



Curriculum Mapping Report

PGO 2: Knowledge for Practice

Academic Year: 2016-2017



TTUHSC – PLFSOM
Office of Medical Education
Office of Assessment and Evaluation
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Methodology

This report summarizes data from several sources. First, course syllabi mapping and course assessment mapping come from the Annual Report for AY 2015-2016. The methodology for assessments is described there as:

For course syllabus to PGO: The Director of Assessment and Evaluation reviewed all course syllabi for AY 2016-2017 using the versions approved by the CEPC. For each course, the director mapped a program goal and objective (PGO) if possible. Unless the course syllabi did not specifically make the linkage, all linkages are those indicated by the course director.

For PGO Assessment Mapping, This is the first year that this item has been included in the report. As a first process, we have included the linkages as shown in table 6.1-1 of the LCME DCI in preparation. The assessments listing was compiled by the assistant deans for medical education. In reviewing the list, some of the linkages are vague. For example, M3&M4 clerkship assessment forms. It is the opinion of the director of assessment and evaluation that this is not specific enough to ensure that coverage is specific enough to ensure adequate assessment or that the PGO is actually assessed in all clerkships, though we have mapped them that way at this time. Further, assessments entered into CHAMP will have associations that we anticipate will improve our ability to identify specific linkages for those activities.

The data for assessments has been updated as table 6.1 has been updated by the assistant deans for medical education.

In addition, session level objective linkages to PGOs is included. This data comes from a new report from the CHAMP system. Faculty identify which PGOs are relevant when they create the objectives. For objectives that were rolled over from the Ilios system, faculty provided instruction to the course coordinators on how to link their objectives. The tables in this report are cleaned up only for visual ability to identify relevant associations (e.g., we merged all PGO 1.1 labels into a single cell). We have deliberately left misspellings, etc. so that reviewers could identify needed changes.

Finally, the reports contain assessment item linkages in the form of excerpts from LCME table 6.1 and a document prepared by Dr Maureen Francis and the M3 clerkship directors indicating the linkages by assessment. Please note that these are not granular ties but rather are based on whether any element of the assessment is relevant to that PGO.

Goal Components

Demonstrate knowledge of established in the evolving biomedical, clinical, epidemiological, socio-behavioral sciences, as well as the application of this knowledge to patient care.

- 2.1: Compare and contrast normal variation of pathological states the structure and function of the human body across the lifespan.
- 2.2: Apply established and emerging foundational/basic science principles to healthcare.
- 2.3: Apply evidence-based and spoke of clinical sciences to diagnostic and therapeutic decision-making and clinical problem solving.
- 2.4: Apply principles of epidemiological sciences to the identification of health problems, risk factors, treatment strategies, resources, and disease prevention/health promotion efforts for patients and populations.
- 2.5: apply principles of socio-behavioral sciences to patient care including assessment of the impact of psych social, cultural, and societal influences on health, disease, care seeking, adherence, and barriers to care.
- 2.6: Demonstrate an understanding of the potential for engagement in creation, dissemination and application of new healthcare knowledge.

Course Syllabus Map

| Program Goal : | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 |
|--|------------|------------|------------|------------|------------|------------|
| Master's Colloquium | | | | | | |
| Medical Skills | | | ✓ | | ✓ | |
| Scientific Principles of Medicine | ✓ | ✓ | ✓ | | | ✓ |
| Society, Community, and the Individual | | | ✓ | ✓ | ✓ | ✓ |
| Clinical Preparation Course | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Block A | | | | | | |
| Family Medicine Clerkship | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Surgery Clerkship | ✓ | ✓ | ✓ | ✓ | | |
| Block B | | | | | | |
| Internal Medicine Clerkship | | | | | | |
| Psychiatry Clerkship | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Block C | | | | | | |
| Obstetrics & Gynecology Clerkship | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pediatrics Clerkship | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Emergency Medicine Clerkship | | ✓ | ✓ | | | |
| Neurology Clerkship | ? | | ? | | | |
| Critical Care Selective | | | | | | |
| CVICU | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MICU | | ✓ | ✓ | | ✓ | |
| PICU | ✓ | ✓ | ✓ | | | ✓ |
| NICU | ✓ | ✓ | ✓ | | | ✓ |
| SICU | | ? | ? | | | |
| Sub Internship Selective | | | | | | |
| Family Medicine | | ✓ | ✓ | ✓ | | ✓ |
| Internal Medicine | | ✓ | ✓ | ✓ | | ✓ |
| OB/Gynecology | | ✓ | ✓ | ✓ | | ✓ |
| Surgery | | ? | ? | | | ? |
| Pediatrics | | | | | | |
| Scholarly Activity and Research Project | | | | | | ✓ |

Course Assessment Map

| Program Goal : | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 |
|---|------------|------------|------------|------------|------------|------------|
| Master's Colloquium | | | | | | |
| Medical Skills | ✓ | ✓ | ✓ | | ✓ | |
| Scientific Principles of Medicine | | | ✓ | ✓ | ✓ | ✓ |
| Society, Community, and the Individual | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Clinical Preparation Course | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Block A | | | | | | |
| Family Medicine Clerkship | ✓ | | | ✓ | | |
| Surgery Clerkship | ✓ | ✓ | | ✓ | | |
| Block B | | | | | | |
| Internal Medicine Clerkship | ✓ | ✓ | ✓ | | ✓ | |
| Psychiatry Clerkship | ✓ | | ✓ | ✓ | ✓ | |
| Block C | | | | | | |
| Obstetrics & Gynecology Clerkship | ✓ | ✓ | | | ✓ | |
| Pediatrics Clerkship | ✓ | ✓ | ✓ | | | |
| Emergency Medicine Clerkship | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Neurology Clerkship | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Critical Care Selective | | | | | | |
| CVICU | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MICU | ✓ | ✓ | ✓ | ✓ | ✓ | |
| PICU | ✓ | ✓ | ✓ | ✓ | ✓ | |
| NICU | ✓ | ✓ | ✓ | ✓ | ✓ | |
| SICU | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Sub Internship Selective | | | | | | |
| Family Medicine | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Internal Medicine | ✓ | ✓ | ✓ | ✓ | ✓ | |
| OB/Gynecology | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Surgery | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Pediatrics | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Scholarly Activity and Research Project | | | | | | ✓ |
| Integrated Curricular Expectation (not part of course) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Session Objective Mapping to PGO

KP2.1: Compare and contrast normal variation and pathological states in the structure and function of the human body across the life span.

| Objective Id | Objective | Course Title | Session Id | Session Title |
|--------------|--|--------------|------------|------------------------------------|
| 66 | Define central and peripheral tolerance | SPM IMN | 184 | Control of Immune Responses |
| 340 | Recognize the major components of nucleotides, and describe how they are linked to form a nucleic acid. | SPM IHD | 12 | Molecules and Cells II |
| 341 | Describe the structure of DNA, and know the forces that stabilize it. | SPM IHD | 12 | Molecules and Cells II |
| 342 | Explain how DNA is packaged into chromatin and higher order of condensation structures. | SPM IHD | 12 | Molecules and Cells II |
| 577 | Describe the general properties of amino acids. | SPM IHD | 12 | Molecules and Cells II |
| 655 | Compare T-dependent and T-independent antibody responses with respect to the nature of the antigen, the affinity and isotype of the antibody, and memory | SPM IHD | 98 | Immune Responses in Wound |
| 693 | Describe the process and rationale for desensitization as a therapy for allergy | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 880 | Describe three features of antigens that influence the choice between T cell tolerance and activation | SPM IMN | 184 | Control of Immune Responses |
| 885 | List four common examples of HLA-linked autoimmune diseases and the associated MHC allele(s) | SPM IMN | 184 | Control of Immune Responses |
| 886 | Describe two ways infections may play a role in the development of autoimmunity | SPM IMN | 184 | Control of Immune Responses |

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|-------------|---|---------|-----|--|
| 1070 | Describe the composition, structure and function of the extracellular matrix and its components, including collagens, non-collagenous proteins and proteoglycans. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1071 | Outline the functional roles of the extracellular matrix in tissues | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1074 | Describe the structural features of proteoglycans and contrast with those of glycoproteins. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1075 | Relate the chemical structure of glycosaminoglycans to their function. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1076 | Outline the steps involved in proteoglycan synthesis, secretion and degradation. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1077 | Outline the synthesis, structure and metabolic turnover of proteoglycan aggregates. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1078 | Describe how diseases such as systemic lupus erythematosus (SLE) and the mucopolysaccharidoses can affect the joints. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 1939 | Describe how a receptor tyrosine kinase (RTK) becomes activated. | SPM IHD | 92 | Cell Signaling |
| 1941 | Describe how a receptor tyrosine kinase (RTK) activates Ras. | SPM IHD | 92 | Cell Signaling |
| 1942 | Define the MAP kinase signaling module. | SPM IHD | 92 | Cell Signaling |
| 1943 | Describe how activation of PI3-kinase by receptor tyrosine kinases (RTKs) leads to downstream activating events at the plasma membrane. | SPM IHD | 92 | Cell Signaling |
| 1944 | Distinguish between phosphatidylinositol 3,4,5-triphosphate (PIP3; generated by PI3 kinase) and inositol 1,4,5-triphosphate (IP3; generated by PLC). | SPM IHD | 92 | Cell Signaling |
| 1945 | Describe how activation of the AKT kinase can promote cell survival and growth. | SPM IHD | 92 | Cell Signaling |
| 1946 | Outline the general steps involved with JAK-STAT signaling. | SPM IHD | 92 | Cell Signaling |

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|-------------|---|---------|-----|--|
| 1947 | Outline the general steps involved in TGF-beta signaling. | SPM IHD | 92 | Cell Signaling |
| 1977 | Define proprioception | SPM IMN | 258 | Proprioception Basic Spinal Reflexes |
| 1978 | Define and describe the muscle receptors involved in proprioception such as the nuclear chain, nuclear bag and golgi tendon organ receptors | SPM IMN | 258 | Proprioception Basic Spinal Reflexes |
| 1979 | Draw and explain the basic spinal reflexes such as the knee jerk reflex, Golgi tendon reflex, crossed extensor and the flexor withdrawal reflex. | SPM IMN | 258 | Proprioception Basic Spinal Reflexes |
| 2711 | Describe the primary components of the hyaline cartilage matrix. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 2712 | Describe how alterations in articular cartilage turnover can lead to osteoarthritis. | SPM IMN | 215 | Molecular Aspects of Joint Tissue Turnover |
| 2724 | Describe Parvovirus B19 in terms of genome composition, virion shape and composition, mode of replication, host cell target, mode of transmission, and clinical presentation. | SPM IHD | 72 | Child with Fever and Rash |
| 2752 | Define the following signal transduction concepts:(1) relay; (2) amplify; (3) integrate; and (4) distribute. | SPM IHD | 92 | Cell Signaling |
| 2753 | Distinguish between membrane permeable and membrane impermeable signals in terms of: (1) their biochemical properties; and (2) the localization of their cognate receptor. | SPM IHD | 92 | Cell Signaling |
| 2754 | Discuss the mechanism by which the steroid/thyroid family of signaling molecules regulate transcription of target genes | SPM IHD | 92 | Cell Signaling |
| 2755 | Discuss the mechanism by which nitric oxide regulates vasodilation and how compounds such as nitroglycerine and sildenafil are used clinically to influence regulation through this pathway | SPM IHD | 92 | Cell Signaling |
| 2756 | Define the term "second messenger" in the context of signal transduction and signal amplification. | SPM IHD | 92 | Cell Signaling |

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|-------------|--|---------|------|---|
| 2757 | Explain the mechanism by which the nicotinic acetylcholine receptor becomes activated. | SPM IHD | 92 | Cell Signaling |
| 2758 | Define the general structure of a G-protein coupled receptor (GPCR) and how activation of a GPCR modulates the activity of the alpha, beta, and gamma subunits of their associated G-proteins. | SPM IHD | 92 | Cell Signaling |
| 2759 | Define the mechanism by which signaling through GPCRs can either activate or inhibit signaling through the Protein Kinase A (PKA) pathway | SPM IHD | 92 | Cell Signaling |
| 2760 | Outline the downstream effects of phospholipase C (PLC) activation in terms of inositol phospholipid signaling. | SPM IHD | 92 | Cell Signaling |
| 2959 | Describe immune privilege as it relates to the brain | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |
| 2967 | Explain molecular mimicry in the context of the role of Campylobacter jejuni in GBS | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |
| 3291 | Discuss and differentiate between a direct and an indirect inguinal hernia. | SPM IHD | 86 | Inguinal Hernias |
| 3536 | Describe the mechanism of oxygen binding to myoglobin and hemoglobin. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 3537 | Describe conformational differences between deoxygenated and oxygenated hemoglobin. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 3539 | Describe the Bohr effect and its role in modulating the binding of oxygen to hemoglobin. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 3540 | Explain how 2,3-bisphosphoglycerate interacts with hemoglobin and influences oxygen binding. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 3546 | Outline the general structure of heme and major steps of heme synthesis. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 3550 | Outline iron metabolism and transport in the human body. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 3770 | Describe the function of pyridoxal phosphate in transamination reactions. | SPM GIS | 137 | Metabolism in the Liver |

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|-------------|--|---------|-----|------------------------------------|
| 3772 | Summarize the sources of ammonium ion for the urea cycle | SPM GIS | 137 | Metabolism in the Liver |
| 3775 | Describe how alanine and glutamine are utilized to transport amino acid nitrogen to the liver. | SPM GIS | 137 | Metabolism in the Liver |
| 3776 | Describe the purpose of the urea cycle, outline its sequence of reactions, and trace the flow of nitrogen into and out of the cycle. | SPM GIS | 137 | Metabolism in the Liver |
| 3788 | Classify and differentiate between hepatitis A, hepatitis B, Hepatitis C, Hepatitis D , Hepatitis E and Hepatitis G viruses according to viral family, virion architecture, disease characteristics, replication and transmission. | SPM GIS | 128 | Viral Hepatitis |
| 3789 | Describe/define the Hepadnavirus family and compare it to Picornavirus, Flavivirus, and Norovirus. | SPM GIS | 128 | Viral Hepatitis |
| 3790 | Recognize the risk factors for an HAV infection the hepatitis virus known to be transmitted by fecal-oral routes and describe the serological markers for HAV. | SPM GIS | 128 | Viral Hepatitis |
| 3791 | Explain the risk factors and medical importance of HBV. | SPM GIS | 128 | Viral Hepatitis |
| 3792 | Recognize that chronic hepatitis due to HBV are risk factors for liver cirrhosis, liver failure and hepatocellular carcinoma. | SPM GIS | 128 | Viral Hepatitis |
| 3793 | Differentiate between the diagnosis associated with the presence of the following serological markers: HBsAg, HBeAg, anti-HBs antibody, anti-HBc IgM antibody, anti-HBc IgG antibody, anti-HBe antibody. | SPM GIS | 128 | Viral Hepatitis |
| 3850 | Describe the metabolism of bilirubin. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3851 | Summarize the key biochemical laboratory findings that can be used to differentiate between hemolytic, cholestatic and hepatocellular causes of jaundice. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3852 | Comment on the mechanism of hepatotoxicity of drugs and alcohol. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |

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| 3853 | Describe the liver's mechanisms of inactivation and detoxification of xenobiotic compounds (key concepts: cytochrome P450, glucuronidation, glutathione, acetaminophen, ethanol). | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3855 | Discriminate between the conjugated and unconjugated hyperbilirubinemias. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3856 | Describe the pathogenesis of Kernicterus. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3857 | Summarize the genetic and biochemical aspects of the following inherited forms of liver disease and jaundice: Hemochromatosis, Wilson's Disease, alpha1-antitrypsin deficiency, Gilbert's syndrome, Crigler-Najjar syndrome, Dubin-Johnson syndrome, and Rotor syndrome. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3921 | Describe the presence of autoantibodies and lymphocytes in Sjogren's syndrome. | SPM CSS | 338 | Immunology of the Eye |
| 3962 | Describe the nonspecific immune defense mechanisms of the intestinal mucosa, including the effect of its normal flora | SPM GIS | 161 | Immunity and the GI Tract |
| 3963 | Explain the immune defense mechanisms of the gut-associated lymphoid tissue (GALT), including the cellular structure of Peyer's patches and the role of "M" cells | SPM GIS | 161 | Immunity and the GI Tract |
| 3964 | Describe three molecules essential for lymphocyte homing to the lamina propria | SPM GIS | 161 | Immunity and the GI Tract |
| 3965 | Compare intraepithelial lymphocytes with the lymphocytes found in the lamina propria | SPM GIS | 161 | Immunity and the GI Tract |
| 3966 | Explain how a naïve B cell differentiates into a plasma cell producing IgA | SPM GIS | 161 | Immunity and the GI Tract |
| 3967 | Compare the structure and function of IgA with the other immunoglobulin isotypes | SPM GIS | 161 | Immunity and the GI Tract |
| 3968 | Explain the transport of dimeric IgA across mucosal epithelial cells, including the function of the polymeric immunoglobulin receptor (pIgR), the production of | SPM GIS | 161 | Immunity and the GI Tract |

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| | secretory component (SC) and the composition of secretory IgA (sIgA) | | | |
| 4141 | Define the fed, fasting, and starved state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |
| 4145 | Discuss metabolic changes that occur as our body transitions from the fasting to starved state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |
| 4370 | Discuss how the oxygen dissociation curves for adult hemoglobin, fetal hemoglobin and myoglobin predict condition-dependent variances in the degree of oxygen delivery throughout the human body. | SPM HEM | 1068 | Biochemistry of Iron and Hemoglobin |
| 4372 | Differentiate between cardiac and non-cardiac causes of chest discomfort. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4373 | Under cardiac causes of chest discomfort, differentiate between the ischemic and non-ischemic categories and the final pathology/disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4374 | Under the ischemic category differentiate between acute coronary syndrome, chronic stable angina and left ventricular outflow obstruction and the final pathology/disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4375 | Under acute coronary syndrome, differentiate ST segment elevation, new left bundle branch block and NO ST segment elevation and the final pathology and disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4376 | Under non-cardiac causes of chest discomfort differentiate between pulmonary/chest wall, GIT and psychiatric causes of chest discomfort and the final pathology/disease in each category | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4377 | Under pulmonary/ chest wall differentiate between vascular, parenchymal and chest wall/pleura causes of chest discomfort and the final pathology/disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |

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| 4378 | Describe how reactive oxygen species originate in the erythrocyte and outline the role of glutathione as an antioxidant. | SPM HEM | 1083 | Anemia Case Studies |
| 4379 | Describe the molecular basis of sickle cell disease. | SPM HEM | 1083 | Anemia Case Studies |
| 4380 | Describe the biochemical tests used to diagnose sickle cell disease. | SPM HEM | 1083 | Anemia Case Studies |
| 4381 | Describe the major components of the erythrocyte cytoskeleton. | SPM HEM | 1083 | Anemia Case Studies |
| 4382 | Provide biochemical explanations for the following conditions related to anemia: glucose-6-phosphate dehydrogenase deficiency, folate deficiency, hereditary spherocytosis, iron deficiency, vitamin B6 deficiency, vitamin B12 deficiency, pyruvate kinase deficiency, and lead poisoning. | SPM HEM | 1083 | Anemia Case Studies |
| 4383 | Classify the anemias on the basis of red cell morphology (microcytic hypochromic; macrocytic normochromic; normocytic normochromic), functional deficit and possible cause. | SPM HEM | 1083 | Anemia Case Studies |
| 4420 | Know the definition of the clinical terms given. | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4421 | Know about the different laboratories tests that are utilized in hematopathology. | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4422 | Know the most common antigen profiles of different hematopoietic cells. See table on antigenic profiles of common hematopoietic cells. | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4423 | Know the about the different types, etiologies and clinical implications of reactive leukopenias. This includes neutropenia, lymphopenia, and monocytopenia. | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4424 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of myelodysplastic syndromes (MDS). | SPM HEM | 1098 | Pathology of Abnormal White Count |

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| 4425 | Know the about the different types, etiologies, morphologic findings, and clinical implications of reactive leukocytosis, which includes neutrophilia, lymphocytosis, and monocytosis. | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4426 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of acute myeloid leukemia (AML). | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4427 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of acute lymphoid leukemia (ALL). | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4429 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of myeloproliferative / myelodysplastic disorders. | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4430 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of leukocytic dysfunctions (Chronic granulomatous disease of childhood, Myeloperoxidase deficiency, and Chediak-Higashi syndrome). | SPM HEM | 1098 | Pathology of Abnormal White Count |
| 4622 | Discuss how blood glucose levels are maintained in the fasting and starved states | SPM GIS | 137 | Metabolism in the Liver |
| 4624 | Discuss the role of alanine aminotransferase in the synthesis of pyruvate from alanine | SPM GIS | 137 | Metabolism in the Liver |
| 4627 | Discuss key regulatory mechanisms by which the flux of metabolic intermediates is inhibited from entering glycolysis or the TCA cycle during gluconeogenesis | SPM GIS | 137 | Metabolism in the Liver |
| 4654 | Understand the metabolic basis for the toxic effects of ethanol metabolism in the liver (alcoholic fatty liver, acidosis, hypoglycemia). | SPM GIS | 125 | Metabolic Aspects of Liver Disease |

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| 4655 | Describe the molecular events underlying the development of alcohol-induced hepatitis. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 4680 | Describe the immune aspects of the risk factors, pathogenesis, diagnosis and management of autoimmune hepatitis (AIH), primary biliary cirrhosis (PBC) and primary sclerosing cholangitis (PSC). | SPM GIS | 140 | Pathology of Liver Diseases |
| 4707 | Compare and contrast physiologic and pathologic jaundice. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 4756 | Explain T cell maturation in the thymus including: expression of the TCR, CD3, zeta chain, CD4 and CD8; the process of positive and negative selection of T cells and the role of self peptides. | SPM CVR | 1204 | The Thymus |
| 4759 | Define the following markers of myocardial damage in terms of function and temporal kinetic profiles: myoglobin, creatine kinase, troponin, and lactate dehydrogenase. | SPM CVR | 1134 | Pathology of Chest Pain |
| 4878 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of ATERIAL-VEINUS MALFORMATION. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4879 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of ANEURYSMS (including berry aneurysms and AAA). | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4880 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of HEMANGIOMAS. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4881 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of GLOMUS TUMOR. | SPM CVR | 1153 | Cardiovascular Neoplasia |

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| 4882 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of HEMANGIOENDOTHELIOMAS. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4883 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of KAPOSII SARCOMA. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4884 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of ANGIOSARCOMA. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4885 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of CARDIAC MYXOMA. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4886 | Know the definition, epidemiology, clinical presentation, diagnostic features, morphologic features, and treatment/management of CARDIAC RHABDOMYOMA. | SPM CVR | 1153 | Cardiovascular Neoplasia |
| 4943 | Explain the steps in an immune response that result in the synthesis of IgE | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4944 | Explain the development of CD4+ TH2 cells and define "atopic" | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4946 | Describe the target cells and functions of IL-4, IL-5 and IL-13 | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4947 | Describe the development and distribution of mast cells and the sensitization phase of Type I Hypersensitivity | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4948 | Describe the roles of IgE, antigen, Fc epsilon RI and mast cells in anaphylaxis | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4950 | Describe the products released from activated mast cells and the roles they play in anaphylaxis | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4951 | Explain the signaling events that result in mast cell activation, including the role of the signaling chains of Fc epsilon RI | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |

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| 4952 | Explain the late phase response, including the recruitment and role of eosinophils, and the roles of cytokines and chemokines | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4953 | Describe the contribution of basophils to type I hypersensitivity (and anaphylaxis) | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4954 | Explain the mechanism by which superantigens can cause septic shock | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4955 | Explain the mechanism by which Pattern Recognition Receptors (PRRs) can cause septic shock | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4956 | Describe the role of C5a and C3a (called anaphylatoxins) in shock | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4990 | Describe the pathogenesis, possible etiologies, and helpful clinical features in differentiating the various etiologies of hypovolemic shock | SPM CVR | 1164 | Pathology of Shock |
| 4991 | Define shock | SPM CVR | 1164 | Pathology of Shock |
| 4992 | Describe the pathogenesis, possible etiologies, and helpful clinical features in differentiating the various etiologies of cardiogenic shock | SPM CVR | 1164 | Pathology of Shock |
| 4993 | Describe the two major diagnostic categories (initial branch points in clinical scheme) and subcategories of shock | SPM CVR | 1164 | Pathology of Shock |
| 4995 | Describe the pathogenesis, possible etiologies, and helpful clinical features in differentiating the various etiologies of extra-cardiac obstructive shock | SPM CVR | 1164 | Pathology of Shock |
| 4996 | Describe the general clinical features of shock and distinguish which features are most helpful in differentiating between shock due to reduced cardiac output vs. reduced systemic vascular resistance | SPM CVR | 1164 | Pathology of Shock |
| 4997 | Describe the pathogenesis, common etiologies, and clinical features of septic shock | SPM CVR | 1164 | Pathology of Shock |

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| 4998 | Describe the pathogenesis, common etiologies, and clinical features of anaphylactic shock | SPM CVR | 1164 | Pathology of Shock |
| 5088 | Describe the causes, pathogenesis, classification, morphologic features, clinical features and clinical course of emphysema | SPM CVR | 1185 | Pathology of Dyspnea |
| 5089 | Describe the causes, pathogenesis, morphologic features, clinical features, and clinical course of chronic bronchitis | SPM CVR | 1185 | Pathology of Dyspnea |
| 5090 | Describe the causes and clinical features of pneumothorax | SPM CVR | 1185 | Pathology of Dyspnea |
| 5095 | Describe the causes, pathogenesis, morphologic features, and clinical features of bronchiectasis | SPM CVR | 1185 | Pathology of Dyspnea |
| 5096 | Describe the pathogenesis and clinical features of pulmonary hypertension | SPM CVR | 1185 | Pathology of Dyspnea |
| 5114 | Explain the major caused of acute respiratory acidosis and alkalosis and chronic respiratory acidosis and alkalosis. | SPM CVR | 1182 | Respiratory Control of pH |
| 5154 | Describe the cause, classification, pathogenesis, morphologic features, clinical features, and diagnosis of asthma | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5155 | Describe the most common causes, pathogenesis, morphologic features, and clinical features of acute lung injury/acute respiratory distress syndrome | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5156 | Describe the common general pathogenic features, pulmonary function test findings, and chest radiograph findings of chronic interstitial lung diseases | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5158 | Describe the cause, pathogenesis, morphologic features, and clinical features of idiopathic pulmonary fibrosis | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5159 | Describe the pathogenesis, morphologic features, and clinical features of coal workers' pneumoconiosis | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5160 | Describe the pathogenesis, morphologic features, and clinical features of silicosis | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |

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| 5161 | Describe the pathogenesis, morphologic features, and clinical features of the various asbestos-related diseases | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5213 | Describe the cause, pathogenesis, morphologic features, clinical features, and diagnosis of sarcoidosis | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 5214 | Describe the cause, pathogenesis, morphologic features, and clinical features of pulmonary alveolar proteinosis | SPM CVR | 1190 | Pathology of Asthma and Interstitial Lung Disease |
| 8818 | List the key differences between prokaryotic and eukaryotic cells in regards to genomic, intracellular, and surface structures. | SPM IHD | 17 | Normal Flora |
| 8820 | Describe the normal flora of the skin. | SPM IHD | 17 | Normal Flora |
| 8821 | Describe the normal flora of the mouth. | SPM IHD | 17 | Normal Flora |
| 8822 | Describe the normal flora of the genitourinary system. | SPM IHD | 17 | Normal Flora |
| 8823 | Describe the normal flora of the gastrointestinal tract. | SPM IHD | 17 | Normal Flora |
| 8825 | Describe conditions where normal flora can cause clinical disease. | SPM IHD | 17 | Normal Flora |
| 8854 | Describe the characteristics used to define virus families, genera and species including genome structure, Capsid symmetry, and envelope characteristics. | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8856 | Compare and contrast the mechanisms of positive and negative single stranded RNA virus genome replication. | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8857 | Describe the common characteristics unique to the members of each of the following viral families: Picornaviridae, Orthomyxoviridae, and Paramyxoviridae | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8858 | List the most common viral etiological agents of sore throat/rhinorrhea: Adenovirus, Rhinovirus (Picornaviridae), Coxsackievirus (Picornaviridae), Coronavirus, Influenza (Orthomyxoviridae), Herpes simplex, Parainfluenza (Paramyxoviridae). | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8859 | Describe and classify Rhinovirus and Influenza virus based on genome composition, capsid shape, viral proteins and antigens, presence or absence of envelope, | SPM IHD | 59 | Viral Causes of Sore Throat |

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| | modes of replication, receptor, disease, and mode of transmission. | | | |
| 8860 | Compare and contrast the pathology of Rhinovirus and Influenza viruses as it relates to their different modes of reproduction and the preferred region of entry in the respiratory tract, how they evade the interferon host defense and differences in the adaptive immune response. | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8861 | Differentiate between antigenic shift and antigenic drift and explain how these two mechanisms of genetic variation can lead to epidemics and pandemics. | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8862 | List the most important microbial agents isolated from each of the following types of infected wounds: human and animal bites; burns; surgical sites; soil-contaminated soil-contaminated wounds. | SPM IHD | 93 | Bacterial Wound Infections |
| 8872 | Define chronic inflammation and describe the three major components that characterize chronic inflammation | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8873 | List several etiologies of chronic inflammation | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8874 | Describe the morphologic features of the inflammatory cells seen in chronic inflammation | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8875 | Describe the role of the macrophage in chronic inflammation including its activation and secreted products | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8876 | Describe the etiologies, morphologic features, and clinical significance of granulomatous inflammation | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8877 | Describe the physical manifestations of the acute phase response | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8878 | Describe the steps involved in the development of fever | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8879 | List the most clinically significant acute phase proteins and describe their clinical applications | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |

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| 8880 | Describe the basis of the erythrocyte sedimentation rate and its clinical applications | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8881 | Define leukocytosis and describe its pathogenesis and morphologic features | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 8902 | Define and describe the microbial classification of Protozoa, differentiating between ameba, flagellates, ciliates and sporozoa. | SPM IHD | 83 | Chronic Relapsing Fever |
| 8905 | Recognize a case of Mumps (MuV), Measles (Morbillivirus), or Rubella (Rubivirus) based on classic signs, symptoms and epidemiological factors. | SPM IHD | 72 | Child with Fever and Rash |
| 8906 | Identify each of the pathogens for which the MMR vaccine provides protection and the know the form or type of vaccine used for these pathogens. | SPM IHD | 72 | Child with Fever and Rash |
| 8907 | Be able to describe the genome structure, virion structure, surface antigens, replication mechanism, natural host cell/receptor for the viruses that cause Mumps, Measles, and Rubella. | SPM IHD | 72 | Child with Fever and Rash |
| 8908 | Recognize a case of Varicella-zoster virus based upon classic signs and symptoms and be able to describe the genome structure, virion structure and replication mechanism. | SPM IHD | 72 | Child with Fever and Rash |
| 8909 | Know the terminology used to describe skin rashes including exanthem, enanthem, maculopapular, diffuse erythema, pustule, petechial eruption, purpuric eruption, vesiculobullous eruptions. | SPM IHD | 72 | Child with Fever and Rash |
| 8932 | Distinguish between these terms: antigen and antibody; active and passive immunity; innate and adaptive immunity; humoral and cellular immunity; naïve, effector and memory lymphocytes; primary and secondary immune responses; generative (central or primary) and peripheral (secondary) lymphoid organs | SPM IHD | 15 | Introduction to the Immune System |
| 8933 | Describe the process of phagocytosis as it relates to the immune system and classify 3 types of phagocytes | SPM IHD | 15 | Introduction to the Immune System |

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| | (neutrophils, macrophages, dendritic cells) with respect to their general characteristics, function and location in the body | | | |
| 8934 | Classify the 3 types of lymphocytes (T, B and NK cells) with respect to their general characteristics, function and location in the body | SPM IHD | 15 | Introduction to the Immune System |
| 8935 | Describe the function of the bone marrow, thymus, lymph, lymph nodes and spleen | SPM IHD | 15 | Introduction to the Immune System |
| 8936 | Describe the migration of cells of the immune system. Define "chemokine" and describe their role in this process | SPM IHD | 15 | Introduction to the Immune System |
| 8937 | Outline the phases of an immune response beginning with the early innate response, followed by recognition, elimination and memory of the microbe by the adaptive immune system | SPM IHD | 15 | Introduction to the Immune System |
| 8955 | Compare and contrast the features of innate and adaptive immunity | SPM IHD | 28 | Innate Immunity and Complement System |
| 8956 | List the principle components of innate and adaptive immunity. Classify each component as humoral or cellular. | SPM IHD | 28 | Innate Immunity and Complement System |
| 8957 | Describe the molecules of innate immunity that recognize pathogen or damage associated molecular patterns and their function. In particular, list the pathogen-associated molecules that are recognized by the TLRs. | SPM IHD | 28 | Innate Immunity and Complement System |
| 8958 | Define "adjuvant" and explain the role of innate immunity (signal #2) in initiating adaptive immune responses | SPM IHD | 28 | Innate Immunity and Complement System |
| 8959 | Describe the phagocytes of innate immunity and process of recruitment of leukocytes to sites of infection | SPM IHD | 28 | Innate Immunity and Complement System |
| 8960 | Describe the role of natural killer (NK) cells in an innate immune response, including their ability to activate macrophages through reciprocal production of cytokines by NK cells and macrophages | SPM IHD | 28 | Innate Immunity and Complement System |

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| 8961 | Define the terms cytokine, interleukin and chemokine, and describe the structure of chemokines and chemokine receptors | SPM IHD | 28 | Innate Immunity and Complement System |
| 8962 | List the cytokines of innate immunity, their principal cellular source(s) and biologic effects | SPM IHD | 28 | Innate Immunity and Complement System |
| 8963 | Describe the three mechanisms that can set off the complement cascade | SPM IHD | 28 | Innate Immunity and Complement System |
| 8964 | Listing all the components, describe the process of complement fixation in the three complement pathways as a series of binding steps and enzymatic cleavages | SPM IHD | 28 | Innate Immunity and Complement System |
| 8965 | Explain how the complement cascade facilitates phagocytosis | SPM IHD | 28 | Innate Immunity and Complement System |
| 8966 | Describe the role of the complement cascade in localized inflammation | SPM IHD | 28 | Innate Immunity and Complement System |
| 8967 | Describe the formation and function of the membrane attack complex | SPM IHD | 28 | Innate Immunity and Complement System |
| 8968 | Identify the regulators on cells and in serum that control complement activation and the mechanism | SPM IHD | 28 | Innate Immunity and Complement System |
| 8969 | Categorize the regulators of complement activation by which pathway or pathways are affected | SPM IHD | 28 | Innate Immunity and Complement System |
| 8970 | Describe the cellular distribution, ligands, and function of complement receptors, CR1 and CR2 | SPM IHD | 28 | Innate Immunity and Complement System |
| 8971 | Describe antigen presentation by dendritic cells and the initiation of T cell responses | SPM IHD | 51 | Antigens and MHC |
| 8972 | Describe the features of antigens recognized by T lymphocytes | SPM IHD | 51 | Antigens and MHC |
| 8975 | Explain the importance of having separate class I and II MHC antigen presentation pathways in selecting the nature of the T cell response | SPM IHD | 51 | Antigens and MHC |
| 8976 | Explain the activating and inhibitory receptors of NK cells, including the role of class I MHC, ITAMs and ITIMs | SPM IHD | 51 | Antigens and MHC |

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| 8977 | Briefly summarize the process and timeline for innate and adaptive immune responses to extracellular bacteria, up to and including presentation of antigen by dendritic cells | SPM IHD | 51 | Antigens and MHC |
| 8978 | Briefly summarize the process and timeline for innate and adaptive immune responses to viruses, up to and including presentation of antigen by dendritic cells | SPM IHD | 51 | Antigens and MHC |
| 8979 | Describe the structure of molecules in the immunoglobulin family | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8980 | Compare antigen recognition by T and B lymphocyte antigen receptors | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8981 | Compare the general properties of the T cell receptor (TCR) and B cell receptor (BCR, membrane immunoglobulin) | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8982 | Demonstrate the steps in the rearrangement (somatic recombination) of antigen receptor genes in T and B lymphocytes | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8983 | Explain the mechanisms for combinatorial and junctional diversity in antigen receptors and antibodies, including the enzymes that catalyze these processes | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8985 | Define, identify and compare the Fc and Fab portions of an antibody molecule | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8986 | Describe the general structure of an antibody and relate this structure to antigen specificity and binding | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8988 | Relate the concepts of isotype, affinity and avidity to antibody structure | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8989 | Define and compare the terms: epitope and antigenic determinant; antigen and immunogen | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8991 | Identify the major features of the five major isotypes (classes) of antibodies including which activate the classical complement pathway | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |

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| 8992 | Describe the normal serum levels and half-life of IgG, IgA and IgM | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8993 | Briefly summarize the stages of T and B lymphocyte maturation | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 8994 | Explain the molecular interactions between a CD4+ T cell and an antigen presenting cell during T cell activation | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 8995 | Describe the role of CD4+ T cells in activation of CD8+ T cells | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 8996 | Describe the molecular interactions and changes that occur when B cells are activated by antigen | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 8997 | Contrast the roles of the CR2-CD19-CD18 coreceptor complex and FcγRIIB in B cell activation | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 8998 | Outline the sequence of events in the lymph node that result in an antibody response to a T-dependent protein antigen. Include the function of chemokine receptors in cell migration and the molecular interactions between B and CD4+ helper T cells, including B7 and CD28, and CD40 and CD40 ligand | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 8999 | Outline the molecular mechanisms and important cytokines of immunoglobulin heavy chain isotype (class) switching | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 9002 | Describe the development of T-independent antibody responses including the role of the spleen | SPM IHD | 98 | Immune Responses in Wound |
| 9128 | Compare the structure of class I and II MHC and relate this structure to peptide binding and antigen presentation to T cells | SPM IHD | 51 | Antigens and MHC |
| 9129 | Relate the role of MHC in immune responses to the inheritance and expression pattern of MHC genes | SPM IHD | 51 | Antigens and MHC |
| 9130 | Compare the two pathways for intracellular processing and presentation of protein antigens by describing the derivation of the antigenic peptides, the molecules that participate and their respective functions | SPM IHD | 51 | Antigens and MHC |

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| 9131 | Relate the general structure of the T cell antigen receptor to antigen specificity and binding | SPM IHD | 55 | Antigen Receptors and Lymphocyte Maturation |
| 9132 | Describe changes that occur in T cells when they are activated by antigen, including the roles of CD3, zeta chain and ITAMs | SPM IHD | 58 | Activation/Interaction of T&B Cells |
| 9163 | Identify the properties of an atom | SPM IHD | 11 | Molecules and Cells I |
| 9164 | Distinguish between ionic and covalent bonds | SPM IHD | 11 | Molecules and Cells I |
| 9165 | Distinguish between polar and nonpolar covalent bonds | SPM IHD | 11 | Molecules and Cells I |
| 9166 | Discuss the concept of hydrogen bonding in context to intermolecular interactions | SPM IHD | 11 | Molecules and Cells I |
| 9167 | Identify the basic building blocks of the cell and the larger macromolecular structures that they form | SPM IHD | 11 | Molecules and Cells I |
| 9171 | Present an overview of eukaryotic cellular organization and function, including the specialized functions of the subcellular organelles. | SPM IHD | 12 | Molecules and Cells II |
| 9172 | Identify eukaryotic cellular components in electron and light micrographs. | SPM IHD | 12 | Molecules and Cells II |
| 9176 | Describe the general properties of cytokines and the three types of cytokine action (autocrine, paracrine, endocrine) | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9177 | Explain the differences between naïve, effector and memory T and B lymphocytes | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9178 | List five types of effector T lymphocytes, correlating each with its function | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9180 | Describe the development, function and cytokines produced by CD4+ TH1 and TH17 cells | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9181 | Briefly describe the four types of hypersensitivity, especially recognize the role of CD4+ TH1 cells in Type IV Hypersensitivity | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |

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| 9182 | Explain the role of CD4+ TH1 cells in Delayed-Type Hypersensitivity | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9183 | Compare the types of intracellular microbes eliminated by CD4+ TH1 cells and CD8+ cytotoxic T cells (CTLs) | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9184 | Describe the effector function of CTLs and compare killing by CTLs and NK cells | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9185 | Contrast endogenous and exogenous pyrogens | SPM IHD | 63 | Pyrogens & The Immune System |
| 9186 | Describe the role of TLRs in the biologic response to endotoxins like lipopolysaccharide (LPS) | SPM IHD | 63 | Pyrogens & The Immune System |
| 9187 | Define the term superantigen and explain how a superantigen can activate such a large number of T cells | SPM IHD | 63 | Pyrogens & The Immune System |
| 9188 | List two types of bacteria that produce superantigens | SPM IHD | 63 | Pyrogens & The Immune System |
| 9189 | Compare the interactions with class II MHC molecules and TCRs of a "regular" antigen and a "super" antigen | SPM IHD | 63 | Pyrogens & The Immune System |
| 9218 | Construct a diagram showing the mechanism by which superantigens cause disease | SPM IHD | 63 | Pyrogens & The Immune System |
| 9220 | For the primary immune deficiencies list the pattern of inheritance, the immune defect and the most common type of infections | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9221 | List the common causes of acquired (secondary) immunodeficiency | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9224 | Describe the significance of an IgM vs IgG response or a rise in the titer of an IgG antibody in the diagnosis of an infection | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9230 | Describe the development, function and cytokines produced by CD4+ TH2 cells | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9231 | Explain the role of cytokines produced by CD4+ TH1 and TH2 cells in immunoglobulin heavy chain isotype (class) switching | SPM IHD | 96 | Immune Mechanisms in Healing |

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| 9233 | Describe the function and types of Fc receptors | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9234 | Describe the process of antibody-dependent cellular cytotoxicity (ADCC) | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9235 | List and compare the specific effector functions of IgM, IgG1, IgG3, and IgG4 and IgE | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9236 | Explain the role of IgE in protection against helminth infections and in Type I Hypersensitivity | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9237 | Define the term "alternative" macrophage activation and describe the role of CD4+ TH2 cytokines in wound healing | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9238 | Describe and give at least one example of each of Hypersensitivity Types II and III | SPM IHD | 98 | Immune Responses in Wound |
| 9239 | Explain the differences in the antibody response between the primary and secondary exposure to an antigen | SPM IHD | 98 | Immune Responses in Wound |
| 9240 | Describe affinity maturation, including the role of somatic hypermutation, follicular dendritic cells and B cell selection in germinal centers | SPM IHD | 98 | Immune Responses in Wound |
| 9241 | Define the terms hapten and carrier, and draw the process of B and T cell and collaboration that results in a T-dependent antibody response to a conjugated hapten or polysaccharide antigen | SPM IHD | 98 | Immune Responses in Wound |
| 9242 | Distinguish between active and passive immunization and compare the types of vaccines used for active immunization | SPM IHD | 98 | Immune Responses in Wound |
| 9243 | Describe the effects of adjuvants on the immune response to a vaccine | SPM IHD | 98 | Immune Responses in Wound |
| 9244 | Distinguish between a polyclonal and a monoclonal antibody to an antigen | SPM IHD | 98 | Immune Responses in Wound |
| 9268 | Describe the major forms of immune-associated glomerular injury | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |

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| 9269 | Describe the cellular and soluble immune mediators of glomerular injury | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9270 | Describe the major immunological mechanisms and immunodiagnosis of the following renal diseases: poststreptococcal glomerulonephritis, rapidly progressive glomerulonephritis (RPGN) including Goodpasture syndrome, membranous nephropathy, minimal change disease, membranoproliferative glomerulonephritis (MPGN), IgA nephropathy (Berger disease), and lupus nephritis | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9271 | Define cryoglobulin and distinguish three types of cryoglobulins by their antibody isotypes and associated diseases | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9272 | Define amyloidosis, describing the major types of amyloid and the relationship to renal disease | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9513 | Explain the terms autologous, syngeneic, allogeneic and xenogeneic in the context of transplantation | SPM RNL | 1224 | Transplantation |
| 9514 | Explain the nomenclature, function, expression and inheritance of MHC (HLA) molecules | SPM RNL | 1224 | Transplantation |
| 9515 | Explain the terms haplotype, codominant expression, and polymorphism in the context of transplantation | SPM RNL | 1224 | Transplantation |
| 9516 | Explain the role of MHC (HLA) in rejection | SPM RNL | 1224 | Transplantation |
| 9517 | Compare direct and indirect pathway allorecognition in graft rejection | SPM RNL | 1224 | Transplantation |
| 9518 | Summarize the differences between hyperacute, acute, and chronic rejection | SPM RNL | 1224 | Transplantation |
| 9519 | Describe the treatments for graft rejection and their mechanisms of action | SPM RNL | 1224 | Transplantation |
| 9520 | Explain the immunologic problems that are unique to bone marrow and hematopoietic stem cell transplantation, including the development of graft-versus host disease and infections | SPM RNL | 1224 | Transplantation |

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| 9571 | Define the various clinical manifestations of renal disease. | SPM RNL | 1236 | Glomerular Disease |
| 9572 | Recognize the clinical manifestations of the major glomerular syndromes. | SPM RNL | 1236 | Glomerular Disease |
| 9573 | Describe the pathogenesis, morphology, and clinical features of IgA nephropathy (Berger Disease). | SPM RNL | 1236 | Glomerular Disease |
| 9574 | Describe the pathogenesis, morphology, and clinical features of Alport Syndrome and Thin Basement Membrane Disease (Benign Familial Hematuria). | SPM RNL | 1236 | Glomerular Disease |
| 9575 | Describe the pathophysiology and clinical manifestations of the nephritic syndrome. | SPM RNL | 1236 | Glomerular Disease |
| 9576 | Describe the pathogenesis, morphology, and clinical features of acute proliferative glomerulonephritis. | SPM RNL | 1236 | Glomerular Disease |
| 9577 | Describe the pathogenesis, morphology, and clinical features of rapidly progressive glomerulonephritis. | SPM RNL | 1236 | Glomerular Disease |
| 9578 | Describe the pathophysiology of and clinical manifestations of the nephrotic syndrome. | SPM RNL | 1236 | Glomerular Disease |
| 9579 | Describe the pathogenesis, morphology, and clinical features of minimal-change disease. | SPM RNL | 1236 | Glomerular Disease |
| 9580 | Describe the pathogenesis, morphology, and clinical features of focal segmental glomerulosclerosis (FSGS). | SPM RNL | 1236 | Glomerular Disease |
| 9581 | Describe the pathogenesis, morphology, and clinical features of membranous nephropathy (glomerulopathy). | SPM RNL | 1236 | Glomerular Disease |
| 9582 | Describe the pathogenesis, morphology, and clinical features of membranoproliferative glomerulonephritis and dense deposit disease. | SPM RNL | 1236 | Glomerular Disease |
| 9585 | Describe the pathogenesis, morphology, and clinical features of chronic glomerulonephritis. | SPM RNL | 1236 | Glomerular Disease |
| 9586 | Describe the pathogenesis, morphology, and clinical features of the following systemic disorders as they | SPM RNL | 1236 | Glomerular Disease |

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| | relate to renal disease: Diabetes, Henoch-Schonlein Purpura, and systemic lupus erythematosus. | | | |
| 9604 | Describe the development and maintenance of memory cells | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9649 | Describe the pathogenesis, morphology, and clinical features of cystic diseases of the kidney including simple cysts, AD polycystic kidney disease, AR polycystic kidney disease, and cystic diseases of the renal medulla | SPM RNL | 1239 | Cystic Disease and Neoplasms of the Kidney |
| 9650 | Describe the pathogenesis, morphology, and clinical features of urolithiasis | SPM RNL | 1239 | Cystic Disease and Neoplasms of the Kidney |
| 9651 | Describe the pathogenesis and morphology of hydronephrosis | SPM RNL | 1239 | Cystic Disease and Neoplasms of the Kidney |
| 9652 | Describe the pathogenesis, morphology, and clinical features of renal oncocytoma and renal cell carcinoma | SPM RNL | 1239 | Cystic Disease and Neoplasms of the Kidney |
| 9788 | Describe the process of phagocytosis in macrophages. | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 9789 | Describe the mechanism of reactive oxygen and nitrogen species microbicidal activity in macrophages. | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 9790 | Know the basic functions of nitric oxide in macrophages and blood vessels. | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 9807 | Understand the role of the major factors contributing to the regulation of serum calcium concentration | SPM END | 440 | Abnormal Serum Calcium |
| 9808 | Know the causes and clinical presentations of hypercalcemia and hypocalcemia | SPM END | 440 | Abnormal Serum Calcium |
| 9809 | Explain the role of parathyroid hormone related protein in hypercalcemia of malignancy | SPM END | 440 | Abnormal Serum Calcium |
| 9810 | Understand the role of vitamin D and its metabolism in health and disease | SPM END | 440 | Abnormal Serum Calcium |
| 9821 | Pathology: Describe the pathogenesis, morphologic features, clinical features, and laboratory findings of primary hyperparathyroidism | SPM END | 440 | Abnormal Serum Calcium |

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| 9822 | Pathology: Describe the pathogenesis, morphologic features, clinical features, and laboratory findings of secondary hyperparathyroidism | SPM END | 440 | Abnormal Serum Calcium |
| 9823 | Pathology: Describe the causes, clinical features, and laboratory findings of hypoparathyroidism | SPM END | 440 | Abnormal Serum Calcium |
| 9824 | Pathology: Describe the pathogenesis and laboratory findings of pseudohypoparathyroidism | SPM END | 440 | Abnormal Serum Calcium |
| 9825 | Pathology: Describe the pathogenesis and laboratory findings of hypercalcemia secondary to malignancy | SPM END | 440 | Abnormal Serum Calcium |
| 9826 | List the viral systemic infections characterized by a fever and rash. | SPM IHD | 72 | Child with Fever and Rash |
| 9827 | Describe the viral causative agents of roseola infantum [HHV6 and 7] in terms of genome architecture, virion morphology, clinical manifestations. | SPM IHD | 72 | Child with Fever and Rash |
| 9928 | Identify the basic structural and biochemical properties of cholesterol | SPM END | 402 | Cholesterol Metabolism |
| 9929 | Identify the primary dietary sources of cholesterol | SPM END | 402 | Cholesterol Metabolism |
| 9930 | Identify when and where endogenous production of cholesterol occurs | SPM END | 402 | Cholesterol Metabolism |
| 9931 | Discuss the normal physiological role for membrane associated cholesterol | SPM END | 402 | Cholesterol Metabolism |
| 9932 | Identify key organic molecules that are derived from cholesterol | SPM END | 402 | Cholesterol Metabolism |
| 9933 | Identify key steps in the cholesterol biosynthetic pathway | SPM END | 402 | Cholesterol Metabolism |
| 9934 | Discuss how the esterification of cholesterol effects its transport | SPM END | 402 | Cholesterol Metabolism |
| 9935 | Discuss the role of lipoproteins in cholesterol transport | SPM END | 402 | Cholesterol Metabolism |
| 9936 | Discuss the role of LDL in context to atherosclerosis | SPM END | 402 | Cholesterol Metabolism |
| 9937 | Discuss the origin and composition of bile salts and their role in the absorption of dietary cholesterol | SPM END | 402 | Cholesterol Metabolism |

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| 9938 | Discuss the biochemical and genetic basis of familial hypercholesterolemia | SPM END | 402 | Cholesterol Metabolism |
| 9943 | Understand the hypothalamic-pituitary-adrenal axis and be able to differentiate between the anterior and posterior glands and understand the relevance of pituitary and adrenal secretions. | SPM END | 429 | Hypothalamic Pituitary Control of Endocrine |
| 9947 | Understand the feedback mechanism(s) involved in hypothalamic-pituitary-adrenal function(s). | SPM END | 429 | Hypothalamic Pituitary Control of Endocrine |
| 9948 | Define the target tissues and function of pituitary and adrenal gland hormones. | SPM END | 429 | Hypothalamic Pituitary Control of Endocrine |
| 9964 | Describe the risk factors and immune mechanisms of Hashimoto thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9965 | Describe the risk factors and immune mechanisms of Graves disease | SPM END | 438 | Pathology of the Thyroid |
| 9966 | Describe the immune mechanisms in subacute thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9988 | Describe the general clinical features and causes of hyperthyroidism | SPM END | 438 | Pathology of the Thyroid |
| 9989 | Describe the pathogenesis, clinical features, morphology, and laboratory features of Graves disease | SPM END | 438 | Pathology of the Thyroid |
| 9990 | Describe the pathogenesis and clinical features of infectious thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9991 | Describe the pathogenesis, clinical features, morphology, and laboratory features of subacute granulomatous thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9992 | Describe the pathogenesis, clinical features, morphology, and laboratory features of subacute lymphocytic thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9993 | Describe the causes and clinical features of cretinism | SPM END | 438 | Pathology of the Thyroid |
| 9994 | Describe the causes and clinical features of myxedema | SPM END | 438 | Pathology of the Thyroid |
| 9995 | Describe the general causes of hypothyroidism | SPM END | 438 | Pathology of the Thyroid |

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| 9996 | Describe the pathogenesis, clinical features, morphology, and laboratory features of Hashimoto thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9997 | Describe the pathogenesis and clinical features of Riedel thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9998 | Describe the pathogenesis, clinical features, and morphology of diffuse nontoxic goiter | SPM END | 438 | Pathology of the Thyroid |
| 9999 | Describe the pathogenesis, clinical features, and morphology of multinodular goiter | SPM END | 438 | Pathology of the Thyroid |
| 10000 | Describe the pathogenesis, clinical features, and morphology of follicular adenoma | SPM END | 438 | Pathology of the Thyroid |
| 10001 | Describe the pathogenesis, clinical features, and morphology of papillary carcinoma | SPM END | 438 | Pathology of the Thyroid |
| 10022 | Identify the steps and control factors of thyroid hormone biosynthesis, storage, and release and describe the distribution of iodine and the metabolic pathway involved in thyroid hormone synthesis. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10023 | Describe how T3 and T4 are carried in the blood | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10024 | Describe how T3 and T4 are metabolized and eliminated from the body | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10025 | Define the half life for T3 and T4 | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10026 | Describe the interrelationship between T3 and T4 | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10061 | Explain the negative selection process during B and T lymphocyte maturation and its role in central tolerance | SPM IMN | 184 | Control of Immune Responses |
| 10062 | Explain the function of the AIRE gene and its relationship to autoimmunity | SPM IMN | 184 | Control of Immune Responses |
| 10063 | Explain the development of CD4+ regulatory T cells in the thymus and their role in peripheral tolerance | SPM IMN | 184 | Control of Immune Responses |

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| 10064 | Describe and compare the features of central and peripheral tolerance | SPM IMN | 184 | Control of Immune Responses |
| 10065 | Define anergy and explain the role of innate immunity and costimulation in preventing anergy | SPM IMN | 184 | Control of Immune Responses |
| 10066 | Describe the role of CTLA-4 and PD-1 in anergy | SPM IMN | 184 | Control of Immune Responses |
| 10067 | Explain the process of activation-induced death of T cells in peripheral tolerance | SPM IMN | 184 | Control of Immune Responses |
| 10068 | Describe peripheral tolerance as it relates to B lymphocytes | SPM IMN | 184 | Control of Immune Responses |
| 10069 | Describe the natural decline of an immune response including the role of antibody feedback | SPM IMN | 184 | Control of Immune Responses |
| 10070 | Describe two principle factors that contribute to the development of autoimmunity | SPM IMN | 184 | Control of Immune Responses |
| 10086 | Describe the diagnosis and classification of diabetes | SPM END | 425 | Pathology of Diabetes |
| 10088 | Describe the pathogenesis of type 1 diabetes mellitus | SPM END | 425 | Pathology of Diabetes |
| 10089 | Describe the pathogenesis of type 2 diabetes mellitus | SPM END | 425 | Pathology of Diabetes |
| 10090 | Describe the pathogenesis of monogenic forms of diabetes | SPM END | 425 | Pathology of Diabetes |
| 10091 | Describe the pathogenesis of common diabetic complications | SPM END | 425 | Pathology of Diabetes |
| 10092 | Describe diabetic complications including changes in the pancreas, macrovascular disease, microangiopathy, nephropathy, pyelonephritis, ocular complications, and diabetic neuropathy | SPM END | 425 | Pathology of Diabetes |
| 10095 | Identify the steps involved in biosynthesis of thyroid hormones. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10096 | Describe the role of iodine in thyroid hormone synthesis. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10097 | Describe factors that control the synthesis, storage and secretion of thyroid hormones. | SPM END | 437 | Regulation and Function of Thyroid Hormones |

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| 10098 | Understand the significance of the conversion of tetraiodothyronine (T4) to triiodothyronine (T3) and reverse T3 (rT3) in extrathyroidal tissues and how thyroid hormones produce their cellular effects. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10099 | Describe thyroid hormones effect on development and metabolism and understand the causes and consequences of excess and deficiency of thyroid hormones. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10100 | Understand the causes and consequences of hypothyroidism. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10101 | Describe thyroid hormone feedback mechanism. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10106 | Describe the role of the immune system in Addison disease | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10107 | Describe and compare Autoimmune Polyendocrine Syndrome Type 1 (APS1 or APECED: Autoimmune Polyendocrinopathy, Candidiasis and Ectodermal Dystrophy) and Autoimmune Polyendocrine Syndrome Type 2 (APS2), including their classic triads, inheritance and relationship to Addison disease | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10108 | Relate the immune function of the AIRE gene to APS1 | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10109 | Describe IPEX (Immune dysregulation PolyEndocrinopathy X-linked inheritance) and explain the role of the FOXP3 gene | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10110 | Describe the risk factors for type I diabetes, including the possible role of HLA, CTLA-4 and CD25 | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10111 | Describe the possible role of viral infection in autoimmune diseases like type I diabetes | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10112 | Explain the effector mechanisms of beta-cell destruction and list the three major autoantigens in type I diabetes | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |

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| 10113 | Explain the relationship between obesity and inflammation in metabolic syndrome, including the role of TLRs and cytokines | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10368 | Provide a comprehensive biochemical overview of hepatic fat synthesis from glucose and fructose, with special attention to subcellular location, regulatory checkpoints, essential cofactors, metabolites and reducing equivalents. | SPM END | 420 | Biochemistry of Diabetes and Obesity |
| 10369 | Apply your knowledge of the intracellular mechanisms of insulin, glucagon, cortisol and catecholamine action to outline the regulation and flux of metabolic fuel pathways during the fed, fasting, and stressed states. | SPM END | 420 | Biochemistry of Diabetes and Obesity |
| 10370 | Use your understanding of hormonal control of fuel homeostasis to recognize and explain the metabolic alterations in diseases affecting fuel balance (e.g. diabetes, insulinoma, glucagonoma, pheochromocytoma, Cushing syndrome, acromegaly). | SPM END | 420 | Biochemistry of Diabetes and Obesity |
| | | | 424 | Diabetes Case Studies |
| 10371 | Based on your understanding of the key differences between hepatic fructose and glucose metabolism, explain how elevated fructose consumption as seen in the modern Western diet may contribute to nonalcoholic fatty liver disease (NAFLD) and the metabolic syndrome. | SPM MHD | 1272 | Pediatric Metabolic Emergencies: Lactic Acidemias and Disorders of Carbohydrate Metabolism |
| 10372 | Explain immune privilege as it relates to the testis | SPM REP | 493 | Immunologic Causes of Infertility |
| 10406 | Define and differentiate between primary and secondary dysmenorrhea. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10408 | Define primary and secondary infertility and list the most common causes of primary and secondary infertility . | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10411 | Interpret a semen analysis. | SPM REP | 494 | SCHEME - Infertility |

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| | | | 497 | Screening and Prevention and Infertility WCE |
| 10412 | Differentiate between pre-testicular, testicular and post-testicular causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10447 | Discuss the advantages and limitations of ultrasound, computerized tomography (CT) and magnetic resonance imaging (MRI) in evaluation of female pelvis. | SPM REP | 468 | Diagnostic Imaging |
| 10448 | Know the basic technical aspects of how radiologic procedures are performed. | SPM REP | 468 | Diagnostic Imaging |
| 10449 | Recognize and discuss ultrasound, CT and MRI images of normal female pelvic anatomy. | SPM REP | 468 | Diagnostic Imaging |
| 10450 | Describe typical ultrasound findings of the ovary and endometrium during ovulatory menstrual cycle. | SPM REP | 468 | Diagnostic Imaging |
| 10451 | Recognize and discuss ultrasound, CT and MRI images of uterine lesions and abnormal endometrial thickening. | SPM REP | 468 | Diagnostic Imaging |
| 10452 | Recognize and discuss ultrasound, CT and MRI images of benign and malignant adnexal (ovarian and tubal) lesions. | SPM REP | 468 | Diagnostic Imaging |
| 10453 | Recognize and discuss ultrasound, CT and MRI images of cervical lesions. | SPM REP | 468 | Diagnostic Imaging |
| 10454 | Develop an appreciation of the complexity of diagnostic imaging and understanding of the types of studies that are available and the information they provide. | SPM REP | 468 | Diagnostic Imaging |
| 10455 | Gain familiarity with the use of radiologic subspecialties in the context of modern medical practice. | SPM REP | 468 | Diagnostic Imaging |
| 10483 | Identify the risk factors for cervical neoplasia. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10484 | Know how to perform an adequate Pap smear. | SPM REP | 486 | SCHEME - Screening and Prevention |

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| | | | 497 | Screening and Prevention and Infertility WCE |
| 10485 | Discuss the association of human papilloma virus infection with cervical intraepithelial neoplasia and invasive cancer. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10486 | List indications for HPV testing, colposcopy, endocervical curettage, cervical and endometrial biopsy and loop electrosurgical excision (LEEP). | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10487 | Describe the initial management of a patient with abnormal Pap smear. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10488 | List recommendations for prevention of cervical dysplasia/cervical cancer and identify health promotion strategies for sexually active women. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10489 | Discuss diagnostic approach to a woman with chief complaint of breast mass, nipple discharge and/or breast pain . | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10506 | List clinical and physical findings that may suggest galactorrhea, mastitis and/or benign and malignant breast lesions. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10507 | Select women who are at high risk for breast cancer based on age, family history or the presence of other pre-existing risk factors, signs and symptoms for mammography and/or genetic screening. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10508 | Counsel/educate patients on the role of breast self-examination, mammography, ultrasound, fine needle aspiration, and core needle biopsy. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10509 | | SPM REP | 486 | SCHEME - Screening and Prevention |

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| | Differentiate between infectious and non-infectious vaginal discharge. | | 497 | Screening and Prevention and Infertility WCE |
| 10510 | Differentiate the signs and symptoms of the following sexually transmitted infections: Gonorrhea, Chlamydia, Herpes simplex virus, Chancroid, Syphilis and Trichomonas. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10512 | Select the patients for pH, wet mount, KOH smear, gram stain and cervical culture in yeast, bacterial, trichomonas and atrophic vaginitis | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10513 | Outline preventive measures for sexually transmitted diseases (e.g., limiting number of sexual partners, use of barrier contraceptives, especially condoms). | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10515 | Outline a management plan for candidiasis, trichomoniasis, and vaginitis due to gonorrhea and /or chlamydia including role of local hygiene in prevention. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10518 | Differentiate between vaginal bleeding related to or unrelated to pregnancy. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10519 | List and interpret critical clinical and laboratory findings which are key in the processes of exclusion and differentiation between the causes of abnormal uterine bleeding. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10520 | List the most common causes of genital tract bleeding in premenarchal patients. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10521 | List the most common causes of genital tract bleeding in reproductive age patients. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10522 | List the most common causes of genital tract bleeding in peri- and postmenopausal patients. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10523 | | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |

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| | Outline the appropriate evaluation and management of patients with premenarchal, reproductive age and postmenopausal vaginal bleeding. | | 462 | Abnormal Uterine Bleeding WCE |
| 10661 | Apply diagnostic methods in patients with uterine fibroids (leiomyoma) and adenomyosis. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10664 | Compare the characteristics of functional (follicular, luteal and hemorrhagic) cysts, benign ovarian neoplasms (cystadenoma, dermoid cyst, endometriosis etc.) and ovarian malignancies. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10665 | Describe the histological classification of ovarian neoplasms. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10666 | List the risk factors for ovarian carcinoma and counsel a woman at risk for ovarian cancer. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10667 | Define acute and chronic pelvic pain. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10668 | List the most common causes and clinical manifestations of acute and chronic pelvic pain. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10669 | List diagnostic and management options for patients presenting with acute and chronic pelvic pain. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10688 | Discuss the physiologic and anatomic changes associated with pregnancy, diagnose pregnancy, assess the gestational age and recognize the pregnancy at risk. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10689 | Describe appropriate diagnostic studies for each trimester of pregnancy, know how to perform a physical exam on obstetric patients and list the methods for prenatal diagnosis (antenatal care). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10690 | Know how to counsel patients concerning pregnancy, nutritional needs of pregnant women, exercise during | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |

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| | pregnancy, immunization, adverse effects of drugs and the environment, labor and delivery. | | | |
| 10691 | List the signs, symptoms and stages of labor, and describe the techniques to evaluate the progress of the labor and assess fetal wellbeing (intrapartum care: fetal auscultation, electronic fetal monitoring). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10692 | Discuss the physiologic changes of the postpartum period, and list the components of normal postpartum care. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10693 | List the normal physiologic and anatomic changes of the breast during pregnancy and lactation, and know how to recognize and treat common postpartum abnormalities of the breast (normal and abnormal lactation). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10694 | Recognize the following medical and surgical conditions that may alter the course of the pregnancy: fetal growth abnormalities (intrauterine growth restriction and fetal macrosomia), premature delivery, premature rupture of membranes, isoimmunization, diabetes mellitus, urinary tract disorders, anemia and surgical abdomen. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10695 | Define and classify hypertension in pregnancy, and recognize the symptoms and physical findings in patients with preeclampsia-eclampsia syndrome. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10696 | List abnormal labor patterns and discuss fetal and maternal complications of abnormal labor (non-reassuring fetal status). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10697 | List the most common causes of postpartum complications (postpartum hemorrhage, infection, mastitis and depression). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10710 | Describe the major events that occur in each week of the first four weeks of development (post conception). | SPM REP | 478 | Embryology and Ultrasound Correlations |

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| 10796 | Discuss the clinical presentation and identification of common bacterial causes of urethritis and cervicitis/PID (N.gonorrhoeae, C.trachomatis, Mycoplasma spp). | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 10797 | Discuss the clinical presentation and identification of common causes of vaginitis (T.vaginalis, C.albicans, G. vaginalis, Mycoplasma spp, Mobiluncus spp). | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 10798 | Discuss the clinical presentation and identification of common bacterial causes of genital ulcers (T.pallidum, H.ducreyi, C. trachomatis) | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 10847 | Describe the clinical features, physical exam findings, and diagnostic testing of the most common etiologies of cervicitis and vulvovaginitis. | SPM REP | 489 | Cervical Pathology |
| 10848 | Describe the risk factors and pathogenesis of premalignant and malignant neoplasms of the cervix. | SPM REP | 489 | Cervical Pathology |
| 10856 | Describe and discuss the anatomy of the placenta and umbilical cord and the fetal circulation. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10860 | List and interpret key clinical, laboratory and imaging findings which are key in the process of differentiation and diagnosis of threatened, missed, inevitable and septic abortion. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10862 | List and interpret Key clinical, laboratory and imaging findings which are key in the process of differentiation, diagnosis and evaluation of the patients with normal and abnormal intrauterine pregnancy, and ectopic pregnancy. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10863 | List and interpret key clinical, laboratory and imaging findings which are key in the process of evaluation of the patients with recurrent pregnancy loss (such as autoimmune screen, karyotyping, X ray HSG, 3D US, laparoscopy and hysteroscopy). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10864 | Conduct an effective plan of management for patients requiring pregnancy termination: expectative treatment, medical termination (such as misoprostol), and surgical termination (such as dilatation and curettage, D&C). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |

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| 10865 | Counsel patient about risks and complications of each management option for pregnancy termination. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10866 | Develop a differential diagnosis for bleeding and abdominal pain in the first (spontaneous abortion and ectopic pregnancy), second and third trimesters of pregnancy (bloody show, cervicitis, cervical trauma, placental abruption, placenta previa). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10868 | Describe the maternal complications of pregnancy loss and fetal death, including disseminated intravascular coagulopathy (DIC). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10869 | Counsel the patient experiencing pregnancy loss and fetal death. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10925 | Define domestic violence and sexual assault. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10926 | Identify the patients at increased risk for domestic violence and sexual abuse. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10927 | Describe the medical management of a victim of sexual assault. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10928 | List screening questions for domestic violence. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10933 | Describe, discuss and identify the decidua and the extraembryonic products of conception including the chorion, amnion, placenta and extraembryonic membranes. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10934 | Describe the normal turnover (production and disposal) of amniotic fluid, and demonstrate an understanding of how defects in development of the gastrointestinal or urogenital systems can cause oligohydramnios or polyhydramnios. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10935 | List the major events of the first, second and third trimesters of pregnancy. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10936 | Describe the circulatory changes that occur at birth. | SPM REP | 478 | Embryology and Ultrasound Correlations |

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| 10946 | Outline the approach to a patient with an adnexal mass. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10975 | Recognize a normal reactive fetal heart tracing (FHT). | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10976 | Identify various fetal heart rate patterns and their significance. | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10977 | Develop a systematic approach to reading a fetal heart beat tracing. | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10978 | Identify the various patterns and causes of decelerations on fetal heart tracing. | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10995 | Identify the ultrasound equipment and probes required to perform first, second and third trimester pregnancy ultrasound. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10996 | Perform a gestational age assessment and discuss the process of gestational sonographic dating and viability. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10997 | Differentiate among different causes of bleeding in early pregnancy (for example ectopic pregnancy vs. a miscarriage, or threatened abortion vs. molar pregnancy). | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10998 | Differentiate among different causes of bleeding in second and third trimester of pregnancy. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 10999 | Identify multiple pregnancy. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 11000 | Describe the principles of first trimester genetic ultrasound screening. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 11001 | Describe the principles of second trimester fetal anatomy scan. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 11002 | List indications for third trimester ultrasound. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 11003 | Describe the use of sonography in the diagnosis of fetal structural anomalies | SPM REP | 478 | Embryology and Ultrasound Correlations |

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| 11004 | Describe the use of sonography in detection of premature labor. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 11018 | Differentiate between decreased cardiac output and decreased systemic vascular resistance as causes of abnormal blood pressure-shock. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11019 | Under the category of decreased cardiac output as a cause of shock, differentiate between hypovolemic and cardiogenic and extra-cardiac/obstructive causes of shock. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11020 | Under the category of hypovolemic causes of shock, differentiate between the categories of hemorrhagic and fluid losses and the final pathology/disease in each category. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11021 | Under the category of cardiogenic causes of shock differentiate between myopathic, and sustained refractory arrhythmias, as causes of shock and the final pathology/disease in each category. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11022 | Under the category of extra-cardiac obstructive causes of shock, differentiate to the final pathology/ disease. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11023 | Under the category of decreased systemic vascular resistance as a cause of abnormal blood pressure-shock, differentiate to the distributive causes of shock. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11024 | SHOCK H: Under the category of distributive causes of shock differentiate between the categories of septic, anaphylactic, neurogenic, and other causes of shock and the final pathology/disease in each category | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11053 | List and interpret key clinical, laboratory and imaging findings for differentiation and diagnosis of anembryonic pregnancy and retained products of conception (incomplete abortion). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 11179 | Outline the whole-body transport and metabolism of nitrogen from amino acids (Keywords: alanine, aspartate, glutamate, glutamine, alpha-ketoglutarate, | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |

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| | oxaloacetate, pyruvate, pyridoxal phosphate, glucose-alanine cycle, aminotransferases (transaminases), glutamine synthase, glutaminase, glutamate dehydrogenase, deaminase, dehydratase) | | | |
| 11180 | Outline the sequence of reactions in the urea cycle, trace the flow of nitrogen from amino acids into and out of the cycle, explain how the cycle is regulated and describe its relationship to the citric acid cycle. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11181 | Describe the six urea cycle disorders including presenting features, biochemical defects, laboratory presentations and treatment options. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11182 | Provide a biochemical explanation for how hyperammonemia can lead to brain dysfunction. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11183 | Explain how the metabolism of amino acids interfaces with carbohydrate and lipid metabolism. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11184 | Be able to categorize each of the 20 amino acids required for protein biosynthesis according to their side-chain properties (polar, non-polar, aliphatic, aromatic, acidic, basic, neutral) as well as the following criteria: essential, non-essential, glucogenic, ketogenic. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11185 | Describe the metabolic origin of the non-essential amino acids and be able to explain how some amino acid disorders cause certain non-essential amino acids to be 'conditionally essential' (e.g. phenylketonuria, cystathioninuria, homocystinuria). | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11186 | For phenylketonuria and hyperphenylalaninemia, be able to describe the clinical manifestations, biochemical defects (e.g. phenylalanine hydroxylase deficiency versus defective bipterin synthesis and recycling; potential effects on tyrosine, serotonin and catecholamine synthesis), laboratory presentations and treatment | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |

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| | options (including maternal/fetal versus pediatric considerations). | | | |
| 11187 | Provide a biochemical rationale for impaired brain development in phenylketonuria and hyperphenylalaninemia. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11190 | Be familiar with the clinical presentations, biochemical abnormalities and laboratory findings associated with the following amino acid disorders: alkaptonuria, tyrosinemia, histidinemia, homocystinuria. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11270 | Explain hypogammaglobulinemia of infancy | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11271 | Explain the impact of immaturity of the immune system on childhood immunizations, including the use of conjugated vaccines | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11272 | Define oral tolerance and describe its relationship to inappropriate mucosal immune responses | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11273 | Describe food allergies in infants and children, including the specific tests used and recommended treatment | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11274 | Describe the role of TH2 cells, IgE, mast cells and eosinophils in food allergies in infants and children | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11356 | Describe the clinical presentations, biochemical abnormalities, laboratory findings and potential treatment options associated with the following congenital causes of lactic acidosis: pyruvate dehydrogenase deficiency, pyruvate carboxylase deficiency, fructose-1,6-bisphosphatase deficiency, phosphoenolpyruvate carboxykinase deficiency and respiratory chain defects. | SPM MHD | 1272 | Pediatric Metabolic Emergencies: Lactic Acidemias and Disorders of Carbohydrate Metabolism |
| 11357 | Describe the clinical presentations, biochemical abnormalities and laboratory findings associated with the following disorders of carbohydrate metabolism: sucrase/isomaltase deficiency, lactase deficiency, essential fructosuria, hereditary fructose intolerance and | SPM MHD | 1272 | Pediatric Metabolic Emergencies: Lactic Acidemias and Disorders of Carbohydrate Metabolism |

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| | galactosemia types 1 & 2 (galactose-1-phosphate uridylyltransferase deficiency and galactokinase deficiency). | | | |
| 11398 | Define primary and secondary immune deficiency, and list the common causes of secondary (acquired) immune deficiency | SPM MHD | 1261 | Childhood Immune Deficiency |
| 11399 | Describe and categorize immune deficiencies in children, especially with regard to the following characteristics: primary or secondary; innate or adaptive; specific defect; pattern of inheritance; common infections; diagnosis | SPM MHD | 1261 | Childhood Immune Deficiency |
| 11400 | Describe changes in the immune system related to aging | SPM MHD | 1261 | Childhood Immune Deficiency |
| 11424 | Discuss the reason why glutamine serves as an efficient repository for nitrogen | SPM GIS | 137 | Metabolism in the Liver |
| 11426 | Identify the enzymatic steps required for the release of nitrogen from glutamine and glutamate | SPM GIS | 137 | Metabolism in the Liver |
| 11427 | Discuss the role of N-acetylglutamate in the regulation of the urea cycle | SPM GIS | 137 | Metabolism in the Liver |
| 11461 | Discuss key steps in the synthesis of phosphoenolpyruvate from pyruvate by gluconeogenesis | SPM GIS | 137 | Metabolism in the Liver |
| 11462 | Define the role of biotin as a cofactor for pyruvate carboxylase | SPM GIS | 137 | Metabolism in the Liver |
| 11729 | Explain the immune mechanisms associated with rheumatic heart disease | SPM CVR | 1147 | Valvular Heart Disease |
| 11758 | Describe the innate and adaptive factors involved in ocular immune defense | SPM CSS | 338 | Immunology of the Eye |
| 11759 | Discuss immune privilege as it relates to the eye, and compare it with immune privilege for the brain, testes and fetus | SPM CSS | 338 | Immunology of the Eye |
| 11760 | Explain how immune privilege facilitates corneal transplantation | SPM CSS | 338 | Immunology of the Eye |

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| 11761 | For hypersensitivity types I, II and IV, list the most common immune-mediated conjunctivitis and its cause | SPM CSS | 338 | Immunology of the Eye |
| 11763 | Describe lens-induced uveitis and sympathetic ophthalmia | SPM CSS | 338 | Immunology of the Eye |
| 11764 | Describe the most likely cause of immune-mediated scleritis and list 9 associated systemic immune-mediated diseases | SPM CSS | 338 | Immunology of the Eye |
| 11791 | Compare and contrast the structures of phospholipids (phosphatidic acid, phosphatidylserine, phosphatidylethanolamine, phosphatidylcholine, phosphatidylinositol) and sphingolipids (sphingosine, ceramide, sphingomyelin, cerebrosides, globosides, gangliosides). | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 11794 | Describe the following peroxisomal disorders in terms of general classification, biochemical defect, accumulated substrate, mode of inheritance and clinical presentation: (1) Peroxisome biogenesis disorders: Zellweger Syndrome, Neonatal adrenoleukodystrophy, Infantile Refsum Disease; (2) Peroxisomal enzyme deficiencies: Acyl-CoA oxidase deficiency, Adrenoleukodystrophy, Adult Refsum Disease. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 11933 | Describe the adaptive immune defense mechanisms of the respiratory system | SPM CVR | 1187 | Pneumonia in the Immunocompromised Host |
| 11934 | Define opportunistic infection, recognize difficulties in their diagnosis/treatment and list the opportunistic pneumonia-causing pathogens for each type of immune defect in immunocompromised patients | SPM CVR | 1187 | Pneumonia in the Immunocompromised Host |
| 11935 | Describe Pneumocystis, Nocardia, Aspergillus, Histoplasma and Rhizopus, including their defining characteristics, route of infection, diagnosis and why they cause pulmonary disease in immunocompromised patients | SPM CVR | 1187 | Pneumonia in the Immunocompromised Host |

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| 11984 | Describe the innate and adaptive immune defenses of the skin | SPM IMN | 185 | Immune Responses of the Skin |
| 11985 | Describe three primary immunodeficiencies with cutaneous manifestations (Wiskott-Aldrich syndrome, hereditary angioneurotic edema, and ataxia-telangiectasia) | SPM IMN | 185 | Immune Responses of the Skin |
| 11986 | Describe autoimmune disorders with cutaneous manifestations, including: scleroderma, dermatomyositis, discoid lupus erythematosus, alopecia, pemphigus, bullous pemphigoid, and dermatitis herpetiformis | SPM IMN | 185 | Immune Responses of the Skin |
| 11987 | Explain the role of the immune system in the acute inflammatory dermatoses (urticaria, acute eczematous dermatitis, erythema multiforme) and chronic inflammatory dermatoses (psoriasis). | SPM IMN | 185 | Immune Responses of the Skin |
| 11988 | Compare the immune responses in the two types of leprosy: tubercular and lepromatous | SPM IMN | 185 | Immune Responses of the Skin |
| 18493 | Differentiate between regeneration and repair | SPM IHD | 95 | Wound and Repair |
| 18503 | Describe the events in repair including inflammation, angiogenesis, migration and proliferation of fibroblasts, scar formation, and connective tissue remodeling | SPM IHD | 95 | Wound and Repair |
| 18504 | Describe angiogenesis | SPM IHD | 95 | Wound and Repair |
| 18505 | Describe the role of VEGF in angiogenesis | SPM IHD | 95 | Wound and Repair |
| 18506 | Describe the steps in the process of cutaneous wound healing including formation of blood clot, formation of granulation tissue, cell proliferation and collagen deposition, scar formation, wound contraction, connective tissue remodeling, and recovery of tensile strength | SPM IHD | 95 | Wound and Repair |
| 18507 | Describe the local and systemic factors that alter wound healing | SPM IHD | 95 | Wound and Repair |
| 18509 | Describe the clinical and microscopic features of a keloid | SPM IHD | 95 | Wound and Repair |

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| 18510 | Describe the effects of atherosclerotic disease and neuropathy on wound healing | SPM IHD | 95 | Wound and Repair |
| 18511 | Describe the complications resulting from inadequate granulation tissue or scar formation | SPM IHD | 95 | Wound and Repair |
| 18512 | Describe exuberant granulation and its consequences | SPM IHD | 95 | Wound and Repair |
| 18513 | Describe contracture and its usual clinical setting | SPM IHD | 95 | Wound and Repair |
| 18514 | Define fibrosis and understand its pathophysiology | SPM IHD | 95 | Wound and Repair |
| 18693 | Describe the pathogenesis, morphologic features, clinical and laboratory features, and diagnosis of hypercortisolism | SPM END | 399 | Adrenal Pathology |
| 18694 | Describe the pathogenesis, morphologic features, clinical and laboratory features, and diagnosis of hyperaldosteronism | SPM END | 399 | Adrenal Pathology |
| 18695 | Describe the pathogenesis, morphologic features, clinical and laboratory features, and diagnosis of the adrenogenital syndromes | SPM END | 399 | Adrenal Pathology |
| 18696 | Describe the pathogenesis, morphologic features, clinical and laboratory features, and diagnosis of adrenocortical insufficiency (primary and secondary) | SPM END | 399 | Adrenal Pathology |
| 18697 | Describe the clinical and morphologic features of adrenocortical neoplasms | SPM END | 399 | Adrenal Pathology |
| 18698 | Describe the pathogenesis, morphologic features, clinical and laboratory features, and diagnosis of pheochromocytoma | SPM END | 399 | Adrenal Pathology |
| 18699 | Describe the pathogenesis, morphologic features, clinical and laboratory features, and diagnosis of neuroblastoma | SPM END | 399 | Adrenal Pathology |
| 18733 | Describe the general features of pituitary adenomas including classification and general clinical features. | SPM END | 434 | Pathology of the Pituitary |
| 18734 | Describe the pathophysiology, clinical features, diagnosis, and treatment of prolactinomas and secondary hyperprolactinemia. | SPM END | 434 | Pathology of the Pituitary |

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| 18735 | Describe the pathophysiology, clinical features, diagnosis, and treatment of growth hormone cell adenomas. | SPM END | 434 | Pathology of the Pituitary |
| 18736 | Describe the pathophysiology, clinical features, and diagnosis of ACTH cell adenomas. | SPM END | 434 | Pathology of the Pituitary |
| 18737 | Describe the clinical features of gonadotroph adenomas. | SPM END | 434 | Pathology of the Pituitary |
| 18738 | Describe the typical clinical presentation of nonfunctioning pituitary adenomas. | SPM END | 434 | Pathology of the Pituitary |
| 18739 | Describe the causes, pathophysiology, and pertinent clinical features of hypopituitarism. | SPM END | 434 | Pathology of the Pituitary |
| 18740 | Describe the pathophysiology, clinical features, diagnosis, and treatment of diabetes insipidus. | SPM END | 434 | Pathology of the Pituitary |
| 18741 | Describe the pathophysiology, clinical features, diagnosis, and treatment of syndrome of inappropriate ADH secretion. | SPM END | 434 | Pathology of the Pituitary |
| 18742 | Describe the clinical and morphologic features of craniopharyngioma. | SPM END | 434 | Pathology of the Pituitary |
| 18784 | Recognize the congenital anomalies and anatomic variations which can involve the gallbladder, pancreas, and biliary tract and correlate them with potential clinical complications. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18785 | Correlate the clinical presentation of acute and chronic cholecystitis with the gross and microscopic findings in cholecystectomy specimens. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18786 | Recognize the less common gross and microscopic features of chronic cholecystitis (porcelain gallbladder, xanthogranulomatous cholecystitis, hydrops) as well as the potential complications of acute and chronic cholecystitis. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18787 | Correlate the type of gallstone with its mechanism of formation and identify the most common clinical presentation for each. | SPM GIS | 172 | Pathology of Abdominal Pain |

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| 18788 | Know the pathogenesis, clinical features, and gross and microscopic pathology of tumors of the biliary tract and gallbladder, including adenomas, adenocarcinomas, and the less common tumors mentioned in lecture. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18791 | Compile a chart comparing etiologic factors, clinical presentation, gross and microscopic pathology of acute vs chronic pancreatitis. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18793 | Compile a chart comparing etiologic factors, molecular alterations, gross and microscopic appearance, and treatment of the following conditions: pancreatic pseudocyst, serous cystic neoplasms, mucinous cystic neoplasms, intraductal papillary mucinous neoplasms (IPMNs), solid-pseudopapillary neoplasm. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18794 | Compare the features (genetic alterations, location in the pancreas, gross and microscopic appearance) of PAIN vs Pancreatic carcinoma. | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18795 | Correlate the clinical findings with the gross and microscopic appearance of acute appendicitis and give a differential diagnosis of acute appendicitis (enterobius vermicularis infestation, endometriosis, metastatic disease, mesenteric adenitis, ovarian lesions). | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18796 | Compile a chart comparing incidence, gross and microscopic appearance, and prognosis of appendiceal tumors (mucinous cystadenoma, mucinous adenocarcinoma, appendiceal carcinoid, appendiceal adenocarcinoma). | SPM GIS | 172 | Pathology of Abdominal Pain |
| 18812 | List and interpret clinical and laboratory findings which are key in the processes of exclusion, differentiation and diagnosis of the uterine causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 18922 | Describe the pathogenesis, clinical features, and treatment of Bartholin cyst | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18923 | Describe the pathogenesis, morphologic features, and clinical significance of lichen sclerosus | SPM REP | 461 | Pathology of Vulva and Vagina |

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| 18924 | Describe the pathogenesis, morphologic features, and clinical significance of squamous cell hyperplasia | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18925 | Describe the pathogenesis and morphologic features of condyloma acuminatum | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18926 | Describe the clinical features, risk factors, pathogenesis, and morphologic features of the subtypes of vulvar intraepithelial neoplasia and vulvar carcinoma | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18928 | Describe the pathogenesis, morphologic features, and typical clinical course of extramammary Paget disease | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18930 | Describe the morphologic features and prognosis of vulvar malignant melanoma | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18931 | Describe the pathogenesis and risk factors of vaginal intraepithelial neoplasia and vaginal squamous cell carcinoma | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18932 | Describe the typical clinical features of embryonal rhabdomyosarcoma | SPM REP | 461 | Pathology of Vulva and Vagina |
| 18949 | Discuss the muscles of the floor of the female pelvis. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18950 | Discuss the fasciae of the pelvis as supporting structures for the female pelvic viscera. Discuss the trampoline and suspension bridge analogies. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18951 | Discuss the utero-vaginal axis (anteverted vs. retroverted uterus). | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18952 | Discuss pelvic organ prolapse, including symptoms and risk factors. Discuss cystocele, urethral prolapse, prolapse of the uterus (including procidentia), enterocele, rectocele, prolapse of the vagina, and multiple organ prolapse. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18953 | Discuss the effects of damage during parturition in causing disorders of the female pelvic floor. Discuss the use of polypropylene tape as a means of reinforcing the supporting structures. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |

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| 18954 | Discuss nerve damage as a mechanism of weakening of the supports for the pelvic organs. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18955 | Outline the sequence of reactions in the tricarboxylic acid (TCA) cycle. | SPM HEM | 1089 | Inborn Errors of Heme Metabolism: The Porphyrrias |
| | | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 18956 | Define the terms 'anaplerosis' and 'cataplerosis' as they apply to the TCA cycle and describe how key anaplerotic and cataplerotic reactions are coupled to allow the cycle to efficiently provide both energy and intermediates required for the biosynthesis of heme, purines, pyrimidines, neurotransmitters, glucose, amino acids, cholesterol and fatty acids. | SPM HEM | 1089 | Inborn Errors of Heme Metabolism: The Porphyrrias |
| | | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 18957 | Outline the biochemical pathways of important carbon sources that provide precursors for heme biosynthesis under different physiological conditions, and recognize the essential vitamin cofactors required in each case. | SPM HEM | 1089 | Inborn Errors of Heme Metabolism: The Porphyrrias |
| 18958 | Apply your knowledge of normal and abnormal heme biosynthesis to recognize, explain, and suggest treatment options for the following disorders of heme metabolism: X-linked sideroblastic anemia, delta-aminolevulinic acid dehydratase pophyria, acute intermittent porphyria, porphyria cutanea tarda, erythropoietic protoporphyria, lead poisoning & vitamin B6 deficiency. | SPM HEM | 1089 | Inborn Errors of Heme Metabolism: The Porphyrrias |
| 18966 | Describe the pathogenesis, morphologic features, and clinical features of acute mastitis | SPM REP | 491 | Breast Pathology |
| 18967 | Describe the pathogenesis and clinical features of periductal mastitis | SPM REP | 491 | Breast Pathology |
| 18969 | Describe the pathogenesis, morphologic features, and clinical features of fat necrosis | SPM REP | 491 | Breast Pathology |

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| 18970 | Describe the clinical features, morphologic findings, and clinical significance of nonproliferative breast changes (fibrocystic changes) including cysts, apocrine metaplasia, fibrosis, and adenosis | SPM REP | 491 | Breast Pathology |
| 18971 | Describe the clinical features, morphologic findings, and clinical significance of proliferative breast diseases without atypia including epithelial hyperplasia, sclerosing adenosis, papillomas, and complex sclerosing lesions | SPM REP | 491 | Breast Pathology |
| 18972 | Describe the clinical features, morphologic findings, and clinical significance of proliferative breast diseases with atypia including atypical ductal hyperplasia and atypical lobular hyperplasia | SPM REP | 491 | Breast Pathology |
| 18973 | Describe the risk factors, pathogenesis, clinical features, morphologic findings, and prognostic/predictive factors of breast carcinoma including carcinoma in situ, Paget diseases, invasive ductal carcinoma, invasive lobular carcinoma, medullary carcinoma, and inflammatory carcinoma | SPM REP | 491 | Breast Pathology |
| 18974 | Describe the clinical features, morphologic findings, and clinical significance of fibroadenoma and phyllodes tumor | SPM REP | 491 | Breast Pathology |
| 18975 | Describe the pathogenesis, morphologic findings, and clinical features of gynecomastia | SPM REP | 491 | Breast Pathology |
| 19021 | Demonstrate an understanding of how monozygotic and dizygotic twins develop and how to discern the difference. | SPM REP | 478 | Embryology and Ultrasound Correlations |
| 19066 | Know the pathogenesis, etiology, associated gross and microscopic morphologic features, and predisposing conditions of sudden cardiac death | SPM CVR | 1134 | Pathology of Chest Pain |
| 19070 | Know the pathogenesis, gross and microscopic morphologic manifestations, clinical features, and consequences and complications of acute and chronic pericarditis | SPM CVR | 1137 | Myocarditis and Pericarditis |

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| 19071 | Know the pathogenesis, gross and microscopic features, clinical features and diagnosis of myocarditis | SPM CVR | 1137 | Myocarditis and Pericarditis |
| 19089 | Describe the pathogenesis, morphologic features, clinical and physical exam findings, and clinical course of aortic stenosis | SPM CVR | 1147 | Valvular Heart Disease |
| 19090 | Describe the pathogenesis, morphologic features, clinical and physical exam findings, and clinical course of mitral valve prolapse | SPM CVR | 1147 | Valvular Heart Disease |
| 19091 | Describe the pathogenesis, morphologic features, clinical features, diagnosis, and clinical course of rheumatic fever and rheumatic heart disease | SPM CVR | 1147 | Valvular Heart Disease |
| 19092 | Describe the classification, risk factors, pathogenesis, causative organisms, morphologic features, and clinical features of infective endocarditis | SPM CVR | 1147 | Valvular Heart Disease |
| 19093 | Describe the pathogenesis, morphologic features, and clinical significance of nonbacterial thrombotic endocarditis | SPM CVR | 1147 | Valvular Heart Disease |
| 19094 | Describe the pathogenesis and morphologic features of Libman-Sacks endocarditis | SPM CVR | 1147 | Valvular Heart Disease |
| 19095 | Describe the pathogenesis and morphologic features of carcinoid heart disease | SPM CVR | 1147 | Valvular Heart Disease |
| 19096 | Describe the types of prosthetic cardiac valves and their advantages and disadvantages | SPM CVR | 1147 | Valvular Heart Disease |
| 19109 | Outline the development of the immune system in the infant and child, and explain its relationship with infections | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 19146 | Know the definitions of the following terms: malformation, disruption, deformation, sequence, and syndrome | SPM MHD | 1266 | Pediatric Pathology |
| 19147 | Know the various causes of anomalies as outlined in Robbins and Cotran Pathologic Basis of Disease, 8th | SPM MHD | 1266 | Pediatric Pathology |

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| | edition including: genetic causes, environmental causes, and multifactorial causes. | | | |
| 19148 | Know the clinical manifestations of fetal alcohol syndrome. | SPM MHD | 1266 | Pediatric Pathology |
| 19149 | Know the causes of prematurity and fetal growth restriction. | SPM MHD | 1266 | Pediatric Pathology |
| 19150 | Know the pathogenesis, gross and microscopic morphologic features, clinical manifestations, laboratory features, and diagnosis of neonatal respiratory distress syndrome. | SPM MHD | 1266 | Pediatric Pathology |
| 19151 | Know the pathogenesis, gross and microscopic morphologic features, clinical manifestations, and diagnosis of necrotizing enterocolitis. | SPM MHD | 1266 | Pediatric Pathology |
| 19152 | Know the pathogenesis, gross and microscopic morphologic features, clinical manifestations, laboratory features, and diagnosis of immune hydrops. | SPM MHD | 1266 | Pediatric Pathology |
| 19153 | Know the pathogenesis, clinical manifestations, laboratory features, and diagnosis of phenylketonuria. | SPM MHD | 1266 | Pediatric Pathology |
| 19154 | Know the pathogenesis, gross and microscopic morphologic features, clinical manifestations, laboratory features, and diagnosis of galactosemia. | SPM MHD | 1266 | Pediatric Pathology |
| 19155 | Know the pathogenesis, gross and microscopic morphologic features, and diagnosis of sudden infant death syndrome. | SPM MHD | 1266 | Pediatric Pathology |
| 19156 | Know the pathogenesis, gross and microscopic morphologic features, clinical manifestations, and diagnosis of Wilms tumor. | SPM MHD | 1266 | Pediatric Pathology |
| 25517 | Categorize microorganisms into bacterial, fungal, protozoan, helminthic and viral groupings based on size, morphological and genomic structure, and mechanism for obtaining nutrients | SPM IHD | 17 | Normal Flora |

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| 25518 | Describe the classification of bacteria based on morphology, Gram stain, growth requirements and laboratory analyses. | SPM IHD | 17 | Normal Flora |
| 25557 | Describe the pathogenesis and clinical features of Parkinsonism | SPM CSS | 299 | Pathology of Movement Disorders |
| 25572 | Outline the components of the nervous system that are required for gait and posture and relate these to the common and classic clinical presentations of gait disturbances. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25574 | Describe the causes and clinical manifestations of "Frontal Gait Disorder"/"Gait Apraxia" and relate it to the clinical scheme for gait disturbances. Distinguish it from cerebellar ataxia and sensory ataxia. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25575 | Recognize the high prevalence of falls in the elderly and list the prominent associated risk factors. Outline basic diagnostic considerations and common interventions. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25586 | At the conclusion of these two lectures, students should have a clear observance notions of obtaining relevant information through physical examination, integrate data and formulate appropriate statements regarding location of lesions in the nervous system. | Clinical Neurosciences | 914 | Neurological Physical Exam |
| 25600 | HeadachesAt the conclusion of the lecture students should be familiar with the pathophysiology, clinical features, differential diagnosis, and various types of treatment modalities for migraine headaches. Special emphasis will be made on:a) Assessment of all headaches and how to seperate migraines from other types of headaches, particularly from headaches of ominous nature.b) Management of migraine headaches. The triptan family in the treatment of migraine headaches. Information on these new serotonin agonist medications available for suppressive treatment of migraines.c) Management of headaches throughout hormonal milestones in a women's life cycle. | Clinical Neurosciences | 907 | Headaches - Neuro Clerkship |

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| 25602 | A review of Epilepsy will include the classification of seizure disorders, different types of seizures, integration of syndrome and the management of antiepileptic drugs and their adverse effects. Students will develop a learning plan that will incorporate future generalized knowledge of epilepsy. Students will be proficient in the treatment of status epilepticus. | Clinical Neurosciences | 915 | Epilepsy |
| 25603 | The student will understand specific facts needed to differentiate thrombotic, embolic and hemorrhagic strokes. Students will be exposed to new neuroimaging and therapeutic mobilities to deal with all types of ischemic strokes, hemorrhagic strokes, subarachnoid hemorrhage and aneurysms. They will be able to select the most effective treatment from an array of logical and well established options. These include neuroimaging, catheter angiography, obliteration of cerebral aneurysms through catheterizations, mechanical embolism removal and the care of strokes in the intensive care unit. | Clinical Neurosciences | 905 | Stroke - Neuro Clerkship |
| 25604 | Students will have facts, concepts models and clinical presentations about central and peripheral demyelination; and about the criteria for the diagnosis of multiple sclerosis including clinical presentations, neuroimaging and cerebral spinal fluid findings. Students will be able to apply disease modifying treatments available. | Clinical Neurosciences | 906 | Demyelinating Diseases |
| 25605 | At the conclusion of this lecture the individual who followed the lecture and reviewed the notes provided should be able to:1. Recognize and differentiate different types of Parkinson's disease and Parkinson's syndrome. 2. Recognize the clinical and therapeutic advances made in the area of Parkinson's disease.3. Select treatment of Parkinson's disease based on the stage of the illness, the most prominent symptoms and signs and the age of the patient.4. Learn about deep brain stimulation.5. Learn about essential tremors, chorea, dyskinesia, athetosis ballism and dystonia. | Clinical Neurosciences | 911 | Movement Disorders - Neuro Clerkship |
| | | | 912 | Neuromuscular Abnormalities |

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| 25608 | Describe the relationship of this week’s coursework to the scheme and general themes for this Unit and week | SPM IHD | 4 | Conceptual Framework |
| 25700 | Based on the caloric value (kcal/g) of carbohydrates, protein, fat, and alcohol, determine the daily caloric intake for an individual in which the amount (in grams) of each energy source is known. You should also know the recommended daily calorie % range (adult) for fats, protein, and carbohydrates. | SPM IHD | 91 | Nutrition and Healing |
| 25701 | Identify the three energy requiring processes used to calculate the daily energy expenditure and how this changes in response to stress (wound). | SPM IHD | 91 | Nutrition and Healing |
| 25702 | Discuss the effects of physiological stress (wound, infection, etc) on the metabolism of an individual and why this response is important. | SPM IHD | 91 | Nutrition and Healing |
| 25703 | Identify the defining features of Kwashiorkor and Marasmus and discuss the implications of these nutritional deficiencies on wound healing. | SPM IHD | 91 | Nutrition and Healing |
| 25760 | Outline the basic subcellular pathway of sphingolipid biosynthesis and turnover. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 25761 | Describe the basic principles of lysosome structure, function and biogenesis. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25765 | Understand the essential pathophysiological mechanisms and nomenclature of the four categories of itch (pruritoceptive, neuropathic, neurogenic, psychogenic), and apply this knowledge in a clinical/diagnostic context | SPM IMN | 179 | Neuroscience of Itch |
| 25766 | Describe the neural pathway for itch and its relationship to the neural pathway for pain from the skin to the cerebral cortex | SPM IMN | 179 | Neuroscience of Itch |
| 25767 | Outline the role of opioid peptides and potentially other excitatory factors in the generation of neurogenic itch/pruritus in systemic diseases such as renal failure and liver disease | SPM IMN | 179 | Neuroscience of Itch |

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| 25768 | Recognize post-herpetic neuralgia and multiple sclerosis as potential causes of neuropathic itch/pruritus | SPM IMN | 179 | Neuroscience of Itch |
| 25769 | Describe in broad conceptual terms the effects of scratching and rubbing on the modulation of itch/pruritus | SPM IMN | 179 | Neuroscience of Itch |
| 25775 | Outline the structural characteristics of the glycosaminoglycans (mucopolysaccharides). | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25776 | Outline the biosynthesis of glycosaminoglycans (mucopolysaccharides), including how each of the monosaccharides involved are derived from glucose and activated for glycosaminoglycan synthesis. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25777 | Describe the following lysosomal storage diseases in terms of general classification, biochemical defect, accumulated substrate, mode of inheritance and clinical presentation: (1) Mucopolysaccharidoses: Hunter Syndrome, Hurler Syndrome; (2) Mucopolipidosis II (I-cell Disease). | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25778 | Describe the basic principles of peroxisome structure, function and biogenesis. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25779 | Explain the biochemical basis for the following inherited diseases of the extracellular matrix that can present with hearing and/or vision loss: Ehlers-Danlos syndrome, Osteogenesis imperfecta, Marfan syndrome, Alport syndrome. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 26040 | Identify factors including divorce & child maltreatment which contribute to emotional disorders in children/adolescents, recognize behaviors often seen in these children and the clinical sequelae of childhood maltreatment. | SPM MHD | 1283 | Trauma: Childhood Determinants of Psychopathology and the Dissociative Disorders |
| 26047 | Explain the etiology, types of amnesias, how normal memories are formed, gender differences in emotional | SPM MHD | 1283 | Trauma: Childhood Determinants of Psychopathology and the Dissociative Disorders |

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| | memories, the effects of trauma on memory, the prognosis and treatment of the Dissociative Disorders. | | | |
| 26052 | From movie clips and reading assignments of personality disorders identify characteristics of each personality disorder, explain developmental issues with these disorders, apply strategies for working with patients with personality disorders, and recognize the importance of a good developmental history. | SPM MHD | 1287 | The Difficult Patient and Personality Disorders |
| 26081 | Define atherosclerosis and know the major consequences of atherosclerosis in terms of morbidity and mortality in the United States. | SPM CVR | 1131 | Pathology of Atherosclerosis |
| 26082 | Know the epidemiology of atherosclerosis, including the modifiable, nonmodifiable, and other risk factors associated with atherosclerosis. | SPM CVR | 1131 | Pathology of Atherosclerosis |
| 26083 | Know the epidemiology, pathogenesis, and consequences of myocardial ischemia. | SPM CVR | 1131 | Pathology of Atherosclerosis |
| 30108 | Summarize the risks, subtypes, comorbidities, screening, investigations, neurobiology, complications, intoxication and withdrawal of the Legal Substance Use Disorders. | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |
| 30110 | Explain prescription drug abuse, investigations, epidemiology, inquiries, warning signs, neurobiology, complications, intoxication and withdrawal of the various Prescription Substance Use Disorders. | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |
| 30111 | Relate the epidemiology, investigations, neurobiology, complications, and symptoms of intoxication and withdrawal of the Illicit Substance Use Disorders. | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |
| 30829 | Describe the inflammasome, including the role of NOD-like receptors in inflammation and fever | SPM IHD | 63 | Pyrogens & The Immune System |
| 33494 | List 4 brain structures, 4 classes of the brain stem nuclei and 5 transmitters in the reticular activating system that maintain cortical activity underlying consciousness. | SPM CSS | 326 | Altered States of Consciousness |
| 33497 | Explain decorticate vs. decerebrate posturing. | SPM CSS | 326 | Altered States of Consciousness |

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| 33504 | List diseases that specifically affect motor neurons and analyze and explain six symptoms of the lower motor neuron dysfunction. | SPM CSS | 32 | Motor and Sensory System |
| 33524 | Define the trigeminal pathway innervating meninges and meningeal blood vessels that is involved in the mechanism underlying migraine headache; describe clinical evidence to support the involvement of the trigeminovascular pathway to the etiology of migraine, and explain why “the brain itself does not feel pain”? | SPM CSS | 309 | Neuroscience of Headache |
| 33525 | Describe peripheral sensitization of meningeal nociceptors (i.e. the role of neurogenic inflammation), and explain why peripheral sensitization explains throbbing headache. | SPM CSS | 309 | Neuroscience of Headache |
| 33526 | Explain why vascular theory is unable to fully describe migraine headache. | SPM CSS | 309 | Neuroscience of Headache |
| 33527 | Analyze and explain facial allodynia in migraine patients, and why facial allodynia indicates an involvement of central sensitization as a mechanism underlying migraine pain. | SPM CSS | 309 | Neuroscience of Headache |
| 33529 | Describe heritability of the migraine headache and roles of proteins encoded by genes implicated in 3 types of familial hemiplegic migraine (FHM). | SPM CSS | 309 | Neuroscience of Headache |
| 33537 | Describe the contribution of the brain stem nuclei to the central sensitization in the trigeminal pain pathway . | SPM CSS | 309 | Neuroscience of Headache |
| 33560 | Describe five major phases in the time course of stroke | SPM CSS | 321 | Neuroscience of Stroke |
| 33561 | Explain how do major risk factors and “stroke triggers” cause damage to cerebral blood vessels; the role of the ROS/inflammation and LDL oxidation; impaired cerebral blood flow autoregulation and resultant brain ischemia | SPM CSS | 321 | Neuroscience of Stroke |
| 33562 | Analyze and describe main features of the hyper-acute phase after stroke: cerebral blood flow decrease, stroke core and cell death mechanisms, describe features of the | SPM CSS | 321 | Neuroscience of Stroke |

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| | brain lesion in the first minutes after stroke visualized with imaging techniques | | | |
| 33563 | Explain molecular processes that take place in the penumbra during the acute phase after stroke, and the use of tPA in the treatment of ischemic stroke; describe MRI imaging approaches that can visualize the brain tissue in penumbra | SPM CSS | 321 | Neuroscience of Stroke |
| 33564 | Explain the chronic phase after stroke: including formation of fibrotic/gliar scar and fluid-filled cavity; endogenous angiogenesis/gliogenesis and neural plasticity underlying functional recovery; describe main types of potential cell-based therapies for stroke patients | SPM CSS | 321 | Neuroscience of Stroke |
| 33576 | Define the main role of the Basal ganglia within the motor system. | SPM CSS | 297 | Basal Nuclei |
| 33577 | Define main afferent and efferent pathways. | SPM CSS | 297 | Basal Nuclei |
| 33578 | Describe three major transmitters in the Basal ganglia circuitry. | SPM CSS | 297 | Basal Nuclei |
| 33579 | Analyze and explain: Direct, Indirect and Hyperdirect pathways. | SPM CSS | 297 | Basal Nuclei |
| 33580 | Describe Dopamine modulation of Direct and Indirect pathways, and explain the effect of ACh on dopamine-induced modulation of the BG circuitry. | SPM CSS | 297 | Basal Nuclei |
| 33581 | Explain Parkinson’s disease using Basal ganglia circuitry. | SPM CSS | 297 | Basal Nuclei |
| 33582 | Explain Huntington’s disease using Basal ganglia circuitry. | SPM CSS | 297 | Basal Nuclei |
| 33601 | Define, distinguish, and correctly apply the common medical terms used to describe and identify clinical states of Somatic Symptom and Related Disorders | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33602 | Recognize the potential for medical conditions to present as psychiatric disorders and identify medical conditions on the interface between medical and psychiatric disorders. | SPM CSS | 315 | Somatic Symptom and Related Disorder |

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| 33603 | Compare and contrast Somatic Symptom and Related Disorders and Malingering. | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33604 | Recognize the effects that stress and certain personality types can have on various medical conditions and summarize the changes stress can make in the body. | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33628 | Provide a general overview of the structure and composition of enzymes including the role of cofactors and coenzymes, and conditions that affect enzymatic reactions | SPM IHD | 87 | Basic Enzymology |
| 33629 | Describe the general properties of the six major classes of enzymes and their enzymatic reactions | SPM IHD | 87 | Basic Enzymology |
| 33630 | Describe the characteristics of enzymatic reactions from the viewpoint of free energy, equilibrium and kinetics | SPM IHD | 87 | Basic Enzymology |
| 33631 | Describe single-substrate enzyme kinetics based on the Michaelis-Menten equation and the significance of the Michaelis constant (K_m) | SPM IHD | 87 | Basic Enzymology |
| 33632 | Demonstrate an ability to use and interpret the following in order to estimate K_m and V_{max} : (i) a plot of reaction rate versus substrate concentration; and (ii) a Lineweaver-Burk plot | SPM IHD | 87 | Basic Enzymology |
| 33633 | Describe the elements of enzyme structure that explain substrate specificity and catalytic activity | SPM IHD | 87 | Basic Enzymology |
| 33635 | Differentiate between the major types of enzyme inhibition from the viewpoint of enzyme kinetics | SPM IHD | 87 | Basic Enzymology |
| 33645 | Describe the basic functions of macrophages. | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 33655 | Describe the regulatory mechanisms affecting enzymatic reactions, including allosteric effectors, protein-protein interactions and covalent modification | SPM IHD | 87 | Basic Enzymology |
| 33658 | Describe 'nitrogen balance' and explain why a positive nitrogen balance is essential for effective wound healing. | SPM IHD | 91 | Nutrition and Healing |

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| 33659 | Identify the roles of the following micronutrients in wound healing as well as the clinical presentations typically associated with deficiencies in each: vitamin A, vitamin B5, vitamin C, vitamin E, vitamin K, copper, iron, zinc. | SPM IHD | 91 | Nutrition and Healing |
| 33684 | Outline the basic steps for using the ophthalmoscope and examining the optic disc and retina. | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33685 | Identify, apply in clinical diagnosis, and explain the fundamental underlying pathophysiology of common disorders causing 'red eye', including conjunctivitis, subconjunctival hemorrhage, corneal injury or infection, acute iritis, and acute angle closure glaucoma. | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33686 | Identify, apply in clinical diagnosis, and explain the fundamental underlying pathophysiology of common disorders of the eyelids and structures around the eye, including entropion, ectropion, exophthalmos, pterygium, pinguecula (contrast and distinguish pinguecula from pterygium), episcleritis, sty, chalazion, xanthelasma and inflammation of the lacrimal sac (dacryocystitis). | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33687 | Identify, apply in clinical diagnosis, and explain the fundamental underlying pathophysiology of common disorders causing opacities of the cornea and lens, including corneal arcus, Kayser-Fleisher Ring, corneal scar, pterygium and cataracts. | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33688 | Recognize common variation of the appearance of the optic disc, including physiologic cupping, rings and crescents, and medullated nerve fibers. Distinguish from normal variants, identify, apply in clinical diagnosis, and explain the fundamental underlying pathophysiology of common disorders causing abnormalities of the optic disc including papilledema, glaucomatous cupping and optic atrophy. | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |

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| 33689 | Identify, apply in clinical diagnosis, and explain the fundamental underlying pathophysiology of common disorders causing red spots and streaks in the optic fundi, including superficial retinal hemorrhages, preretinal hemorrhages, deep retinal hemorrhages, microaneurysms and neovascularization. | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33691 | Correlate in an appropriate clinical context and explain the fundamental underlying pathophysiology of the common ophthalmoscopic findings of hypertensive and diabetic retinopathy. | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33692 | Recall and explain the basic anatomical associations and clinical implications of the most common intraocular malignancy of adults (metastases) and the most common primary intraocular malignancy in adults (uveal melanoma) and children (retinoblastoma) | SPM CSS | 344 | Clinical Visualization and Recognition of Common Pathological Processes Affecting the Eye |
| 33718 | Explain the processes involved in neurotransmitter release from presynaptic neurons, including the roles of voltage-gated calcium channels, SNARE proteins and vesicle fusion, and vesicle recycling. | SPM IMN | 241 | Neurotransmission |
| 33719 | List three major types of neurotransmitters; describe the site of their synthesis; list 5 major classes of classical neurotransmitters, and name their vesicular transporters. | SPM IMN | 241 | Neurotransmission |
| 33720 | Describe the synthesis of acetylcholine, monoamines, glutamate and GABA; explain the difference between vesicular and reuptake transporters, and describe the processes that terminate transmitter effects upon release. | SPM IMN | 241 | Neurotransmission |
| 33721 | Compare and contrast neurotransmitter receptors (ionotropic vs. metabotropic); list seven ionotropic receptors and present some examples of metabotropic receptors. | SPM IMN | 241 | Neurotransmission |

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| 33723 | Explain the mechanisms that underlie the effects of various toxins and diseases affecting the presynaptic processes, such as Lambert-Eaton Syndrome, botulinum toxin, sarin gas, Stiff man syndrome or cocaine/amphetamine | SPM IMN | 241 | Neurotransmission |
| 33724 | Explain the mechanisms that underlie the effects of various toxins and diseases affecting the postsynaptic receptors, such as Myasthenia gravis, Curare, PCP and Pertussis/Cholera toxin. | SPM IMN | 241 | Neurotransmission |
| 33771 | Apply your knowledge of normal and abnormal purine metabolism to highlight differences between de novo and salvage pathways. | SPM IMN | 218 | Inborn Errors of Purine Metabolism |
| 33772 | Provide a biochemical rationale for the use of antineoplastic, antirheumatic and antibacterial drugs that interfere with purine biosynthesis. | SPM IMN | 218 | Inborn Errors of Purine Metabolism |
| 33773 | Describe the metabolic basis of and therapy for the following disorders of purine metabolism: gout due to congenital overproduction of uric acid, Lesch-Nyhan syndrome, and SCID. | SPM IMN | 218 | Inborn Errors of Purine Metabolism |
| 33775 | Compare the somatic and autonomic nervous systems: define their roles, and compare their anatomical similarities and dissimilarities (i.e. location of motor neurons, two-neuron vs. one neuron chain; motor and sensory roots). | SPM GIS | 121 | Autonomic nervous system |
| 33776 | Describe sympathetic efferents: motor neurons in the spinal cord; autonomic ganglia (paravertebral and prevertebral); postganglionic axons; target organs | SPM GIS | 121 | Autonomic nervous system |
| 33777 | Describe parasympathetic efferents: motor neurons in the brain stem and spinal cord; autonomic ganglia (in the neck and head); terminal ganglia in the organ itself or in the nearby; plexus; postganglionic axons; target organs | SPM GIS | 121 | Autonomic nervous system |
| 33778 | Analyze and compare the effects of sympathetic and parasympathetic efferents on their targets; and describe | SPM GIS | 121 | Autonomic nervous system |

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| | the neurotransmitters/receptors used by both systems, including exceptions (innervation of sweat glands and blood vessels). | | | |
| 33809 | Relate the different metabolic properties of fast- and slow-twitch muscle fibers to their specialization in terms of resistance to fatigue and capacity for prolonged aerobic exercise versus brief high-intensity anaerobic exercise. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33810 | Outline the molecular events of synaptic transmission at the skeletal neuromuscular junction and describe how these events are disrupted by botulinum and tetanus toxins, snake alpha-neurotoxin and organophosphate poisoning. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33811 | Outline the molecular events of excitation-contraction coupling in skeletal muscle including the roles of membrane depolarization, the sarcoplasmic reticulum and calcium signaling. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33812 | Use your knowledge of the actin-myosin cross-bridging cycle to explain why cellular ATP depletion will result in (i) exercise-induced muscle cramps and (ii) rigor mortis. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33813 | Outline the pathways of fuel utilization employed by skeletal muscle in the fed, fasting and starved states, as well as during rest and exercise. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33814 | Demonstrate how the main fuels for skeletal muscle metabolism enter the TCA cycle for energy production. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33815 | Outline the temporal profile of skeletal muscle fuel utilization during (i) brief periods of strenuous work and (ii) prolonged exercise. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33816 | Identify the roles of creatine kinase and creatine phosphate in muscle contraction and explain the utility of creatine kinase and creatinine as laboratory markers of disease. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |

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| 33817 | Outline the key features of glycogen structure and describe the important endocrine and intracellular signals that control glycogenesis/glycogenolysis during the fed/fasting states and during exercise. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33818 | Discriminate between aerobic and anaerobic glucose utilization during exercise, and provide a general outline of the particular pathways and processes involved including glycolysis, the TCA cycle and the electron transport chain. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33819 | Describe why and how lactate originates in skeletal muscle during exercise, and explain how lactate can be removed from the blood by the heart, by skeletal muscle during aerobic respiration, and by the liver. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33820 | Explain how the rate of glycolysis is regulated by the rate of ATP consumption in muscle during rest and exercise. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33821 | Explain why and how lactic acidosis can be caused by exercise, alcohol consumption, hypoxia, ischemia, mitochondrial poisons and mitochondrial diseases. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33822 | Recognize and explain the clinical features and biochemical mechanisms of the following 'glycogen storage' diseases that present with a metabolic myopathy: Pompe disease, McArdle disease, and Tarui disease. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33823 | Describe the endocrine and molecular processes that govern fatty acid mobilization and uptake by skeletal muscle during the fed and fasting states. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33824 | Provide a general overview of fatty acid import and catabolism in skeletal muscle mitochondria. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33825 | Describe the key molecular components of the carnitine shuttle pathway that transports long-chain fatty acids into the mitochondrion. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |

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| 33826 | Explain how the transport of fatty acids into the mitochondrion is regulated by the intracellular concentration of AMP. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33827 | Recognize and explain the clinical features and biochemical mechanisms of the following disorders of lipid metabolism that present with metabolic myopathy: carnitine deficiency syndromes and fatty-acid transport defects. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33828 | In general terms, recognize and explain the clinical features and biochemical abnormalities associated with the mitochondrial myopathies. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33829 | Explain how the purine nucleotide cycle facilitates the emergency generation of ATP in skeletal muscle during strenuous exercise. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33830 | Recognize and explain the clinical features and biochemical mechanisms associated with myoadenylate deaminase deficiency. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33853 | List circumventricular organs (CVOs) and describe their unique structural characteristics; describe some of the humoral factors that enter the central nervous system (CNS) through the CVOs; describe how these humoral factors modulate hypothalamic regulation of homeostasis. | SPM END | 431 | Hypothalamus |
| 33854 | Describe the blood brain barrier (BBB) and its significance in protecting the CNS. List substances that can penetrate the BBB; and describe the molecular features of the BBB that prevent or allow various agents to enter the CNS. Analyze and describe the drugs that can penetrate the BBB. Describe various ways to bypass the BBB. Analyze and describe the diseases associated with the BBB breakdown. | SPM END | 431 | Hypothalamus |
| 33870 | Pathology: Describe the pathogenesis and clinical features of the multiple endocrine neoplasia (MEN) syndromes | SPM END | 440 | Abnormal Serum Calcium |

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| 33907 | Know the cutoff and classification of hypertension. | SPM CVR | 1166 | Pathology of Hypertension |
| 33908 | Describe the effect of hypertension on the brain, heart, blood vessels, kidney, and eye. | SPM CVR | 1166 | Pathology of Hypertension |
| 33909 | Define malignant hypertension and describe the clinical and pathologic findings. | SPM CVR | 1166 | Pathology of Hypertension |
| 33910 | Define secondary hypertension and be familiar with the various categories of secondary hypertension discussed in class. | SPM CVR | 1166 | Pathology of Hypertension |
| 33911 | Define and describe essential hypertension. Understand that it is a multifactorial disorder with genetic and environmental factors. | SPM CVR | 1166 | Pathology of Hypertension |
| 33912 | Be able to describe and identify the microscopic changes in hypertension involving the small blood vessels (hyaline arteriosclerosis and hyperplastic arteriosclerosis). | SPM CVR | 1166 | Pathology of Hypertension |
| 33913 | Describe the changes that occur in hypertensive heart disease including the gross and microscopic findings of the left ventricle. | SPM CVR | 1166 | Pathology of Hypertension |
| 33943 | Describe the pathogenesis, clinical features, and morphology of follicular carcinoma | SPM END | 438 | Pathology of the Thyroid |
| 33944 | Describe the pathogenesis, clinical features, and morphology of medullary carcinoma | SPM END | 438 | Pathology of the Thyroid |
| 33945 | Describe the pathogenesis, clinical features, and morphology of anaplastic carcinoma | SPM END | 438 | Pathology of the Thyroid |
| 33951 | Describe the anatomy of the inguinal canal: name the structures which make its walls and rings (deep and superficial), and list the contents of the inguinal canal in females and males. | SPM IHD | 86 | Inguinal Hernias |
| 33972 | Identify the primary substrates for gluconeogenesis and where they originate from | SPM GIS | 137 | Metabolism in the Liver |

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| 33979 | Discuss the role of aspartate and alanine aminotransferases in the synthesis of glutamate from alpha ketoglutarate. | SPM GIS | 137 | Metabolism in the Liver |
| 33980 | Distinguish between transamination, reductive amination, and oxidative deamination. | SPM GIS | 137 | Metabolism in the Liver |
| 33982 | Discuss how ALT and AST values are used as an indicator of liver function. | SPM GIS | 137 | Metabolism in the Liver |
| 33987 | Know the microorganisms that compose the normal genitourinary tract flora (microbiota) and importance of pH to good health. | SPM REP | 488 | Bugs and Drugs of Women's Health |
| 33989 | Describe immune mechanisms of protection against sexually-transmitted infections. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33990 | Describe the role of antibodies as the primary mediators of protection induced by the HPV vaccines. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33991 | Compare the vaccines against rubella and varicella with the HPV vaccines. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33992 | Describe the preparation, species content and usefulness of a "humanized" monoclonal antibody using anti-HER2 antibody (Herceptin) as an example. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33993 | Discuss tolerance to the fetus during pregnancy, including the role of trophoblasts, uterine natural killer cells (uNK), and regulatory T cells (Tregs) | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33994 | List the immune investigations that are performed during pregnancy and explain the rationale for each (antibody screen and serologic tests for latex allergies, syphilis, and rubella) | SPM REP | 480 | Immunological aspects of pregnancy and its complications |

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| 33995 | Explain the rationale for vaccination of Rh-negative pregnant women with Rho (D) immune globulin | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33996 | Describe the role of anti-phospholipid antibodies in recurrent fetal loss | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33997 | Explain the maternal-fetal transfer of IgG including the mechanism and time course | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33998 | Describe seven immuno-protective factors in breast milk | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33999 | Compare and contrast two anti-HPV vaccines, Cervarix and Gardasil. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 34022 | Describe the diagnostic classifications associated with cervical cytologic Pap tests versus histologic biopsy specimens. | SPM REP | 489 | Cervical Pathology |
| 34023 | Describe the morphologic features and natural history (where applicable) of each cervical Pap test and biopsy diagnostic category. | SPM REP | 489 | Cervical Pathology |
| 34024 | Recognize a genital Herpes infection (HSV2) from the clinical presentation, know the viral morphology and genomic architecture and know laboratory methods for HSV identification. | SPM REP | 488 | Bugs and Drugs of Women's Health |
| 34079 | Relate the different metabolic activities of mature erythrocytes and erythrocyte precursor cells to their unique cellular characteristics | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34080 | Compare and contrast the metabolic processes in erythroblasts and erythrocytes that are critical to the generation of ATP from glucose (key concepts: glucose transport proteins; aerobic and anaerobic glycolysis; TCA (Kreb's) cycle) | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34081 | Outline the two phases of glycolysis and describe the roles of the key enzymes involved (glucokinase, PFK-1, GAPDH, phosphoglycerate kinase, pyruvate kinase) | SPM HEM | 1078 | Metabolism in the Erythrocyte |

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| 34082 | Describe the pentose phosphate pathway in terms of its cellular roles, subcellular location, key substrates, enzymes and products | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34083 | Compare and contrast the structure and function of the cellular reducing equivalents NAD ⁺ /NADH and NADP ⁺ /NADPH | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34084 | Explain how the pentose phosphate pathway and glutathione antioxidant system work in conjunction to protect cells from free radicals | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34085 | Apply your knowledge of normal pyrimidine metabolism to explain the metabolic basis, clinical presentation, and treatment of hereditary orotic aciduria | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34086 | Explain how chemotherapeutic pyrimidine analogs such as 5-fluorouracil can cause anemia | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34087 | Describe the mechanism of action of the immunosuppressant drug mycophenolate on purine metabolism and explain why T and B lymphocytes are more sensitive to mycophenolate therapy than erythrocytes | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34088 | Outline the role of folate in purine and pyrimidine metabolism and explain why each of the following can result in a functional folate deficiency: methotrexate treatment, 5-fluorouracil treatment, vitamin B12 deficiency, hereditary orotic aciduria | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34089 | Explain what is meant by 'methyl trapping' (a.k.a. 'methylfolate trapping') and describe how this can arise | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34090 | Compare and contrast the clinical presentations and laboratory findings associated with folate and vitamin B12 deficiencies | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34091 | Explain how cataplerotic TCA cycle flux works in conjunction with AST, ALT and glutamine synthetase to provide amino acid precursors necessary for nucleotide biosynthesis | SPM HEM | 1078 | Metabolism in the Erythrocyte |

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| 34092 | Outline the metabolic limitations of erythrocytes as compared to erythroblasts | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34093 | List the key cellular processes in mature erythrocytes that require ATP | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34094 | List the key cellular processes in mature erythrocytes that require NADPH and NADH | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34095 | Explain the significance of the Rapoport-Luebering shunt | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34096 | Recognize the clinical presentation of and explain the molecular basis for the following erythrocyte enzyme deficiencies that present as hemolytic anemia: glucose-6-phosphate dehydrogenase (G6PD) deficiency; pyruvate kinase deficiency | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34102 | Describe the pathogenesis, clinical features, and morphologic features of the various forms of cystitis | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34103 | Describe the clinical features, causative factors, pathogenesis, morphologic features, clinical course, and treatment of the various forms of urothelial carcinoma | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34104 | Describe the clinical features and complications of the various congenital anomalies of the penis | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34105 | Compare the clinical features and pathogenesis of phimosis and paraphimosis | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34106 | Describe the clinical features, pathogenesis, and morphologic features of condyloma acuminatum | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34107 | Describe the clinical features, pathogenesis, morphologic features, and clinical course of the various malignant neoplasms of the penis | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34109 | Describe the clinical features, diagnosis, and clinical significance of cryptorchidism | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34110 | Describe the clinical features and common causes of epididymitis | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |

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| 34111 | Describe the pathogenesis, clinical features, and clinical significance of testicular torsion | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34112 | Describe the risk factors, pathogenesis, morphologic features, and clinical features of seminomatous and nonseminomatous germ cell tumors | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34113 | Describe the clinical and morphologic features of Leydig cell tumors | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34114 | Describe the pathogenesis, clinical features, morphologic features, treatment, and natural history of benign prostatic hyperplasia | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34115 | Describe the pathogenesis, clinical features, morphologic features, prognostic predictors, and treatment of prostatic adenocarcinoma | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 34116 | Define somatic pain pathways in the pelvis and explain pudendal neuralgia | SPM REP | 463 | Pelvic Pain Pathways |
| 34117 | Describe autonomic afferents innervating pelvic organs and explain the Pelvic pain line | SPM REP | 463 | Pelvic Pain Pathways |
| 34120 | Explain why is autonomic pelvic pain: (a) aching and burning, (b) poorly localized, (c) associated with emotional and autonomic reactions, and (d) referred to somatic tissue | SPM REP | 463 | Pelvic Pain Pathways |
| 34124 | Explain central sensitization at the level of spinal cord; the role of neuronal hyperexcitability in the viscerovisceral convergence (or the cross-organ sensitization) | SPM REP | 463 | Pelvic Pain Pathways |
| 34125 | Explain central sensitization and the role of amygdala in pelvic pain conditions with trauma and stress | SPM REP | 463 | Pelvic Pain Pathways |
| 34126 | Explain hormonal influence on the pelvic pain in women, and changes in pain pathways during pregnancy | SPM REP | 463 | Pelvic Pain Pathways |
| 34136 | Describe the pathogenesis, classification, clinical and microscopic features of endometrial hyperplasia | SPM REP | 460 | Pathology of Uterine Bleeding |

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| 34137 | Describe the clinical features, pathogenesis, morphologic features, and prognosis of endometrioid and serous carcinoma | SPM REP | 460 | Pathology of Uterine Bleeding |
| 34138 | Describe the clinical features, morphology, and prognosis of malignant mixed mullerian tumors | SPM REP | 460 | Pathology of Uterine Bleeding |
| 34173 | Define, distinguish, and correctly apply the common medical terms used to describe and identify from clinical presentations the various Trauma and Stressor Related Disorders. | SPM MHD | 1282 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part I: PTSD and Dissociative Disorders |
| 34174 | Correctly differentiate Trauma and Stressor Related Disorders from the Dissociative Disorders, Obsessive-Compulsive and Related Disorders and the Anxiety Disorders. | SPM MHD | 1282 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part I: PTSD and Dissociative Disorders |
| 34175 | Formulate essential features of the diagnostic evaluation of a patient with Stress-Induced, Fear and Anxiety Disorders, including investigations, physiological and psychological changes. | SPM MHD | 1282 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part I: PTSD and Dissociative Disorders |
| 34176 | Define, distinguish and correctly apply the common medical terms used to describe, formulate a diagnostic evaluation of a patient, and identify from clinical presentations the various Anxiety Disorders and Obsessive-Compulsive and Related Disorders from the scheme presentation. | SPM MHD | 1293 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part II: OCD and Anxiety Disorders |
| 34177 | Describe the etiology, pathophysiology, comorbid conditions, frequently seen obsessions and compulsions seen in Obsessive-Compulsive and Related Disorders. | SPM MHD | 1293 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part II: OCD and Anxiety Disorders |
| 34178 | Describe comorbid conditions frequently seen with the Anxiety Disorders and recognize the adult psychiatric conditions which frequently result from childhood anxiety disorders. | SPM MHD | 1293 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part II: OCD and Anxiety Disorders |
| 34179 | Define, distinguish and correctly apply the common terms used to describe, differentiate and identify clinical | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |

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| | states of the Substance Related and Addictive Disorders scheme presentation. | | | |
| 34180 | Define, distinguish and correctly apply the common medical terms used to describe psychotic conditions, differentiate how psychosis can present at different points in the life cycle, and recognize that there can be different etiologies at different stages of life. | SPM MHD | 1298 | SCHEME - Psychosis and Disordered Thought |
| 34181 | Formulate essential features of the diagnostic evaluation of a patient presenting with Psychosis-Disordered Thought, including a good history and investigations. | SPM MHD | 1298 | SCHEME - Psychosis and Disordered Thought |
| 34182 | Describe risk factors, development, gender issues, course, biologic abnormalities and neurotransmitters in psychotic disorders and from clinical presentations distinguish and compare the diagnostic criteria of the disorders included in the scheme presentation. | SPM MHD | 1298 | SCHEME - Psychosis and Disordered Thought |
| 34184 | Define, distinguish, and correctly apply the common terms used to describe and identify from clinical presentations the various types of attachment, temperament, stages of cognitive development, and the stages of individuation and separation. | SPM MHD | 1271 | Child Cognitive and Emotional Development and Defense Mechanisms |
| 34185 | Correctly identify and describe delays in a child's cognitive and emotional development. | SPM MHD | 1271 | Child Cognitive and Emotional Development and Defense Mechanisms |
| 34186 | Relate the concepts of the Freudian theories presented in class, explain what is meant by a defense mechanism and recognize different defense mechanisms presented in class. | SPM MHD | 1271 | Child Cognitive and Emotional Development and Defense Mechanisms |
| 34187 | Define, distinguish and correctly apply the common terms used to describe and identify from clinical presentations the various Dissociative Disorders across the life cycle. | SPM MHD | 1283 | Trauma: Childhood Determinants of Psychopathology and the Dissociative Disorders |
| 34188 | Concisely explain and contrast the concepts of transference, countertransference and the following defense mechanisms: projection, intellectualization, | SPM MHD | 1287 | The Difficult Patient and Personality Disorders |

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| | isolation of affect, splitting, projective identification, somatization, regression, and acting out. | | | |
| 34191 | Describe and contrast changes in the DSM-5, define what is meant by a mental disorder, recognize situations that are not a mental disorder, and explain the elements of a diagnosis using the DSM-5. | SPM MHD | 1281 | Diagnostic and Statistical Manual of Mental Disorders (DSM-5) |
| 34192 | From clinical presentations devise a diagnosis including the spectrum disorder, subtype, descriptive feature (such as atypical depression) , course and severity specifiers so a biopsychosocial formulation and treatment plan can be generated (also understand the components of each sphere of the biopsychosocial formulation) | SPM MHD | 1281 | Diagnostic and Statistical Manual of Mental Disorders (DSM-5) |
| 34193 | Recognize that the spectrum disorders will also include other diagnoses including substance /medication induced psychiatric disorder, a psychiatric disorder due to a medical condition, other specified/unspecified psychiatric disorder and describe the components of the mnemonics for Major Depression and Bipolar Disorder. | SPM MHD | 1281 | Diagnostic and Statistical Manual of Mental Disorders (DSM-5) |
| 34210 | Know the pathogenesis, gross and microscopic features, clinical features and diagnosis of chronic ischemic heart disease | SPM CVR | 1131 | Pathology of Atherosclerosis |
| 34211 | Know the major pathologic consequences of atherosclerotic disease including atherosclerotic stenosis, acute plaque change, thrombosis, and vasoconstriction. | SPM CVR | 1131 | Pathology of Atherosclerosis |
| 34212 | Know the clinically important changes which atherosclerotic plaques can undergo; including thrombosis, hemorrhage into a plaque, atheroembolism, and aneurysm formation. | SPM CVR | 1131 | Pathology of Atherosclerosis |
| 34213 | Know the major clinical consequences of atherosclerotic disease including myocardial infarction, cerebral infarction, aortic aneurysms, and peripheral vascular disease. | SPM CVR | 1131 | Pathology of Atherosclerosis |

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| 37193 | Define anxiety as a price we pay for our ability to plan for the future; discriminate between normal and pathological anxiety. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37194 | Describe brain structures in the “fear circuit” | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37196 | Name five typical maladaptive responses in patients suffering from anxiety disorders; explain them using the “Pete and John” example | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37197 | Describe brain structures involved in rational and emotional assessments of threat, and inflated estimates of threat in AD. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37198 | Describe maladaptive hyper-vigilance vs. adaptive heightened vigilance | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37199 | Define deficient safety learning in AD and connection to the impaired fear extinction in PTSD patients. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37200 | Describe behavioral and cognitive avoidance in AD. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37202 | Summarize treatment options for ADs and their confirmed or suspected effects on the functional aberrations in the fear circuit (CBT, exposure therapy, psychotherapy); analyze transmitters and drug targets using simplified fear/reward circuits. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 37223 | Describe the pathogenesis, etiologies, and clinical features of neurogenic shock | SPM CVR | 1164 | Pathology of Shock |
| 37224 | Describe the morphologic changes seen in the heart, brain, liver, kidney, GI tract, lung, and adrenal glands in association with shock | SPM CVR | 1164 | Pathology of Shock |
| 37239 | Describe sensory and short-term memory (duration and characteristics) | SPM MHD | 1322 | Memory, Aging and Dementia |
| 37240 | Explain the cellular mechanism underlying short-term memory (i.e. transient strengthening of synaptic connections within neuronal networks) that involves glutamate receptors | SPM MHD | 1322 | Memory, Aging and Dementia |

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| 37243 | List some of the changes in the aging CNS; describe types of memory that are affected by aging and brain areas mostly affected by aging; explain structural differences between aging brain and demented brain. | SPM MHD | 1322 | Memory, Aging and Dementia |
| 37244 | Name some causes of dementias; explain which processes are common in neurodegenerative diseases associated with dementia | SPM MHD | 1322 | Memory, Aging and Dementia |
| 37247 | Describe "Amyloid cascade hypothesis" and processes underlying Abeta- induced neuronal dysfunction/death; describe the role of the hyperphosphorylated Tau in Abeta-induced neuronal toxicity; name two major problems with "Amyloid cascade hypothesis," and explain an alternative hypothesis. | SPM MHD | 1322 | Memory, Aging and Dementia |
| 37251 | Describe the risk factors, pathogenesis, morphologic features, and clinical features of Alzheimer disease | SPM MHD | 1318 | Pathology of Dementia |
| 37252 | Describe the pathogenesis, morphologic features, and clinical features of Pick disease | SPM MHD | 1318 | Pathology of Dementia |
| 37253 | Describe the pathogenesis, morphologic features, and clinical features of Creutzfeldt-Jakob disease | SPM MHD | 1318 | Pathology of Dementia |
| 37254 | Describe the pathogenesis, morphologic features, and clinical features of Lewy body disease | SPM MHD | 1318 | Pathology of Dementia |
| 37255 | Describe the risk factors, pathogenesis, and clinical features of vascular dementia | SPM MHD | 1318 | Pathology of Dementia |
| 37256 | Describe the pathogenesis and clinical features of normal pressure hydrocephalus | SPM MHD | 1318 | Pathology of Dementia |
| 40663 | Analyze and describe the sub-chronic phase after stroke: infiltration of neutrophils and blood-borne macrophages; activation of microglia and astrocytes; potential therapies (in clinical trials) | SPM CSS | 321 | Neuroscience of Stroke |
| 40664 | Describe cortical spreading depression and its the contribution to the central and peripheral sensitization in the trigeminal pain pathway. | SPM CSS | 309 | Neuroscience of Headache |

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| 40665 | Analyze components of a sensory neuron; explain which part of the sensory neuron belongs to the peripheral NS and which to CNS; categorize sensory neurons by axon diameter | SPM IHD | 99 | Introduction to Somatosensation |
| 40666 | Describe different types of: (a) mechanoreceptors (b) proprioceptors and (c) free nerve endings/nociceptors; name sensory receptors in the skin | SPM IHD | 99 | Introduction to Somatosensation |
| 40667 | Analyze and explain three major ascending sensory pathways (dorsal column/medial lemniscus pathway, spinocerebellar and spinothalamic tracts) | SPM IHD | 99 | Introduction to Somatosensation |
| 40668 | Explain sensory impairments in the proprioceptor dysfunction and in the spinal cord lesions affecting the dorsal column pathway | SPM IHD | 99 | Introduction to Somatosensation |
| 40673 | Define motor and sensory roles of cranial nuclei and cranial nerves; name all 12 cranial nerves, and brain stem structures where they originate; characterize their physiological roles. | SPM CSS | 320 | Brain Stem Stroke |
| 40674 | Name major arteries supplying medial and lateral parts of the brain stem; define main structures that are critical for the understanding of the functional deficits in the brain stem lesions. | SPM CSS | 320 | Brain Stem Stroke |
| 40675 | List long ascending and descending tracts that are affected due to the medial or lateral damage to the brain stem; and assign functional deficits to each of those tracts upon damage. | SPM CSS | 320 | Brain Stem Stroke |
| 40676 | Describe: (a) the medial medullar syndrome (occlusion/dissection of the anterior spinal artery (ASA)) and (b) lateral medullary syndrome (Wallenberg syndrome; occlusion of the vertebral artery (VA) or the posterior inferior cerebellar artery, PICA). | SPM CSS | 320 | Brain Stem Stroke |

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| 40677 | Analyze the lateral pontine syndrome (occlusion of the anterior inferior cerebellar artery) and compare it with the lateral medullary syndrome (Wallenberg syndrome). | SPM CSS | 320 | Brain Stem Stroke |
| 40678 | Explain devastating consequences of the ventral pontine stroke or "locked-in" syndrome. | SPM CSS | 320 | Brain Stem Stroke |
| 40679 | Create a chart showing each of the demyelinating diseases to include its purported etiology, location of the lesions in the brain and spinal cord, gross appearance of the lesion, microscopic appearance of the lesion, and appearance of the lesion on myelin stains. | SPM CSS | 289 | CNS Pathology |
| 40680 | Explain why white matter differs from gray matter and the significance of this finding in the localization of demyelinating diseases; identify the primary cell type that is involved and how it functions normally in the brain and spinal cord and what happens in demyelination. | SPM CSS | 289 | CNS Pathology |
| 40681 | Outline and recognize in a clinical setting the common signs and symptoms of multiple sclerosis and explain why this diagnosis requires lesions separated in time and space; what does 'time and space' refer to? | SPM CSS | 289 | CNS Pathology |
| 40682 | Interpret CSF studies for oligoclonal bands and explain their use in diagnosing multiple sclerosis. | SPM CSS | 289 | CNS Pathology |
| 40683 | Relate the lesions of neuromyelitis optica to its clinical presentation and be able to distinguish this condition from multiple sclerosis on myelin stained sections of brain and spinal cord. | SPM CSS | 289 | CNS Pathology |
| 40684 | Outline and recognize in a clinical setting the signs and symptoms of acute disseminated encephalomyelitis and acute necrotizing hemorrhagic encephalomyelitis and compare their similarities and differences. | SPM CSS | 289 | CNS Pathology |
| 40685 | Analyze the clinical setting in which central pontine myelinolysis might occur and identify the pontine lesions on H/E and myelin stained sections. | SPM CSS | 289 | CNS Pathology |

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| 40686 | Outline and recognize in a clinical setting the common signs and symptoms of amyotrophic lateral sclerosis (ALS) and identify the typical gross and microscopic neuropathologic features. | SPM CSS | 289 | CNS Pathology |
| 40687 | Utilize the histology of spinal muscular atrophy to explain the observed clinical features of a floppy baby. | SPM CSS | 289 | CNS Pathology |
| 40688 | Describe the difference between bacterial colonization, bacterial infection and infectious disease. | SPM IHD | 17 | Normal Flora |
| 40689 | Describe the ways in which normal flora impacts human health. | SPM IHD | 17 | Normal Flora |
| 40690 | Describe basic features of thalamic anatomy and define 3 main functional categories of thalamic nuclei. | SPM CSS | 326 | Altered States of Consciousness |
| 40691 | Describe different levels of arousal and awareness in altered states of consciousness. | SPM CSS | 326 | Altered States of Consciousness |
| 40692 | Define intrinsic cortical activity as a mechanism underlying of arousal and awareness, and assess optimal levels of cortical activation. | SPM CSS | 326 | Altered States of Consciousness |
| 40693 | Define brain structures whose lesions lead to altered states of consciousness and name some of diseases associated with altered states of consciousness. | SPM CSS | 326 | Altered States of Consciousness |
| 40694 | Compare brain stem lesions that do not affect consciousness in locked-in patients with brain stem lesions that cause coma. | SPM CSS | 326 | Altered States of Consciousness |
| 40695 | Describe basic components of the nervous system: central and peripheral nervous systems; brain regions and spinal cord segments; describe structures that separate the CNS from the PNS. | SPM IHD | 57 | Introduction to Neuroscience |
| 40696 | Describe cells in the nervous system, and their basic roles in normal and injured or diseased CNS and PNS | SPM IHD | 57 | Introduction to Neuroscience |
| 40697 | Define basic neuroanatomical terms: white/gray matter in the CNS and PNS; nuclei, tracts and columns; ganglia | SPM IHD | 57 | Introduction to Neuroscience |

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| | and nerves. Identify the location of the white and gray matter in the crosssections of the CNS and PNS. | | | |
| 40698 | Describe nerves and nerve coverings; state the number and segmental distribution of spinal and cranial nerves; define "dermatome" | SPM IHD | 57 | Introduction to Neuroscience |
| 40699 | Explain the roles of the CNS and PNS; describe two divisions of the PNS (sensory and motor); and two subdivisions of the PNS (somatic and autonomic motor and sensory branches). | SPM IHD | 57 | Introduction to Neuroscience |
| 40700 | Discuss definition, etiology, clinical presentation, diagnostic features, morphologic features, and treatment/prevention for following neural tube disorders: a) ANENCEPHALY b) CRANIUM BIFIDUM c) SPINA BIFIDA. | SPM CSS | 293 | Developmental Pathology of the Nervous System |
| 40701 | Discuss definition, etiology (if any), clinical presentation, diagnostic features, and morphologic features for following posterior fossa anomalies: a) ARNOLD CHIARI MALFORMATION b) DANDY-WALKER MALFORMATION. | SPM CSS | 293 | Developmental Pathology of the Nervous System |
| 40702 | Discuss definition, etiology (if any), clinical presentation, diagnostic features, morphologic features for following forebrain anomalies: a)MICROCEPHALY b)HOLOPROSENCEPHALY c) AGENESIS OF CORPUS CALLOSUM d) LISSENCEPHALY e) POLYMICROGYRIA | SPM CSS | 293 | Developmental Pathology of the Nervous System |
| 40703 | Discuss definition, etiology (if any), clinical presentation, diagnostic features, morphologic features, and treatment/prevention for HYDROCEPHALUS. | SPM CSS | 293 | Developmental Pathology of the Nervous System |
| 40723 | Describe brain structures that are part of the visual pathway, from the optic nerve to the primary visual cortex. | SPM CSS | 343 | Neuroscience of Vision |
| 40724 | Explain retinotopic organization in the visual pathway ; explain parvocellular vs. magnocellular pathways and their functional significance; explain prosopagnosia and simultanagnosia. | SPM CSS | 343 | Neuroscience of Vision |

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| 40725 | Analyze and describe four quadrants of the visual field and their projection to the retina; define spatial organization of the optic radiation (Mayer’s loop and parietal cortex loop) and identify anatomic location and functional significance of the cuneus and lingual gyrus. Describe macular projection area in the cortex. | SPM CSS | 343 | Neuroscience of Vision |
| 40726 | Define terminology used to describe visual deficits: anopsia, hemianopsia, homonymous hemianopsia, quadrantanopia and hemianopsia with macular sparing, and associated lesions in the visual pathways; explain scotoma. | SPM CSS | 343 | Neuroscience of Vision |
| 40727 | Explain pupillary constriction reflex and its significance in identifying the location of the lesion in the visual pathway. | SPM CSS | 343 | Neuroscience of Vision |
| 40728 | Explain pupillary dilation reflex, Horner syndrome, and explain the effect of drugs used in ophthalmology to increase the eye dilation. | SPM CSS | 343 | Neuroscience of Vision |
| 40729 | Describe mechanisms that underlie eye accommodation; explain errors in the eye accommodation (myopia, hyperopia and astigmatism). | SPM CSS | 343 | Neuroscience of Vision |
| 40730 | Describe mechanisms underlying various eye conditions: retinal detachment, glaucoma, color blindness, or macular degeneration. | SPM CSS | 343 | Neuroscience of Vision |
| 40768 | Describe the role of plasma membrane in separating charges; define resting membrane potential, concentration and electrical gradients, and equilibrium potentials | SPM IMN | 193 | Membrane Excitability |
| 40769 | Explain the role of the sodium potassium pump in the maintenance of ion concentration gradients and resting membrane potential | SPM IMN | 193 | Membrane Excitability |
| 40770 | Describe transient membrane potential changes (depolarization or hyperpolarization) as a code for the information (e.g. sensory or synaptic inputs) in the | SPM IMN | 193 | Membrane Excitability |

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| | nervous system, and the role of gated ion channels in transient changes in membrane potentials | | | |
| 40771 | Analyze spreading of transient membrane potentials and define neuronal length constant; describe the relation between axonal radius and its length constant | SPM IMN | 193 | Membrane Excitability |
| 40772 | Discuss the indications and contraindications for obtaining a lumbar puncture. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40774 | Describe the characteristic CSF findings of:a. acute bacterial meningitis.b. aseptic (viral) meningitis.c. fungal meningitis.d. traumatic tap.e. subarachnoid hemorrhage.f. multiple sclerosis.g. leptomenigeal tumor metastasis. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40781 | Distinguish between CSF findings of viral vs bacterial meningitis. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40782 | List the principal cytokines involved in the development of sepsis | SPM IHD | 84 | Chronic Inflammation and Systemic Effects of Inflammation |
| 40783 | Describe three main parts of the ear, and name structures forming the outer ear. | SPM CSS | 360 | Auditory System |
| 40784 | Explain main functions of three bones (ossicles) in the middle ear, and the role of the Eustachian tube. | SPM CSS | 360 | Auditory System |
| 40785 | Describe inner ear structures involved in hearing: cochlea and the organ of Corti. | SPM CSS | 360 | Auditory System |
| 40786 | Analyze transduction of sounds into electrical signals by the hair cells. | SPM CSS | 360 | Auditory System |
| 40787 | Describe auditory pathway from bipolar sensory neurons to auditory cortex, and explain unique features of this pathway, and its tonotopic organization. | SPM CSS | 360 | Auditory System |
| 40788 | Define hearing loss (conduction and sensorineural) and explain Rinne test; name some of the causes of the dysfunction in the outer and middle ear. | SPM CSS | 360 | Auditory System |

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| 40789 | Describe dysfunction of the inner ear due to mutations, loud noise, ototoxic drugs or vestibular schwannoma; discuss the use of both Rinne and Weber tests to identify conduction vs. sensorineural hearing loss. | SPM CSS | 360 | Auditory System |
| 40790 | Explain why damage to structures in the auditory pathway that are below the inferior colliculi cause ipsilateral deafness. | SPM CSS | 360 | Auditory System |
| 40799 | Describe the etiologies and underlying mechanisms of focal and global cerebral ischemia. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40800 | Describe border zone /water shed infarcts and outline the morphologic changes in the tissues. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40801 | Describe cerebral infarction in terms of its types, various causes, clinical presentation, and morphologic changes over time. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40802 | Define lacunar infarcts, slit hemorrhages, hypertensive encephalopathy and describe their morphology and clinical features. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40803 | Discuss the pathogenesis, morphological features, associated clinical and imaging finding of following: a. epidural hematoma. b. subdural hematoma. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40804 | Describe the pathogenesis, clinical features/correlations, and morphology of following: a. Intracerebral hemorrhage. b. Subarachnoid hemorrhage. c. Vascular malformations. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40806 | Define Astrocytoma and describe its epidemiology, clinical presentation, morphologic features and treatment. | SPM CSS | 312 | Pathology of Headache |
| 40807 | Define Oligodendroglioma and describe its epidemiology, clinical presentation, morphologic features and treatment. | SPM CSS | 312 | Pathology of Headache |

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| 40808 | Define ependymoma and describe its epidemiology, clinical presentation, morphologic features and treatment. | SPM CSS | 312 | Pathology of Headache |
| 40809 | Define meningioma and describe its epidemiology, clinical presentation, imaging findings, morphologic features and treatment. | SPM CSS | 312 | Pathology of Headache |
| 40810 | Describe epidemiology, clinical presentation, morphologic features and treatment of metastatic CNS tumors. | SPM CSS | 312 | Pathology of Headache |
| 40811 | Define neurofibroma and describe its epidemiology, clinical presentation, morphologic features and treatment | SPM CSS | 312 | Pathology of Headache |
| 40812 | Define schwannoma and describe its epidemiology, clinical presentation, imaging findings, morphologic features and treatment | SPM CSS | 312 | Pathology of Headache |
| 40813 | Define malignant peripheral nerve sheath tumor (MPNST) and describe its epidemiology, clinical presentation, imaging findings, morphologic features and treatment | SPM CSS | 312 | Pathology of Headache |
| 40818 | Discuss subfalicine, transtentorial, and tonsillar herniations in terms of their morphologic features and clinical outcome. | SPM CSS | 322 | Pathology of Stroke and CSF Analysis |
| 40819 | Describe taste receptors and transduction of the gustatory stimuli into electrical signals | SPM CSS | 373 | Smell and Taste Disorders |
| 40820 | Identify the neural pathways for taste | SPM CSS | 373 | Smell and Taste Disorders |
| 40821 | Define flavor and the integration of the gustatory with other sensory inputs in the orbital prefrontal cortex | SPM CSS | 373 | Smell and Taste Disorders |
| 40822 | Discuss the common pathological processes that may produce disorders of taste according to their basic categories (conductive, receptive, neural) | SPM CSS | 373 | Smell and Taste Disorders |
| 40823 | Describe olfactory neurons/ receptors and transduction of the olfactory stimuli into electrical signals | SPM CSS | 373 | Smell and Taste Disorders |

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| 40824 | Identify the neural pathways for smell (olfactory nerves (CN I)), olfactory tract and its cortical targets; analyze and discuss unique features of the gustatory pathway | SPM CSS | 373 | Smell and Taste Disorders |
| 40827 | Compare the clinical findings and pathologic lesions seen in brain and spinal cord in thiamine deficiency to those seen in vitamin B12 deficiency. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40828 | Compile a chart summarizing the gross lesions seen in the brain in hypoglycemia, global cerebral hypoperfusion, and hypoxia. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40829 | Recognize in a clinical setting the brain lesions induced by radiation therapy and those seen when radiation therapy and methotrexate are used; correlate with the observed pathologic findings in the brain. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40830 | Recognize in a clinical setting the brain lesions induced by radiation therapy and those seen when radiation therapy and methotrexate are used; correlate with the observed pathologic findings in the brain. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40831 | Recognize in a clinical setting the gross and microscopic pathologic findings in pyogenic meningitis, aseptic meningitis, and chronic meningitis to include bacterial, viral, and fungal etiologies. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40832 | Compare the clinical presentation, gross, and microscopic findings in acute diffuse vs. acute focal brain infections. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40833 | Recognize in a clinical setting the gross and microscopic pathologic findings in chronic bacterial meningoencephalitis. | SPM CSS | 328 | Pathology of Delirium, Stupor and Coma |
| 40848 | Examine pathological alterations in the neuronal resting membrane potential in hyperkalemia or in neurological disorders associated with the impaired function of the sodium/potassium pump. | SPM IMN | 193 | Membrane Excitability |
| 40849 | Explain action potential; describe the threshold for action potential, and the role of voltage gated sodium and potassium channels in different phases of an action | SPM IMN | 216 | Action Potential |

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| | potential, explain the role of sodium-potassium pump in the restoration of the resting membrane potential after an action potential. | | | |
| 40850 | Analyze neuronal refractory period and explain its functional significance | SPM IMN | 216 | Action Potential |
| 40851 | Describe axon hillock as a trigger zone for action potential, and analyze spatial summation of passive, electrotonic (graded) potentials, using examples of the excitatory postsynaptic potentials (EPSPs) and inhibitory postsynaptic potentials (IPSPs). | SPM IMN | 216 | Action Potential |
| 40852 | Define neuronal time constant, and describe how different time constant values (long vs. short time constants in different neurons) affect temporal summation of EPSPs or IPSPs | SPM IMN | 216 | Action Potential |
| 40853 | Explain effects of various ion channel inhibitors (toxins), and channelopathies (affecting voltage-gated sodium and potassium ion channels) on neuronal excitability | SPM IMN | 216 | Action Potential |
| 40854 | Compare general characteristics of the propagation of passive electrical signals within axon with characteristics of conduction of action potential in unmyelinated and myelinated axons | SPM IMN | 219 | Conduction of Action Potential |
| 40855 | Explain the relation between axonal diameter and conduction velocity | SPM IMN | 219 | Conduction of Action Potential |
| 40856 | Describe effects of myelin on neuronal length and time constants, and the resultant effect on the conduction velocity | SPM IMN | 219 | Conduction of Action Potential |
| 40857 | Define demyelinating diseases affecting CNS and PNS and explain the effect of demyelination of myelinated axons on their ability to propagate action potentials | SPM IMN | 219 | Conduction of Action Potential |
| 40888 | Organize the noninfectious congenital and acquired skin lesions of the external ear (branchial cleft cysts, accessory tragus, encephalocele, keloid) by comparing their clinical presentation and pathologic changes. | SPM CSS | 362 | Diseases of the Ear |

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| 40889 | Distinguish in a clinical setting chondrodermatitis nodularis heliis from relapsing polychondritis. | SPM CSS | 362 | Diseases of the Ear |
| 40890 | Recognize that the clinical presentation of chondrodermatitis nodularis heliis (age, location, gross appearance) may mimic basal cell carcinoma or squamous cell carcinoma. | SPM CSS | 362 | Diseases of the Ear |
| 40891 | Recognize in a clinical setting the causes of external ear canal obstruction and unilateral or bilateral hearing loss (foreign body, perforation, cerumen impaction, otic polyp, cholesteatoma, otitis externa and otitis media). | SPM CSS | 362 | Diseases of the Ear |
| 40896 | Recognize the clinical setting in which paraganglioma occurs, to include locations, clinical findings, and histologic appearance. | SPM CSS | 362 | Diseases of the Ear |
| 40897 | Compare the histologic appearance of paraganglioma vs. schwannoma and recognize the differences and similarities in their clinical presentation. | SPM CSS | 362 | Diseases of the Ear |
| 40898 | Recognize in a clinical setting the similarities and differences between Meniere’s disease and labyrinthitis. | SPM CSS | 362 | Diseases of the Ear |
| 40899 | Recognize the pathogenesis and clinical features of otosclerosis in the elderly. | SPM CSS | 362 | Diseases of the Ear |
| 40938 | Describe the anterolateral sensory pathway (components and anatomical course) from the sensory receptor to the cerebral cortex, identify the sensory modalities and transmitters; define dorsal horn laminae, Lissauer tract, somatosensory cortex , and other areas of the brain that receive nociceptive information | SPM IMN | 245 | Sensory Pathways |
| 40939 | Explain withdrawal reflexes, and the role of the spinal interneurons; outline schematically the neuroanatomical basis of the hand withdrawal and leg withdrawal (flexion withdrawal and crossed extension reflexes) and discuss the role of inhibitory and excitatory interneurons in spinal sensory processing, at the level of lumbar and cervical spinal cord segments. | SPM IMN | 245 | Sensory Pathways |

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| 40940 | Analyze the descending modulation of pain and morphine-induced analgesia. | SPM IMN | 245 | Sensory Pathways |
| 40941 | Identify the three major components of the brainstem (midbrain, pons and medulla) and schematically outline the trigeminal nucleus, trigeminal ganglion, trigeminal nerve, spinal trigeminal nucleus and the trigeminothalamic pathways. Identify other sensory modalities processed by the trigeminal nucleus, and their ascending pathways. | SPM IMN | 245 | Sensory Pathways |
| 40942 | Assess and explain somatosensory impairments in lesions affecting somatosensory cortex or thalamus, lower medulla, spinal cords (transection, central cord, hemisection), dorsal (anterior) roots or peripheral nerves | SPM IMN | 245 | Sensory Pathways |
| 40943 | Describe the three main types of pain and define the nociceptive system. List some of the receptors expressed in the peripheral axonal endings of nociceptors (TRP and ENaC channels), and explain their role in normal nociception in "nociceptive pain"). | SPM IMN | 242 | Neuroscience of Pain |
| 40944 | Describe inflammatory pain, neurogenic inflammation and primary hyperalgesia. Explain the effect of inflammatory mediators on the excitability of nociceptors. | SPM IMN | 242 | Neuroscience of Pain |
| 40945 | Define neuropathic pain, its clinical manifestations, and explain mechanisms underlying peripheral sensitization after nerve injury | SPM IMN | 242 | Neuroscience of Pain |
| 40946 | Describe peripheral sensitization after nerve injury, and the role of Nav1.7 channels. | SPM IMN | 242 | Neuroscience of Pain |
| 40947 | Analyze and explain genetic disorders affecting pain pathways (Paroxysmal Extreme Pain Disorder, Primary Erythralgia and Channelopathy-associated insensitivity to pain. | SPM IMN | 242 | Neuroscience of Pain |
| 40948 | Describe central sensitization in pain pathways after injury to the CNS and possible pharmacological treatments. | SPM IMN | 242 | Neuroscience of Pain |

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| 40952 | Describe the etiology, pathogenesis, morphologic findings (gross and microscopic), and laboratory/clinical findings of acute kidney injury (acute tubular necrosis). | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40953 | Describe the etiologies and various mechanisms behind development of pyelonephritis. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40954 | Compare the gross and microscopic findings of acute and chronic pyelonephritis. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40955 | Describe the gross and microscopic features of Xanthogranulomatous pyelonephritis. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40956 | Describe the etiology, pathogenesis, morphology (gross and microscopic), and clinical features of acute drug-induced interstitial nephritis. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40957 | Compare and contrast the etiologies, pathogenesis, gross and microscopic findings of analgesic vs urate nephropathy. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40958 | Describe how hypercalcemia and increased phosphate intake result in renal disease. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40959 | Describe the etiology, pathogenesis, morphologic findings (gross and microscopic), and laboratory/clinical findings of light-chain cast nephropathy. | SPM RNL | 1227 | Tubular and Interstitial Pathology |
| 40960 | Categorize the etiologies of peripheral neuropathy according to their clinical presentation as mononeuropathy, polyneuropathy, mononeuritis multiplex, and radiculopathy. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 40961 | Correlate in a clinical context, the fiber type (myelinated vs unmyelinated) with the type of neuropathy caused, and peripheral nerve structure as seen in EM and light microscopy. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 40962 | Compile a chart comparing AIDP Guillain-Barre vs CIDP chronic inflammatory demyelinating polyneuropathy vs Charcot-Marie-Tooth disease type I using type of | SPM IMN | 248 | Peripheral Nerve Diseases |

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| | neuropathy, CSF findings, molecular findings, pathologic findings, and EM findings. | | | |
| 40963 | Distinguish clinical presentations of leprosy, varicella zoster, and diphtheria and include histologic findings characteristic of each condition, if any. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 40964 | Compare neuropathy type and histologic findings in neuropathies due to nutritional, metabolic, and toxic etiologies. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 40965 | Compare Morton’s neuroma vs traumatic neuroma regarding etiology, pathogenesis, and histologic appearance. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 40966 | Distinguish radiculopathy from paraneoplastic syndromes in the setting of neoplastic disorders. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 40967 | Correlate, in a clinical setting, the findings seen in vasculitides which involve the peripheral nerves to include etiology and histologic findings. | SPM IMN | 248 | Peripheral Nerve Diseases |
| 41008 | Identify gross photographs of the following common congenital anomalies of the kidney and explain their clinical significance (renal agenesis, renal hypoplasia, ectopic kidneys, horseshoe kidneys). | SPM RNL | 1240 | Vascular Pathology |
| 41009 | Correlate the gross pathologic features of nephrosclerosis with the observed microscopic findings. | SPM RNL | 1240 | Vascular Pathology |
| 41010 | Correlate the microscopic findings of nephrosclerosis with the clinical presentation of hypertension and with the effects of long term hypertension on the kidney; recognize that the findings are similar. | SPM RNL | 1240 | Vascular Pathology |
| 41011 | Compile a chart comparing the clinical presentation, gross and microscopic appearance of malignant hypertension to thrombotic thrombocytopenic purpura and hemolytic uremic syndrome. | SPM RNL | 1240 | Vascular Pathology |
| 41012 | Compile a chart comparing gross and microscopic features, and clinical presentation of renal artery | SPM RNL | 1240 | Vascular Pathology |

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| | stenosis, atheroembolic disease, sickle cell disease, and diffuse cortical necrosis. | | | |
| 41013 | List the common congenital anomalies of esophagus and describe their gross findings and relevant clinical features. | SPM GIS | 109 | Pathology of the Esophagus |
| 41014 | Enumerate non-neoplastic causes of esophageal obstruction and describe their pathogenesis (when relevant), clinical features, and gross pathology (when relevant). | SPM GIS | 109 | Pathology of the Esophagus |
| 41015 | Compare the pathogenesis, clinical feature of Mallory-Weiss tears and Boerhaave Syndrome. | SPM GIS | 109 | Pathology of the Esophagus |
| 41016 | Compare and contrast the pathogenesis, clinical features, gross (if any) and microscopic pathology of chemical, infectious, reflux and eosinophilic esophagitis. | SPM GIS | 109 | Pathology of the Esophagus |
| 41017 | Describe the pathogenesis, clinical features, and gross and microscopic pathology of Barrett Esophagus. | SPM GIS | 109 | Pathology of the Esophagus |
| 41019 | List different types of esophageal tumors and describe the pathogenesis, clinical features, and gross and microscopic pathology of esophageal tumors, particularly squamous cell carcinoma and adenocarcinoma. | SPM GIS | 109 | Pathology of the Esophagus |
| 41034 | Define diarrhea and dysentery. Describe different types of diarrhea (secretory, osmotic, exudative, and malabsorption) and their distinguishing features. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 41035 | Describe the etiology/ pathogenesis, epidemiology, clinical presentation, morphologic features (if any) and treatment/prevention of diarrhea due to DISACCHARIDASE DEFICIENCY | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 41036 | Compare the pathogenesis, epidemiology, clinical presentation, morphologic features (radiographic, gross and microscopic findings) and treatment of ULCERATIVE COLITIS and CROHN'S DISEASE. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |

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| 41037 | Define IRRITABLE BOWEL SYNDROME and describe its etiology/ pathogenesis, epidemiology, clinical presentation, morphologic features (if any) and treatment/prevention. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 41038 | Describe the etiology/ pathogenesis, epidemiology, clinical presentation, diagnostic features, morphologic features (radiographic, gross and microscopic findings), and treatment/management of GLUTEN-SENSITIVE ENTEROPATHY. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 41039 | Define WHIPPLE’S DISEASE and describe its epidemiology, clinical presentation, morphologic features (radiographic, gross and microscopic findings), and treatment/management. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 41041 | Describe the pathophysiology and clinical features and treatment of PANCREATIC INSUFFICIENCY and INTRALUMINAL BILE SALT DEFICIENCY associated diarrhea | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 41042 | Identify the steps in bacterial protein biosynthesis where puromycin, chloramphenicol, fusidic acid, the tetracyclines, the aminoglycosides (e.g., streptomycin), the lincosamides (e.g., clindamycin) and the macrolides (e.g., erythromycin) exert their inhibitory actions. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41043 | Outline the biochemistry and pathophysiology of poisoning by ricin and shiga toxin, including environmental sources, the cellular target and mechanism of action. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41044 | Describe the molecular mechanism and pathogenesis of amatoxin (e.g., alpha-amanitin) poisoning, including its source, mechanism of action and clinical presentation. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41045 | Describe the molecular mechanisms of toxins produced by Vibrio cholera and Enterotoxigenic Escherichia coli (ETEC). | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |

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| 41046 | Outline the major steps and factors involved in the biosynthesis of a protein from an mRNA transcript, from tRNA charging through the initiation, elongation and termination stages of translation. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41047 | Compare and contrast prokaryotic and eukaryotic protein biosynthesis. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41048 | Describe the mechanism of action of the antibiotic rifampin (rifampicin) and the related rifamycins. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41049 | Describe the molecular mechanisms of action of Clostridium difficile toxins A, B, and CDT. | SPM GIS | 123 | Molecular Aspects of Acute Food Poisoning and Toxicity |
| 41050 | Describe the anatomical considerations important for successful inguinal hernia surgical repair. | SPM IHD | 86 | Inguinal Hernias |
| 41051 | Describe the classification and laboratory evaluation of dyslipidemia | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41052 | Describe the pathogenesis and clinical features of the following primary dyslipidemias: familial hypercholesterolemia, familial defective apoB-100, familial dysbetalipoproteinemia, lipoprotein lipase deficiency | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41054 | Describe hypothalamic outputs that control the homeostasis; define the efferent connections of the hypothalamus with the autonomic nervous system; list nuclei and pathways; define the role of the hypothalamus in central autonomic control.. | SPM END | 431 | Hypothalamus |
| 41064 | Describe the composition and functions of the plasma lipoproteins: chylomicrons, very low-density lipoproteins (VLDL), remnant particles, low-density lipoproteins (LDL) and high-density lipoproteins (HDL). | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41065 | Describe the functions of the following apolipoproteins: apo A-1, apo B-48, apo B-100, apo C-II, and apo E. | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41066 | Outline the metabolism of chylomicrons, including the roles and sources of important apolipoproteins, | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |

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| | mechanisms of chylomicron degradation in the circulation, and fate of chylomicron remnants. | | | |
| 41067 | Outline the metabolism of very low-density lipoproteins (VLDL), including release from the liver, roles and sources of important apolipoproteins, mechanisms of VLDL degradation in the circulation, and conversion to intermediate-density lipoproteins (IDL) and low-density lipoproteins (LDL). | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41068 | Outline the metabolism of low-density lipoproteins (LDL), including the important factors regulating LDL receptor-mediated endocytosis. | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41069 | Describe the role of macrophage scavenger receptors in LDL uptake and metabolism. | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41070 | Outline the metabolism of high-density lipoproteins (HDL), including the roles of important apolipoproteins, the uptake and esterification of tissue cholesterol, the roles of LCAT and CETP, and the overall process of 'reverse' cholesterol transport. | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41071 | Recognize the serum lipid abnormalities and explain the molecular mechanisms associated with the following primary dyslipidemias: lipoprotein lipase and apo C-II deficiencies; familial hypercholesterolemia (LDL receptor deficiency); familial dysbetalipoproteinemia (apo E deficiencies or apo E2 homozygosity); LCAT deficiency; Tangier syndrome (ABCA1 deficiency). | SPM END | 423 | Lipoprotein Metabolism and the Dyslipidemias |
| 41082 | Describe clinical presentation, morphologic features(gross and microscopic), and treatment/management of PEDIATRIC ETIOLOGIES for GI bleed, including INTUSSUSCEPTIONS, NECROTIZING ENTEROCOLITIS, and MECKEL'S DIVERTICULUM | SPM GIS | 169 | Pathology of GI Bleeding |
| 41083 | Describe the clinical presentation, morphologic features (gross and microscopic), and treatment/management of SMALL BOWEL NEOPLASMS. | SPM GIS | 169 | Pathology of GI Bleeding |

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| 41084 | Describe the epidemiology, clinical presentation, morphologic features (gross and microscopic), and treatment/management of LARGE BOWEL ETIOLOGIES for GI bleed, including DIVERTICULAR DISEASE, ISCHEMIC AND RADIATION COLITIS, ANGIODYSPLASIA, POLYPS, and LARGE INTESTINE NEOPLASMS. | SPM GIS | 169 | Pathology of GI Bleeding |
| 41085 | Describe the epidemiology, clinical presentation, morphologic features (gross and microscopic), and treatment/management of ANAL ETIOLOGIES for GI bleed, including ANAL FISSURES, HEMORRHOIDS, and ANAL CANCERS. | SPM GIS | 169 | Pathology of GI Bleeding |
| 41086 | List different types of colon polyps and their clinical significance with respect to certain genetic diseases, including PEUTZ-JEGHERS SYNDROME, FAMILIAL ADENOMATOUS POLYPOSIS (FAP) SYNDROME, GARDNER'S SYNDROME, and TURCOT'S SYNDROME. | SPM GIS | 169 | Pathology of GI Bleeding |
| 41087 | Describe clinical presentation, morphologic features(gross and microscopic), and treatment/management of Hirschsprung's disease | SPM GIS | 169 | Pathology of GI Bleeding |
| 41092 | Describe treatment options for patients presenting with hepatic encephalopathy, including the molecular basis for therapy with non-absorbable disaccharides, rifaximin, and L-ornithine-L-aspartate | SPM GIS | 137 | Metabolism in the Liver |
| 41094 | Identify the superficial features of the external genitalia in the female. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| 41094 | Identify the superficial features of the external genitalia in the female. | SPM REP | 455 | Female Reproductive System Anatomy Lab |
| 41104 | Trace the continuity of the abdominal peritoneum with that of the pelvic cavity, and identify the peritoneal pouches of the pelvic floor in both sexes. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| 41104 | | SPM REP | 445 | Pre-Lab: Male Reproductive |
| | | | 452 | Pre-Lab: Female Reproductive System |

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| | Trace the continuity of the abdominal peritoneum with that of the pelvic cavity, and identify the peritoneal pouches of the pelvic floor in both sexes. | | 455 | Female Reproductive System Anatomy Lab |
| 41105 | Describe the relationships of the bladder to other pelvic organs in both sexes. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41106 | Describe the normal position and relationships of the organs of the female reproductive tract and the role of each in reproductive processes. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41107 | Describe the broad ligament and differentiate its parts. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41108 | Identify the ovary and discuss the functional significance of its ligaments. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41109 | Demonstrate the uterine tube and its subdivisions. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41110 | Identify the uterus and its subdivisions and demonstrate the continuity of its lumen with that of the uterine tubes and the vagina. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41111 | Differentiate between the internal and external os of the cervix. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41112 | Identify the vagina, and note the angle formed at its junction with the uterus. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
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| 41113 | | SPM REP | 452 | Pre-Lab: Female Reproductive System |

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| | Describe the support mechanisms for the uterus which act to prevent uterine prolapse. | | 455 | Female Reproductive System Anatomy Lab |
| 41114 | Describe the formation of the two sciatic foramina. List the muscles, nerves, and vessels which pass through each. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| | | | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41115 | Identify the pelvic diaphragm and differentiate its components. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41116 | Trace the branching pattern of the internal iliac vessels in each sex, identifying branches by their relationships to pelvic organs or wall structures. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41117 | Identify and describe the inferior hypogastric (pelvic) plexus and its connections to the superior hypogastric plexus via the hypogastric nerves. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41118 | Identify and describe the sacral sympathetic trunks and the sacral sympathetic nerves. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41119 | Trace the sympathetic and parasympathetic nerve supply to any pelvic organ, listing the location of the preganglionic cell body, the course of preganglionic fibers, the location of the postganglionic cell body, and the course of postganglionic fibers, as well as the sensory supply of the pelvic organs. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |

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| 41120 | Describe the general gross features of the breast and its blood supply, innervation, and lymphatic drainage. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41128 | Describe the causes, clinical features, and microscopic findings of acute and chronic endometritis. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41129 | Define dysfunctional uterine bleeding and describe its common causes and their pathogenesis. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41130 | Describe the genetics and clinical features of Turner syndrome and Klinefelter syndrome. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41131 | Describe and identify the various types of mullerian anomalies affecting the uterus. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41132 | Describe the proposed pathogenesis, clinical features including most common sites of involvement, and morphologic features of endometriosis. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41133 | Define adenomyosis and describe its clinical features and microscopic findings. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41134 | Describe the clinical and morphologic (gross and microscopic) features of endometrial polyps and leiomyomas. | SPM REP | 460 | Pathology of Uterine Bleeding |
| | | | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41135 | Describe the pathogenesis and imaging findings of Asherman syndrome. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41136 | Describe the clinical and morphologic (gross) features of polycystic ovarian disease. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41137 | Define pelvic inflammatory disease and describe its pathogenesis, clinical features, morphologic features, and complications. | SPM REP | 495 | Pathology - Uterine, Tubal, and Ovarian Causes of Infertility |
| 41138 | Recall the size of a normal RBC, and based on it, be able to estimate the sizes of different cellular components in a peripheral blood smear. | SPM HEM | 1079 | Red Blood Cell Disorders |

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| 41139 | Recall the approximate time it takes for erythroblasts to mature into normal RBCs and associate this response to treatment of anemia. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41140 | Recall the life span of normal RBCs and describe how it changes with respect to RBC hemolytic disorders. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41141 | Describe what each CBC parameter (RBC, HGB, HCT, MCV, MCH, MCHC, RDW, absolute numbers and percent of the different leukocytes) represents and explain how each of these parameters are obtained from their numbers, size, complexity, and Hgb concentration. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41142 | Describe the purpose and interpretation of each of the following laboratory tests: Reticulocyte count, bilirubin, LDH, serum haptoglobin, hemoglobinuria, hemosiderinuria, TIBC, UIBC, Transferrin saturation, serum ferritin, ESR, Folate levels, Vitamin B12 levels, osmotic fragility test, Direct antibody test (or Coombs test), Indirect antibody test (or indirect Coombs test), protein electrophoresis, and bone marrow biopsy/aspirate. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41143 | Recognize the following RBC morphologies on peripheral blood smears and describe their clinical significance for the following RBC morphologic changes: Bite cell (degmacyte), Hypochromic RBCs, Macrocytes, Microcytes, Nucleated RBCs, Ovalocyte (elliptocyte), Polychromatophilia, RBC Agglutination, Rouleux, Schistocyte, Sickle cell (drepanocyte), Spherocyte, Target Cell (codocyte), and Tear Drop cells (dacrocyte). | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41144 | Explain the definition of polycythemic disorders (primary vs. secondary) and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41145 | Explain the definition of iron deficiency anemia, and discuss how this relates to the laboratory findings | SPM HEM | 1079 | Red Blood Cell Disorders |

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| | (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis | | | |
| 41146 | Explain the definition of anemia of chronic disease, and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41147 | Explain the definition of aplastic anemia, and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41148 | Explain the definition of megaloblastic anemia (Vitamin B12 deficiency vs. folate deficiency), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41149 | Explain the definition of sideroblastic anemia, and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41150 | Explain the definition of intrinsic or hereditary RBC membrane disorder (hereditary spherocytosis and hereditary elliptocytosis), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41151 | Explain the definition of intrinsic or hereditary RBC enzymatic disorders (pyruvate kinase and Glucose 6 phosphate dehydrogenase), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41152 | Explain the definition of hemoglobinopathies (including sickle cell anemia) and thalassemias, and discuss how this relates to the laboratory findings (including | SPM HEM | 1079 | Red Blood Cell Disorders |

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| | peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | | | |
| 41153 | Explain the definition of autoimmune mediated hemolysis (Cold vs. Warm autoantibodies), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41154 | Explain the definition of alloimmune mediated hemolysis (transfusion incompatibility and fetal-maternal incompatibility), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41155 | Explain the definition of Paroxysmal nocturnal hemoglobinuria, and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41156 | Explain the definition of drug induced immune mediated hemolysis (drug absorption vs. immune complex vs. autoimmune mechanism), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41157 | Explain the definition of non-immune mediated hemolysis (Mechanically induced: MAHA and traumatic hemolysis), and discuss how this relates to the laboratory findings (including peripheral blood and bone marrow findings), clinical presentation, and pathogenesis. | SPM HEM | 1079 | Red Blood Cell Disorders |
| 41158 | Describe the etiologic agents, clinical features and predisposing factors for balanoposthitis. | SPM REP | 449 | Pathology of Male Reproductive System and Lower Urinary Tract |
| 41159 | Define these terms (fetus, embryo, gestational age, spontaneous abortion, products of conception, decidua, miscarriage, stillbirth) and relate the definitions to the | SPM REP | 479 | GTD and Pathology of Pregnancy |

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| | expected pathologic gross and/or microscopic findings; be able to explain the importance to the clinician of each of these terms. | | | |
| 41160 | Compare pathology, laboratory, and clinical findings in early pregnancy vs. spontaneous abortion vs. ectopic pregnancy vs. retained products of conception. | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41161 | Correlate structurally abnormal placentas and umbilical cords with potential outcomes. | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41162 | Correlate types of twin placentas with placental gross appearance, risks of vascular anastomoses, risk of twin-twin transfusion, and risk of fetal demise | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41163 | Compile a chart describing the locations of placental attachment (placenta previa, placenta increta, placenta accreta, and placenta percreta) in the uterus and identify the risks to the mother and the fetus, to include risk of second trimester hemorrhage, risk for abruptio placenta, risk for retained placenta, and risk for postpartum hysterectomy. | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41164 | Identify the risk factors for maternal infections, impact on the fetus, diagnostic approaches, and their treatment. | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41165 | Recognize in a clinical setting the hypertensive diseases of pregnancy, the theories of their causation, effects on the mother and fetus, and their treatment. | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41166 | Correlate the laboratory and clinical findings with the pathologic changes seen in gestational trophoblastic diseases. | SPM REP | 479 | GTD and Pathology of Pregnancy |
| 41171 | Define pelvic nociceptors (somatic and silent autonomic), and the role of TRP channels in inflammation- induced peripheral sensitization | SPM REP | 463 | Pelvic Pain Pathways |
| 41172 | Compile a chart comparing gross and microscopic features of benign ovarian cysts (cystic follicles, corpus luteum cysts, theca lutein cysts, polycystic ovarian syndrome, endometriotic cysts, and tuboovarian | SPM REP | 470 | Pelvic Masses |

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| | abscesses) and correlate them with their counterparts in normal ovarian histology (if any) and the expected clinical outcome of the lesion. | | | |
| 41173 | Recognize in a clinical setting fallopian tube lesions (paratubal cyst, adenomatoid tumor) which may present as pelvic masses and identify their gross and microscopic features. | SPM REP | 470 | Pelvic Masses |
| 41174 | Distinguish epithelial, germ cell, and sex cord-stromal ovarian neoplasms based on clinical, gross, and microscopic features and correlate the cell type involved with its counterpart in normal ovarian histology. | SPM REP | 470 | Pelvic Masses |
| 41175 | Compile a chart comparing frequency of occurrence, age range of occurrence, gross, and microscopic features of ovarian epithelial tumors to include benign, low malignant potential, and malignant tumors. | SPM REP | 470 | Pelvic Masses |
| 41176 | List the germ cell neoplasms of the ovary and their histologic counterparts in the testis and compile a chart listing their frequency of occurrence, clinical presentation, gross, and microscopic features in the ovary. | SPM REP | 470 | Pelvic Masses |
| 41177 | Compare and contrast gross, microscopic, and clinical features of adult and juvenile granulosa cell tumors and distinguish their presentation from that of Sertoli-Leydig cell tumor of the ovary | SPM REP | 470 | Pelvic Masses |
| 41178 | Compare the fibroma, thecoma, and Krukenberg tumors based on gross and microscopic findings, clinical presentation, and patient outcome. | SPM REP | 470 | Pelvic Masses |
| 41179 | Describe the epidemiology, clinical and morphologic (gross and microscopic) features of Leiomyosarcoma | SPM REP | 460 | Pathology of Uterine Bleeding |
| 44357 | Recall the definitions of the following terms: anticoagulants, fibrinolysis, ecchymosis, petechiae, purpura, livedo reticularis. | SPM HEM | 1090 | Pathology of Coagulation |

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| 44358 | Describe the difference between primary and secondary hemostasis. | SPM HEM | 1090 | Pathology of Coagulation |
| 44359 | Describe the differences in clinical presentation between platelet and blood vessel derived bleeding disorders and clotting factor disorders. | SPM HEM | 1090 | Pathology of Coagulation |
| 44360 | Describe the definition of the following tests: PT, PTT, TT, Platelet aggregation studies, bleeding time, mixing study (inhibitor screening test), vWF activity assay, vWF antigen factor, D-Dimer, and fibrinogen (quantitative). | SPM HEM | 1090 | Pathology of Coagulation |
| 44361 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Disseminated Intravascular Coagulation (DIC). | SPM HEM | 1090 | Pathology of Coagulation |
| 44362 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Thrombotic thrombocytopenic Purpura (TTP). | SPM HEM | 1090 | Pathology of Coagulation |
| 44363 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Hemolytic Uremic Syndrome (HUS). | SPM HEM | 1090 | Pathology of Coagulation |
| 44364 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Immune Thrombocytopenic Purpura (ITP). | SPM HEM | 1090 | Pathology of Coagulation |
| 44365 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Hypersplenism. | SPM HEM | 1090 | Pathology of Coagulation |
| 44366 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Von Willebrand Disease (vWD). | SPM HEM | 1090 | Pathology of Coagulation |

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| 44367 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Bernard Soulier Syndrome. | SPM HEM | 1090 | Pathology of Coagulation |
| 44368 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Glanzmann's Thrombasthenia. | SPM HEM | 1090 | Pathology of Coagulation |
| 44369 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Hemophilia A and B. | SPM HEM | 1090 | Pathology of Coagulation |
| 44370 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Vitamin K deficiency or hemorrhagic disease of newborn. | SPM HEM | 1090 | Pathology of Coagulation |
| 44371 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Factor V Leiden mutation. | SPM HEM | 1090 | Pathology of Coagulation |
| 44372 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Prothrombin G20210A. | SPM HEM | 1090 | Pathology of Coagulation |
| 44373 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Protein C deficiency. | SPM HEM | 1090 | Pathology of Coagulation |
| 44374 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Protein S deficiency. | SPM HEM | 1090 | Pathology of Coagulation |
| 44375 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Heparin Induced Thrombocytopenia (HIT). | SPM HEM | 1090 | Pathology of Coagulation |
| 44376 | Describe the definition, etiology/pathogenesis, clinical presentation, laboratory, peripheral blood smear findings, and bone marrow findings of Antiphospholipid syndrome. | SPM HEM | 1090 | Pathology of Coagulation |

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| 44383 | Define localized and generalized lymphadenopathy. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44384 | Compare etiology, clinical features and diagnostic findings of acute and chronic nonspecific lymphadenitis. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44385 | Be able to differentiate between reactive Follicular Hyperplasia and Follicular Lymphoma. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44386 | Discuss the epidemiology and describe the clinical features and diagnostic findings (peripheral blood, lymph node, molecular if any) of chronic lymphocytic leukemia/small lymphocytic lymphoma. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44387 | Discuss the epidemiology and describe the clinical features and diagnostic findings (peripheral blood, lymph node, molecular if any) of follicular lymphoma | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44388 | Discuss the epidemiology and describe the clinical features and diagnostic findings (lymph node, molecular if any)of diffuse large B cell lymphoma | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44389 | Discuss the epidemiology, clinical features, diagnostic findings (lymph node, molecular if any) of Burkitt lymphoma. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44390 | Discuss the epidemiology and describe the clinical features and diagnostic findings (lymph node, molecular if any)of mantle cell lymphoma. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44391 | Discuss the epidemiology and describe the clinical features and diagnostic findings (peripheral blood, lymph node, molecular if any)of hairy cell leukemia | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44392 | Be able to differentiate between Hodgkin vs Non Hodgkin lymphomas | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44393 | Describe the epidemiology and different types of Hodgkin lymphoma and their characteristic features. | SPM HEM | 1104 | Pathology of Lymphadenopathy |
| 44394 | Describe different types of plasma cell neoplasm in relation to their clinical and diagnostic findings. | SPM HEM | 1104 | Pathology of Lymphadenopathy |

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| 44434 | Define, distinguish and correctly apply the common terms used to describe the mood disorders, identify from clinical presentations the various mood disorders (including secondary mood disorders) from the scheme presentation, and differentiate between normal situational mood reactions and a clinically significant mood disorder. | SPM MHD | 1289 | SCHEME - Mood Disorders |
| 44435 | Formulate essential features of the diagnostic evaluation of a patient presenting with either a primary or secondary mood disorder including a good history and investigations. | SPM MHD | 1289 | SCHEME - Mood Disorders |
| 44436 | Describe risk factors, development, gender issues, course, and mnemonics for symptoms and comorbidity for the various mood disorders. | SPM MHD | 1289 | SCHEME - Mood Disorders |
| 44437 | Identify the 3 types of angina pectoris and differentiate between the pathogenesis and clinical manifestations of each. | SPM CVR | 1134 | Pathology of Chest Pain |
| 44438 | Define the various classifications of acute coronary syndrome; namely unstable angina and myocardial infarction (NSTEMI and STEMI) and explain the pathogenesis, epidemiology, gross and microscopic manifestations and clinical complications of each. | SPM CVR | 1134 | Pathology of Chest Pain |
| 44439 | Compile a chart showing the location of coronary artery occlusion versus area of myocardium affected and correlate these areas with the likelihood of one of the complications of myocardial infarction occurring. | SPM CVR | 1134 | Pathology of Chest Pain |
| 44440 | Correlate the gross appearance of hearts with myocardial infarction with the microscopic changes seen postinfarction and correlate these changes with the likelihood of complications (arrhythmia, myocardial rupture, ventricular) aneurysm, pericarditis, mural thrombus, papillary muscle dysfunction, chronic ischemic heart disease and congestive heart failure | SPM CVR | 1134 | Pathology of Chest Pain |

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| 44441 | Explain the mechanism of formation of each of the aortic aneurysm types and correlate their gross appearance with the location of formation and with associated clinical syndromes and pathologic findings | SPM CVR | 1134 | Pathology of Chest Pain |
| 44442 | Explain the clinical consequences of pericardial effusion based on the mechanism of formation and correlate the clinical diagnostic findings with the physiologic mechanism of formation and expected laboratory findings | SPM CVR | 1134 | Pathology of Chest Pain |
| 44447 | Name cerebral lobes, and identify anatomical location of: (a) primary motor and sensory areas, (b) unimodal and (c) multimodal association areas (prefrontal, parietal, limbic), and their role in integrating information and generating cognition. | SPM MHD | 1285 | Introduction to Psychiatric Neuroscience |
| 44448 | Explain the role of lateral, medial, orbitofrontal, and prefrontal cortices in complex cognitive processes. Describe developmental changes (and vulnerability) of the prefrontal cortex, and what cellular processes underlie cortical maturation. | SPM MHD | 1285 | Introduction to Psychiatric Neuroscience |
| 44449 | Describe brain structures involved in large-scale networks that control complex cognitive functions: default, salience and central executive brain networks; explain cognitive symptoms in traumatic brain injury as a consequence of the impaired interaction between salience and default mode network. | SPM MHD | 1285 | Introduction to Psychiatric Neuroscience |
| 44454 | Be able to recognize the infectious etiology (viral, bacterial, fungal, or parasitic) of a clinical presentation of Pericarditis or Myocarditis based on clinical presentation, history and laboratory tests. | SPM CVR | 1137 | Myocarditis and Pericarditis |
| 44471 | List brain structures that are part of the limbic system; describe the role of limbic structures in regulating functions relevant to survival, and specify the role of individual limbic structures in controlling emotions. | SPM MHD | 1286 | Psychiatric Neuroanatomy |
| | | | 1290 | Neuroscience of Mood Disorders |
| 44472 | | SPM MHD | 1286 | Psychiatric Neuroanatomy |

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| | Identify anatomical location of amygdala, explain the role of the prefrontal cortex -amygdala connection in initiating fear and rage, in adults and in children; describe symptoms of diseases associated with damaged or atrophied amygdala. | | 1290 | Neuroscience of Mood Disorders |
| 44473 | Outline proposed mechanisms for symptoms of depression: (1) Cognitive symptoms: anhedonia and reward circuit/n. accumbens, lack of concentration and large scale networks, sense of worthlessness, suicidality and HPA axis(2) Vegetative/somatic symptoms: direct and bidirectional connection between the hypothalamus and reward circuit.(3) Describe alterations in reward circuit that can explain mania in bipolar disorder. | SPM MHD | 1290 | Neuroscience of Mood Disorders |
| 44474 | Compare and contrast causes, risk factors, and susceptibility to depression; describe how chronic stress (as a risk factor) affects the reward pathway; explain the role of stress axis in symptoms of demodulated and deactivated depression; define heritability of depression and bipolar disorders. | SPM MHD | 1290 | Neuroscience of Mood Disorders |
| 44475 | List four major treatment modalities for depression; define therapeutic effects of psychotherapy established with fMRI imaging. | SPM MHD | 1290 | Neuroscience of Mood Disorders |
| 44476 | Explain delayed therapeutic and acute side effects of SSRIs by analyzing synaptic connections between raphe nuclei and N. Accumbens neurons, and therapeutic effects demonstrated by fMRI imaging that can explain improvement of depressive symptoms. | SPM MHD | 1290 | Neuroscience of Mood Disorders |
| 44477 | Summarize effects of pharmacological therapeutic interventions targeting dopamine and glutamate transmission in depression. | SPM MHD | 1290 | Neuroscience of Mood Disorders |
| 44478 | Classify neuromodulation approaches to treat depression, and give examples of fMRI findings that document therapeutic effects of neuromodulatory interventions. | SPM MHD | 1290 | Neuroscience of Mood Disorders |

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| 44481 | Define the role of over-active amygdala in triggering somatic symptoms (i.e. stress response and autonomic reflexes) in anxiety disorders. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 44482 | Explain the role of the over-active striatum in obsessive compulsive disorders (OCDs) and connections of the striatum with the fear circuit. | SPM MHD | 1294 | Neuroscience of Anxiety |
| 44487 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the primary depressive and primary bipolar and related disorders. | SPM MHD | 1295 | Integration Session: Mood |
| 44488 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the stress-induced, fear and anxiety disorders. | SPM MHD | 1296 | Integration Session: SIFA |
| 44489 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the psychosis and disordered thought scheme presentation. | SPM MHD | 1306 | Integration Session |
| 44493 | Define structural white matter alterations and functional network dysfunctions associated with symptoms in schizophrenia (positive, negative or cognitive symptoms). | SPM MHD | 1299 | Neuroscience of Schizophrenia |
| 44494 | Explain schizophrenia as a developmental disorder influenced by genetic and environmental vulnerabilities. | SPM MHD | 1299 | Neuroscience of Schizophrenia |
| 44495 | Analyze antipsychotic drugs as treatments for schizophrenia using knowledge of dopaminergic pathways and dopaminergic transmission in structures affected by the disease; compare alterations in | SPM MHD | 1299 | Neuroscience of Schizophrenia |

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| | dopaminergic pathways in depression, bipolar disorder and schizophrenia. | | | |
| 44501 | Compare the the pathogenesis and morphologic features of dilated, hypertrophic and restrictive cardiomyopathy | SPM CVR | 1185 | Pathology of Dyspnea |
| 44502 | Describe the pathogenesis and clinical features of pulmonary embolism | SPM CVR | 1185 | Pathology of Dyspnea |
| 44503 | Describe the causes and clinical features of epiglottitis, croup, angioedema, and laryngeal squamous cell carcinoma | SPM CVR | 1185 | Pathology of Dyspnea |
| 44521 | Define hippocampal roles in memory consolidation; name brain areas involved in memory consolidation; analyze synaptic changes and glutamate receptor modifications underlying long-term memory. | SPM MHD | 1322 | Memory, Aging and Dementia |
| 44522 | Define different types of the long-term memory | SPM MHD | 1322 | Memory, Aging and Dementia |
| 44523 | Identify the five known human prion diseases; and the causative agent of human prion disease; discuss the structural changes that occur in the formation of the prion protein; Identify the primary modes of transmission for CJD and vCJD; Discuss differences in the clinical presentations of CJD and vCJD; Discuss the likelihood that a child born into a family affected by familial CJD would develop the disease; Identify mechanisms currently used to prevent transmission of CJD and vCJD | SPM MHD | 1322 | Memory, Aging and Dementia |
| 44524 | Explain protein misfolding, and the deposition of misfolded proteins intra and extracellularly. | SPM MHD | 1322 | Memory, Aging and Dementia |
| 44525 | Name proteins that are misfolded in Alzheimer’s disease, and their intra/extracellular depositions; describe enzymes that processes Amyloid beta precursor protein (APP) normally (i.e. in nonamyloidogenic pathway) and in Alzheimer `s diseases (i.e. in amyloidogenic pathway). | SPM MHD | 1322 | Memory, Aging and Dementia |

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| 44527 | Identify the risk factors for lung carcinoma and correlate the incidence and mortality of lung cancer with patient age, sex, and environmental exposures. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44528 | List the four major histologic subtypes of lung carcinoma and identify the known or suspected etiologic factors, the patient groups most likely to be involved, the most likely location for the tumor to occur in the lung, and the clinical and radiologic findings associated with each. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44529 | Identify the steps in dedifferentiation for squamous cell carcinoma, to include the histologic changes seen and the genetic changes which occur. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44530 | Identify the common clinical presentation, pathologic findings, epidemiologic associations, and genetic alterations in small cell carcinoma of the lung. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44531 | Identify the most common genetic alterations seen in lung adenocarcinomas and correlate these alterations with the histologic appearance, clinical presentation of the patient, and potential treatment alternatives. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44532 | Correlate the most common clinical presentations of lung carcinoma, to include pulmonary metastases from other primaries, and paraneoplastic syndromes with the tumor type that usually causes these symptoms and identify the anatomic cause of the lesion. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44533 | Be able to identify the 'T stage' in the TNM staging system of a lung carcinoma, given the appropriate clinical, radiographic, and pathologic data. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44534 | Compare the clinical, pathologic, and radiologic findings of well differentiated neuroendocrine tumor (carcinoid) to those of bronchial hamartoma, which is in the differential diagnosis. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44535 | Recognize the gross and microscopic features of the nonepithelial pleural based and pleural neoplasms (mesothelioma, solitary fibrous tumor, inflammatory | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |

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| | myofibroblastic tumor) and compile a chart comparing their clinical presentations, histologic features, and genetic rearrangements. | | | |
| 44536 | Describe the clinical, gross, and microscopic features of the pulmonary hemorrhage syndromes and correlate their appearance with the appropriate clinical syndrome. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 44537 | Correlate the gross description, laboratory features, and cytologic appearance of pleural effusions with their etiology and their impact on the patient. | SPM CVR | 1207 | Pathology of Lung Tumors, Diffuse Pulmonary Hemorrhage Syndromes and Pleural Effusions |
| 47220 | Compare the characteristic features of Staphylococcus epidermidis and Staphylococcus aureus. | SPM IHD | 93 | Bacterial Wound Infections |
| 47221 | Describe the important characteristic features of Clostridium perfringens, Clostridium tetani and Clostridium botulinum. | SPM IHD | 93 | Bacterial Wound Infections |
| 48309 | Describe the features of Staphylococcus aureus that function as virulence factors, including their role in the pathogenesis of the diseases caused by this organism. | SPM IHD | 93 | Bacterial Wound Infections |
| 48310 | Recognize coagulase-negative Staphylococci as etiological agents in catheter and shunt infections as well as infections of implants and prosthetic devices. | SPM IHD | 93 | Bacterial Wound Infections |
| 48311 | Describe the common characteristics of the bacterial species that belong to the genus Clostridium including morphology, physiology and epidemiology. | SPM IHD | 93 | Bacterial Wound Infections |
| 48312 | Compare the virulence factors of Clostridium perfringens, Clostridium tetani and Clostridium botulinum | SPM IHD | 93 | Bacterial Wound Infections |
| 48313 | Explain the mechanism by which acute inflammation occurs, which cell types are involved, and how the symptoms of acute inflammation occur. | SPM IHD | 60 | Acute Inflammation |
| 48314 | Using a graph of time vs inflammatory response, identify the predominant features of the response and correlate these features with the clinical and histologic changes seen. | SPM IHD | 60 | Acute Inflammation |

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| 48315 | Be able to recognize PMN's and macrophages on H/E stained sections and understand their role in the acute inflammatory response and correlate the observed inflammatory cell type to the potential infecting agent. | SPM IHD | 60 | Acute Inflammation |
| 48316 | Using the scheme for the week and the prior faculty presentations in immunology and microbiology, correlate the stimuli of acute inflammation with the clinical presentation and etiology of sore throats. | SPM IHD | 60 | Acute Inflammation |
| 48317 | Explain how serous inflammation occurs at the vascular level and correlate the protein content and specific gravity of the fluid with transudate and exudate formation; explain the difference between edema and pus to include its gross and microscopic appearance and clinical presentation | SPM IHD | 60 | Acute Inflammation |
| 48318 | Identify examples of serosal surfaces, recognize the gross and microscopic appearance of fibrinous inflammation, and explain its clinical significance. | SPM IHD | 60 | Acute Inflammation |
| 48319 | Distinguish suppurative inflammation from fibrinous inflammation and abscesses; be able to recognize gross and microscopic features of each. | SPM IHD | 60 | Acute Inflammation |
| 48320 | Identify gross and microscopic examples of ulcers and recognize their clinical significance. | SPM IHD | 60 | Acute Inflammation |
| 48321 | Identify examples of lymphadenitis and lymphadenopathy and recognize their clinical presentations and significance. | SPM IHD | 60 | Acute Inflammation |
| 48322 | Recognize the potential outcomes of acute inflammation. | SPM IHD | 60 | Acute Inflammation |
| 48324 | Recognize and describe the characteristic skin manifestations of Staphylococcus aureus infection including folliculitis, furuncles, carbuncles, bullous impetigo and scalded-skin syndrome | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48326 | Recognize and describe the characteristic skin manifestations of Streptococcus pyogenes infection | SPM IMN | 177 | Skin manifestations of bacterial infections |

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| | including impetigo, cellulitis, necrotizing fasciitis and erysipelas | | | |
| 48328 | Recognize and describe the characteristic skin manifestations of scarlet fever, including strawberry tongue, caused by <i>Streptococcus pyogenes</i> | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48329 | Recognize and describe <i>Propionibacterium acnes</i> as the causative agent of acne | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48330 | Recognize and describe the skin manifestations of <i>Pseudomonas aeruginosa</i> infection | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48331 | Recognize and describe <i>Bacillus anthracis</i> as the causative agent of cutaneous anthrax, including its virulence factors | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48332 | Recognize and describe leprosy, including the skin lesions, causative organism and distinguishing characteristics | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48333 | Recognize and describe the cutaneous manifestations of systemic <i>Neisseria meningitis</i> , <i>Salmonella Typhi</i> and <i>Haemophilus influenzae</i> infections | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48334 | Recognize and describe the rashes that are prominent characteristics of tick-borne diseases in the U.S. (Lyme disease; Rocky Mountain spotted fever), including the causative agents | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48402 | Describe morphological characteristics of different brain stem sections | SPM CSS | 294 | Motor System and Brain Stem |
| 48403 | Define “rule of four” as a toll to identify parts of the brain stem that contain tracts/nerves that carry motor and sensory information from the body or from the head and cranial motor and sensory nuclei relevant to understanding deficits and lesions in the brain stem | SPM CSS | 294 | Motor System and Brain Stem |
| 48480 | Describe the pathogenesis, morphologic changes (gross and microscopic), clinical features, and diagnosis of Parkinson disease. | SPM CSS | 299 | Pathology of Movement Disorders |

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| 48481 | Describe the pathogenesis, morphologic changes (gross and microscopic), clinical features, and diagnosis of Huntington disease | SPM CSS | 299 | Pathology of Movement Disorders |
| 48482 | Describe the pathogenesis, clinical features, and diagnosis of Friedreich ataxia | SPM CSS | 299 | Pathology of Movement Disorders |
| 48483 | Describe the pathogenesis, clinical features, and diagnosis of ataxia telangiectasia | SPM CSS | 299 | Pathology of Movement Disorders |
| 48484 | Describe the pathogenesis, morphologic changes, clinical features, laboratory findings, and diagnosis of Wilson disease | SPM CSS | 299 | Pathology of Movement Disorders |
| 48498 | Define main structures in the CNS that constitute the "motor system" | SPM CSS | 32 | Motor and Sensory System |
| 48499 | Describe spinal organization of motor neurons, and structures involved in locomotion (central pattern generator in the spinal cord, brain stem centers and other motor control centers in the CNS, and sensory inputs). | SPM CSS | 32 | Motor and Sensory System |
| 48500 | Explain descending control of spinal motor neurons by the pyramidal (corticospinal) and extrapyramidal tracts | SPM CSS | 32 | Motor and Sensory System |
| 48501 | Describe the role of different motor cortex regions in regulating motor neurons/ motor behavior | SPM CSS | 32 | Motor and Sensory System |
| 48503 | Explain main symptoms of the upper motor neuron dysfunction and compare it with the lower motor neuron syndrome; assess impairments in combined lesions (e.g. in ALS or in spinal hemisection) | SPM CSS | 32 | Motor and Sensory System |
| 48504 | Describe lower and upper motor neuron lesions in the brain stem caused by the damage to the facial nerve or the corticobulbar tract | SPM CSS | 32 | Motor and Sensory System |
| 48505 | Describe main functions of the Cerebellum and main components of the cerebellar efferents | SPM CSS | 286 | Motor System and Cerebellum |
| 48506 | Identify main targets of cerebellar efferents | SPM CSS | 286 | Motor System and Cerebellum |

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| 48507 | Describe cerebellar afferents and their role in the processing of information in the Cerebellum; define main transmitters (inhibitory, excitatory) in cerebellar circuitry | SPM CSS | 286 | Motor System and Cerebellum |
| 48508 | Explain the role of Purkinje cells in initiation and cessation of movements | SPM CSS | 286 | Motor System and Cerebellum |
| 48509 | Define common characteristics of all cerebellar lesions | SPM CSS | 286 | Motor System and Cerebellum |
| 48510 | Explain why cerebellar control of movement is always ipsilateral | SPM CSS | 286 | Motor System and Cerebellum |
| 48511 | Describe vermal and hemispheric lesions by using the knowledge of the cerebellar somatotopy and basic cerebellar circuitry | SPM CSS | 286 | Motor System and Cerebellum |
| 48518 | Define and recognize clinical examples of the following adaptive cellular responses: hypertrophy, hyperplasia, atrophy, and metaplasia. | SPM IHD | 22 | Introduction to Pathology |
| 48519 | List the basic etiologies of cellular injury and identify the most common in the United States. | SPM IHD | 22 | Introduction to Pathology |
| 48520 | Describe the histomorphologic and ultrastructural findings associated with reversible and irreversible cell injury and recognize their clinical significance. | SPM IHD | 22 | Introduction to Pathology |
| 48521 | Define necrosis and apoptosis. | SPM IHD | 22 | Introduction to Pathology |
| 48522 | Identify the distinctive gross patterns of necrosis, and describe the histomorphologic features of necrotic cells. | SPM IHD | 22 | Introduction to Pathology |
| 48523 | Describe the mechanisms of apoptosis. | SPM IHD | 22 | Introduction to Pathology |
| 48524 | Describe dystrophic and metastatic calcification. | SPM IHD | 22 | Introduction to Pathology |
| 48546 | Compare the clinical features and associated lesion of neurofibromatosis 1 and 2 syndrome | SPM CSS | 312 | Pathology of Headache |
| 48547 | Neuroanatomy Lectures 2 lectures:-To overview neuroanatomy through clinical cases-To have a better understanding of localization in neurology. | Clinical Neurosciences | 904 | Neuroanatomy |

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| 48549 | Describe where and how microorganisms enter the body and exit the body, including modes of transmission from one host to another. | SPM IHD | 52 | Strep Throat |
| 48550 | Define the term bacterial virulence factor and provide examples of virulence factors that contribute to the entry of bacterial pathogens into the host, adherence to host cells, invasiveness, and tissue destruction. | SPM IHD | 52 | Strep Throat |
| 48552 | List four of the most common bacterial agents that cause sore throat/rhinorrhea. | SPM IHD | 52 | Strep Throat |
| 48556 | Briefly describe each of the following syndromes associated with Streptococcus pyogenes: Acute pharyngitis, impetigo, erysipelas, puerperal sepsis, invasive group A Streptococcal disease (Necrotizing fasciitis), Scarlet fever, acute rheumatic fever, acute glomerulonephritis, Streptococcal toxic shock syndrome. | SPM IHD | 52 | Strep Throat |
| 48755 | Building on your understanding of signal transduction processes within rod cells that underlie vision, explain the biochemical basis of (i) visual disturbances in patients undergoing pharmacotherapy for erectile dysfunction; (ii) night blindness and xerophthalmia in vitamin A deficiency; and (iii) retinitis pigmentosa associated with rhodopsin mutants. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 48756 | Describe the following lysosomal storage diseases in terms of general classification, biochemical defect, accumulated substrate, mode of inheritance and clinical presentation: Fabry disease, Gaucher Disease, Krabbe Disease, Metachromatic Leukodystrophy, Niemann-Pick Disease, Sandhoff Disease, Tay-Sachs Disease. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 48768 | Correlate the histology of the liver with the liver enzymes that test the function of hepatocytes and bile ducts and correlate the lab values with clinical diagnoses of jaundice, icterus, cholestasis, and cholestatic jaundice. | SPM GIS | 140 | Pathology of Liver Diseases |

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| 48769 | Describe expected histologic findings in adult cholestasis; correlate these findings with their causes (bile duct obstruction, sepsis, and primary hepatolithiasis). | SPM GIS | 140 | Pathology of Liver Diseases |
| 48770 | Describe expected histologic findings in neonatal cholestasis; correlate these findings with their causes (biliary atresia and neonatal hepatitis). | SPM GIS | 140 | Pathology of Liver Diseases |
| 48771 | Identify histologic and gross findings in the following conditions and correlate the clinical findings with the causes: steatosis, NASH, toxic hepatitis, autoimmune hepatitis, acute hepatitis, chronic hepatitis, liver failure, and cirrhosis. | SPM GIS | 140 | Pathology of Liver Diseases |
| 48772 | Correlate bilirubin metabolism in the liver with the causes of hyperbilirubinemia and be able to identify treatable causes, benign or insignificant causes, and fatal causes as well as potential treatment options. | SPM GIS | 140 | Pathology of Liver Diseases |
| 48773 | Identify the defects in metabolic liver diseases (945;8321; antitrypsin deficiency, Wilson’s disease, hemochromatosis); correlate with biochemical lesions and recognize significant clinical findings and gross and microscopic findings. | SPM GIS | 140 | Pathology of Liver Diseases |
| 48774 | Correlate microbiologic findings in viral hepatitis (viral genome type, serologic findings, clinical presentation) with the observed gross and microscopic findings and correlate these with the eventual clinical outcome of the disease | SPM GIS | 140 | Pathology of Liver Diseases |
| 48775 | Recognize clinical presentations of hepatic circulatory disorders and correlate the presentation with the location of the lesion, and its gross and microscopic appearance. | SPM GIS | 140 | Pathology of Liver Diseases |
| 48776 | Identify the following hepatic mass lesions based on clinical history, clinical presentation, gross and microscopic appearance, and significant molecular pathology, if any. (focal nodular hyperplasia, nodular regenerative hyperplasia, cavernous hemangioma, | SPM GIS | 140 | Pathology of Liver Diseases |

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| | hepatocellular adenoma, hepatocellular carcinoma, cholangiocarcinoma, and metastatic disease). | | | |
| 48850 | Describe the bacteria and fungi most commonly associated with chronic monoarticular joint pain | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48922 | Recognize clinical settings that might predispose to fungal infections and correlate the type of fungus with the location (cutaneous, subcutaneous, deep, or opportunistic) and identify appropriate specimens to submit for identification. | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |
| 48923 | Recognize the following terms as they relate to fungi and the laboratory diagnosis of fungal infection: mold, yeast, septate hyphae, aseptate hyphae, pseudohyphae, budding, germ tube, dermatophyte, mucormycosis, zygomycosis, spherule, endospore, phaeohyphomycosis, hyaline fungi, saprobe, dimorphic, opportunist, deep, superficial, subcutaneous, onychomycosis, chromomycosis, mycetoma. | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |
| 48924 | Correlate the gross and microscopic appearance of fungi with the appropriate stain for identification and the appropriate culture medium and special additives (olive oil, cycloheximide), if needed. | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |
| 48925 | Be able to identify the dimorphic fungi (<i>Sporothrix schenckii</i> , <i>Blastomyces dermatidis</i> , <i>Histoplasma capsulatum</i> , <i>Paracoccidioides brasiliensis</i> , <i>Coccidioides immitis</i>) and explain the clinical significance of these organisms, their epidemiology, stains useful for identification in tissue, appropriate specimens to submit for culture, appropriate culture media, and serologic tests, if available. | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |
| 48926 | Be able to identify the dermatophyte genera (<i>Trichophyton</i> sp., <i>Microsporum</i> sp., and <i>Epidermophyton</i> sp.) and <i>Malassezia furfur</i> and explain the clinical significance of these organisms, their epidemiology, stains useful for identification in tissue, appropriate | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |

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| | specimens to submit for culture, and appropriate culture media. | | | |
| 48927 | Be able to identify the subcutaneous fungi (Sporotrichosis, chromoblastomycosis, and mycetoma) and explain the clinical significance of these organisms, their epidemiology, stains useful for identification in tissue, appropriate specimens to submit for culture, and appropriate culture media. | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |
| 48928 | Be able to identify the opportunistic fungi (Candida sp., Cryptococcus neoformans, Pneumocystis jirovecii, Aspergillus sp., and Zygomycetes) and explain the clinical significance of these organisms, their epidemiology, stains useful for identification in tissue, appropriate specimens to submit for culture, and appropriate culture media. | SPM IMN | 192 | Fungal Infections of the Skin, Hair, and Nails |
| 48942 | Compare and describe the pathogenesis, clinical features, morphology (gross and microscopic if any) and treatment of gout and pseudogout. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48943 | Describe the etiology, clinical features, risk factors, pathologic findings (laboratory and microscopic) and treatment of suppurative arthritis. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48944 | Differentiate between rheumatoid arthritis and Juvenile rheumatoid arthritis and describe the clinical features, morphologic findings and treatment of rheumatoid arthritis. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48945 | Describe the characteristic findings of systemic lupus erythematosus related arthritis and its associated clinical features. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48946 | Describe seronegative spondyloarthritis and discuss its various types along with their characteristic etiology(if any), pathogenesis(if any) and clinical findings. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48947 | Describe the pathogenesis, different types, clinical features, morphologic findings and treatment of osteoarthritis. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |

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| 48948 | Describe different types of joint tumors and tumor like conditions and discuss the characteristic findings of ganglion and synovial cyst. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48949 | Describe the etiology, clinical, pathologic, and diagnostic findings of Tuberculous and Lyme’s arthritis | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48950 | Describe the etiology, clinical features and diagnostic findings of viral arthritis including the arthritis caused by Chikungunya virus. | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 49016 | Discuss the benign and malignant tumors of adipose tissue(lipoma and liposarcoma) and be able to differentiate between them based on the clinical features and morphologic findings (gross and microscopic) | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49017 | Discuss the benign and malignant tumor of fibrous connective tissue and differentiate between scar, hypertrophic scar and keloid. Describe nodular fasciitis, fibromatosis, fibrosarcoma and discuss their clinical features , morphologic findings (gross and microscopic) and treatment. | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49018 | Discuss the benign and malignant tumors of fibrohistiocytic origin and be able to differentiate between them based on the clinical features and morphologic findings (gross and microscopic). | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49019 | Discuss benign and malignant tumors of smooth muscle origin (leiomyoma and leiomyosarcoma) and be able to differentiate between them based on the clinical features and morphologic findings (gross and microscopic). | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49020 | Discuss benign and malignant tumors of vascular origin and be able to differentiate between hemangioma, Kaposi sarcoma and angiosarcoma based on the clinical features and morphologic findings (gross and microscopic). | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |

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| 49021 | Describe synovial sarcoma and discuss its clinical features and morphologic findings (gross and microscopic). | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49022 | Describe bone forming tumors (osteoma, osteoid osteoma, osteoblastoma and osteosarcoma) and distinguish between these entities with respect to clinical presentation, radiology, and microscopy findings. | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49023 | Describe cartilage forming tumors (osteochondroma, chondroma and chondrosarcoma) and distinguish between these entities with respect to clinical presentation, radiology, and microscopy findings. | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49024 | Describe fibrous and fibro-osseous bone tumors (fibrous cortical defect, non-ossifying fibroma, and fibrous dysplasia) and distinguish between these entities with respect to clinical presentation, radiology, and microscopy findings. | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49025 | Describe Ewing’s sarcoma/Primitive neuroectodermal tumor, giant cell tumor of bone and metastatic bone tumors and describe their pertinent clinical, radiologic and morphologic findings. | SPM IMN | 225 | Musculoskeletal Lumps and Masses Parts I and II |
| 49026 | Describe the nomenclature of neoplasms | SPM IHD | 97 | Introduction to Neoplasia |
| 49027 | Describe the general anatomic and histologic features used to differentiate benign from malignant neoplasms | SPM IHD | 97 | Introduction to Neoplasia |
| 49028 | Describe the epidemiology of cancer including age, environmental factors, acquired predisposing conditions, and the interaction between environmental factors and genetic predisposition | SPM IHD | 97 | Introduction to Neoplasia |
| 49031 | Describe the three main classes of carcinogenic agents | SPM IHD | 97 | Introduction to Neoplasia |
| 49032 | Describe the effects of cancer on the host, grading and staging of cancer, and laboratory diagnosis of cancer | SPM IHD | 97 | Introduction to Neoplasia |

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| 49033 | Identify the major anatomic components of human motor control. Describe how lesions to these structures affect movement | SPM IMN | 252 | Motor Pathways |
| 49034 | Describe spinal organization of motor neurons | SPM IMN | 252 | Motor Pathways |
| 49036 | Describe the course of the pyramidal/corticospinal tract, its components, and its role in voluntary movement. Apply this knowledge in clinical localization | SPM IMN | 252 | Motor Pathways |
| 49037 | Define "upper motor neuron/UMN" and "lower motor neuron/LMN", describe the signs of LMN lesions. Apply these concepts in clinical localization | SPM IMN | 252 | Motor Pathways |
| 49038 | Describe the course of the corticobulbar/corticospinal tract in relation to the corticospinal tract, and its innervation of the motor cranial nerve nuclei. Apply these concepts in clinical localization | SPM IMN | 252 | Motor Pathways |
| 49039 | List and anatomically identify the 12 cranial nerves, describe the major functions of each. | SPM IMN | 252 | Motor Pathways |
| 49040 | Recognize and explain the anatomical basis of the following spinal cord syndromes: transection, hemisection, central cord, anterior spinal artery | SPM IMN | 252 | Motor Pathways |
| 49120 | Describe the aspects of HIV transmission, development of immune deficiency, diagnosis, and diseases/opportunistic infections characteristic of AIDS in children | SPM MHD | 1261 | Childhood Immune Deficiency |
| 49121 | Define and describe components of the sexual history which includes an accepting and affirming environment by not assuming sexual orientation or gender identity (LGBTQ) and normal human sexual response. | SPM REP | 450 | Sexual History and Sexual Dysfunction |
| 49122 | Define, distinguish and correctly apply the common medical terms used to describe and identify the various sexual dysfunctions, paraphilias and gender dysphoria. | SPM REP | 450 | Sexual History and Sexual Dysfunction |
| 49126 | | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |

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| | Demonstrate the origins of the piriformis and obturator internus muscles and describe two specializations of the obturator fascia. | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 49133 | Describe neonatal conjunctivitis and the pathogens that are commonly associated with this disease including Chlamydia trachomatis and Neisseria gonorrhoea | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49134 | Describe neonatal bacterial sepsis and the commonly associated microorganisms | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49135 | Describe neonatal pneumonia and the commonly associated microorganisms | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49136 | Describe the pathogenesis, epidemiology, laboratory detection and prevention of Respiratory Syncytial Virus (RSV) infection in neonates, including the general viral structure | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49137 | Describe the role of enteroviruses in severe neonatal infections including their transmission and general viral structure | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49138 | Describe the symptoms and physical findings in patients with ovarian lesions. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 49139 | Describe the symptoms and physical findings in patients with Tubal lesions. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 49141 | List and interpret clinical and laboratory findings which are key to the exclusion, differentiation and diagnosis of the anovulatory causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 49142 | List and interpret clinical and laboratory findings which are key to the exclusion, differentiation and diagnosis of the cervical causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 49143 | List and interpret clinical and laboratory findings which are key in the processes of exclusion, differentiation and diagnosis of the ovarian or tubal causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |

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| 49149 | Describe important features of immunity of the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49150 | Differentiate immunity of the upper and lower female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49151 | Discuss innate immune responses within the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49152 | Discuss adaptive immune responses within the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49153 | Describe effects of cyclic hormonal changes on immunity of the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49154 | Describe effects of pregnancy on immunity of the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49164 | Describe structures that form the forebrain and Diencephalon. | SPM MHD | 1285 | Introduction to Psychiatric Neuroscience |
| 49165 | Define, three types of cortical white matter fibers, and resultant lateralization. Describe: Cortical gyri/sulci, cellular organization of the cerebral cortex, data on the relevance of cortical thickness to intellect. | SPM MHD | 1285 | Introduction to Psychiatric Neuroscience |
| 49166 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the substance use disorders. | SPM MHD | 1306 | Integration Session |
| 49167 | Identify the following surface features: five lobes (frontal, parietal, occipital, temporal and insula); primary motor area; primary sensory areas (somatic, visual and auditory); motor association area; sensory association areas; prefrontal cortex (lateral, medial and orbitofrontal regions); and uncus | SPM MHD | 1286 | Psychiatric Neuroanatomy |
| | | SPM MHD | 1290 | Neuroscience of Mood Disorders |
| 49168 | Identify the following internal features: cerebral cortex; cerebral white matter (association, commissural and projection fibers); thalamus and hypothalamus; basal | SPM MHD | 1286 | Psychiatric Neuroanatomy |
| | | | 1290 | Neuroscience of Mood Disorders |

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| | nuclei, including nucleus accumbens, the striatum consisting of caudate nucleus and lentiform nucleus (putamen and globus pallidus) | | | |
| 49169 | Identify the following components of the limbic system: hippocampus, mammillary bodies, amygdala, parahippocampal gyrus, and cingulate gyri | SPM MHD | 1286 | Psychiatric Neuroanatomy |
| | | | 1290 | Neuroscience of Mood Disorders |
| 49192 | Recognize Dr. Kubler-Ross 5 stages of grief. | SPM MHD | 1321 | Grief |
| 49193 | Be familiar with common and uncommon reactions to grief. | SPM MHD | 1321 | Grief |
| 49194 | Understand the difference between grief and trauma reactions. | SPM MHD | 1321 | Grief |
| 49195 | Become familiar with the grief recovery process and brief interventions. | SPM MHD | 1321 | Grief |
| 49216 | Please refer to Pathology of Lung session for objectives | SPM CVR | 1206 | Pleural Effusions |
| 49403 | Explain the role of the immune system in “allergic” contact dermatitis | SPM IMN | 185 | Immune Responses of the Skin |
| 49405 | Summarize the steps in the immune response in contact dermatitis | SPM IMN | 185 | Immune Responses of the Skin |
| 49406 | Relate the immune mechanism with the pathogenesis, morphologic and histologic findings in contact dermatitis | SPM IMN | 185 | Immune Responses of the Skin |
| 49703 | Define and differentiate between dementia and delirium. | Clinical Neurosciences | 935 | Dementia - Neuro |
| 49892 | Create a presentation of their cadaver’s case appropriate for an audience of their peers and faculty. | PICE | 1444 | Tankside Grand Rounds |
| 49895 | Clearly explain the relevant basic science content supporting their findings. | PICE | 1444 | Tankside Grand Rounds |
| 49896 | Defend the group’s conclusions about the case. | PICE | 1444 | Tankside Grand Rounds |
| 49901 | Describe the main superficial neurovascular structures of the lower limb | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |

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| 49902 | Describe the compartments of the lower limb and their boundaries | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49903 | Describe source, location, and branches of the neurovascular components of the anterior and medial thigh | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49904 | Describe the muscles of the anterior and medial thigh, including their neurovascular supply and actions | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49907 | Describe the important bony and ligamentous features of the hip and posterior thigh | SPM IMN | 731 | Pre-Lab - Hip and Posterior Thigh - Team B |
| | | | 1439 | Pre-Lab - Hip and Posterior Thigh - Teams A and B |
| 49908 | Describe the muscles of the hip and posterior thigh, including their actions and innervations | SPM IMN | 731 | Pre-Lab - Hip and Posterior Thigh - Team B |
| | | | 1439 | Pre-Lab - Hip and Posterior Thigh - Teams A and B |
| 49909 | Describe the neurovascular structures of the hip and posterior thigh | SPM IMN | 731 | Pre-Lab - Hip and Posterior Thigh - Team B |
| | | | 1439 | Pre-Lab - Hip and Posterior Thigh - Teams A and B |
| 49910 | Describe the muscles of the leg and foot, including their actions and innervations | SPM IMN | 203 | Pre-Lab - Leg and Foot - Team A |
| | | | 1435 | Pre-Lab - Leg and Foot - Teams A and B |
| 49911 | Describe the neurovascular structures of the leg and foot | SPM IMN | 203 | Pre-Lab - Leg and Foot - Team A |
| | | | 1435 | Pre-Lab - Leg and Foot - Teams A and B |
| 49912 | Describe the features of the bones, ligaments, and fascia of the leg and foot | SPM IMN | 203 | Pre-Lab - Leg and Foot - Team A |
| | | | 1435 | Pre-Lab - Leg and Foot - Teams A and B |
| 49913 | Describe the compartments of the leg and foot | SPM IMN | 203 | Pre-Lab - Leg and Foot - Team A |

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| | | | 1435 | Pre-Lab - Leg and Foot - Teams A and B |
| 49914 | Describe the classification of joints and give examples of each type | SPM IMN | 209 | Pre-Lab - Joints |
| 49915 | Describe the general structure of each type of joint | SPM IMN | 209 | Pre-Lab - Joints |
| 49916 | Describe the movements of the various types of joints | SPM IMN | 209 | Pre-Lab - Joints |
| 49917 | Describe the bony, cartilagenous, ligamentous and membranous components of the joints of the back and limbs | SPM IMN | 209 | Pre-Lab - Joints |
| 49918 | Describe the neurovascular supply of the joints of the back and limbs | SPM IMN | 209 | Pre-Lab - Joints |
| 49919 | Identify and describe the superficial veins and cutaneous nerves of the upper limb. | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |
| | | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49920 | Describe the general gross features of the breast, and its neurovascular supply and lymphatic drainage. | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |
| | | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49921 | Identify the muscles and fascia of the pectoral region, posterior shoulder, and arm, and their action and neurovascular supply. | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |
| | | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49922 | Describe the major lymphatic node groups of the axilla. | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |
| | | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49923 | Describe the brachial plexus, including its parts and branches, and their functions, and be able to correlate | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |

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| | functional and cutaneous losses with injury to any portion or branch. | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49924 | Identify the major blood vessels supplying the pectoral region, posterior shoulder, and arm. | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |
| | | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49925 | Identify the bony and ligamentous features of the pectoral region, posterior shoulder, arm, and proximal forearm. | SPM IMN | 221 | Pre-Lab - Shoulder, Axilla, and Arm - Team B |
| | | | 1436 | Pre-Lab - Shoulder, Axilla, and Arm - Teams A and B |
| 49926 | Identify the prominent bony and ligamentous features of the distal arm, forearm, and hand. | SPM IMN | 223 | Pre-Lab - Forearm |
| 49927 | Identify the muscles of the forearm, including their actions and neurovascular supply. | SPM IMN | 223 | Pre-Lab - Forearm |
| 49928 | Identify the pattern of neurovascular structures in the forearm. | SPM IMN | 223 | Pre-Lab - Forearm |
| 49929 | Describe the usual pattern of the neurovascular components of the hand. | SPM IMN | 236 | Pre-Lab - Hand - Team B |
| | | | 1437 | Pre-Lab - Hand - Teams A and B |
| 49930 | Describe the tendons, bursae, and intrinsic muscles of the hand. | SPM IMN | 236 | Pre-Lab - Hand - Team B |
| | | | 1437 | Pre-Lab - Hand - Teams A and B |
| 49931 | Identify the prominent bony features of the hand. | SPM IMN | 236 | Pre-Lab - Hand - Team B |
| | | | 1437 | Pre-Lab - Hand - Teams A and B |
| 49932 | Define the compartments of the hand and the functional significance of each. | SPM IMN | 236 | Pre-Lab - Hand - Team B |
| | | | 1437 | Pre-Lab - Hand - Teams A and B |
| 49933 | Describe the movements of the digits of the hand. | SPM IMN | 236 | Pre-Lab - Hand - Team B |
| | | | 1437 | Pre-Lab - Hand - Teams A and B |
| 49934 | Identify the major gross features of the brain. | SPM IMN | 249 | Pre-Lab - Brain - Team A |

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| 49935 | Identify each of the 12 pairs of cranial nerves, on the brain and in the cranial fossae, and describe their primary function. | SPM IMN | 1438 | Pre-Lab - Brain - Teams A and B |
| | | | 249 | Pre-Lab - Brain - Team A |
| | | | 1438 | Pre-Lab - Brain - Teams A and B |
| 49936 | Identify the three cranial fossa and their associated major openings. | SPM IMN | 249 | Pre-Lab - Brain - Team A |
| | | | 1438 | Pre-Lab - Brain - Teams A and B |
| 49987 | List the most common causes of primary and secondary amenorrhea | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| 49988 | List the appropriate laboratory studies to evaluate primary and secondary amenorrhea. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| 49989 | List the indications for chromosome analysis in patients presenting with amenorrhea. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| 49990 | Name the drugs which may cause amenorrhea. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| 49991 | Define primary and secondary amenorrhea. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| 49999 | List the most common non-gynecologic of acute and chronic pelvic pain | SPM REP | 469 | SCHEME - Pelvic Pain |

KP2.2: Apply established and emerging foundational/basic science principles to health care.

| Objective Id | Objective | Course Title | Session Id | Session Title |
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| 340 | Recognize the major components of nucleotides, and describe how they are linked to form a nucleic acid. | SPM IHD | 12 | Molecules and Cells II |
| 341 | Describe the structure of DNA, and know the forces that stabilize it. | SPM IHD | 12 | Molecules and Cells II |
| 342 | Explain how DNA is packaged into chromatin and higher order of condensation structures. | SPM IHD | 12 | Molecules and Cells II |

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| 344 | Diagram a gene, including coding regions, non-coding regulatory regions, introns, exons, and splicing sequences. | SPM IHD | 12 | Molecules and Cells II |
| 577 | Describe the general properties of amino acids. | SPM IHD | 12 | Molecules and Cells II |
| 578 | Classify amino acids according to the chemical properties of the side chains. | SPM IHD | 12 | Molecules and Cells II |
| 579 | Explain the meaning of the terms pKa and pI as they apply to amino acids and proteins. | SPM IHD | 21 | The Lives of a Cell |
| 582 | Describe the common amino acid modifications that occur in the human body. | SPM IHD | 12 | Molecules and Cells II |
| 584 | Describe the process by which DNA is replicated, including the direction of chain growth. | SPM IHD | 21 | The Lives of a Cell |
| 585 | Explain the roles of DNA polymerases, DNA primase, Okazaki fragments, DNA ligase, helicase, single-strand binding protein, and topoisomerases in DNA replication. | SPM IHD | 21 | The Lives of a Cell |
| 586 | Describe the role of telomerase in DNA replication. | SPM IHD | 21 | The Lives of a Cell |
| 590 | Describe the steps in transcription of a gene and processing of the primary transcript. | SPM IHD | 21 | The Lives of a Cell |
| 593 | Describe how changes in splicing can lead to changes in the protein encoded by an mRNA. | SPM IHD | 21 | The Lives of a Cell |
| 594 | Describe the organization and properties of the genetic code. | SPM IHD | 21 | The Lives of a Cell |
| 596 | Describe the role of enhancer, repressor and general DNA binding proteins in the tissue specific or developmental control of m RNA transcription. | SPM IHD | 21 | The Lives of a Cell |
| 597 | Be able to predict the effects on transcription of specific modifications of DNA, chromatin and histones. | SPM IHD | 21 | The Lives of a Cell |
| 598 | List the characteristics of RNAi and microRNA and explain how they interfere with translation | SPM IHD | 21 | The Lives of a Cell |

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| 655 | Compare T-dependent and T-independent antibody responses with respect to the nature of the antigen, the affinity and isotype of the antibody, and memory | SPM IHD | 98 | Immune Responses in Wound |
| 693 | Describe the process and rationale for desensitization as a therapy for allergy | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 701 | Know the basic mechanism of how cells divide | SPM GIS | 170 | Genetic Inheritance Part I |
| 702 | Know the different stages of the mitotic and meiotic cell cycle and the points at which critical genetic events, such as DNA synthesis, recombination, separation of homologs or sister chromatids, take place. | SPM GIS | 170 | Genetic Inheritance Part I |
| 703 | Compare and contrast the mitotic and meiotic cell cycle. | SPM GIS | 170 | Genetic Inheritance Part I |
| 706 | Define the term mutation. | SPM GIS | 170 | Genetic Inheritance Part I |
| 707 | Describe the types of mutations that can occur in a gene and the effect, if any, they have on the protein that is produced when the gene is expressed. | SPM GIS | 170 | Genetic Inheritance Part I |
| 880 | Describe three features of antigens that influence the choice between T cell tolerance and activation | SPM IMN | 184 | Control of Immune Responses |
| 885 | List four common examples of HLA-linked autoimmune diseases and the associated MHC allele(s) | SPM IMN | 184 | Control of Immune Responses |
| 886 | Describe two ways infections may play a role in the development of autoimmunity | SPM IMN | 184 | Control of Immune Responses |
| 919 | Distinguish and contrast bradykinetic, hyperkinetic and tremor-related movement disorders | SPM CSS | 296 | SCHEME - Movement Disorders |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 920 | Recall the classic motor manifestations of Parkinson's disease | SPM CSS | 296 | SCHEME - Movement Disorders |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 922 | Define myoclonus and identify the circumstances in which it may be encountered | SPM CSS | 296 | SCHEME - Movement Disorders |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 937 | Explain the terms "premutation" and "full mutation" in the context of trinucleotide repeat disease | SPM CSS | 302 | Trinucleotide Repeat Diseases/Huntington Disease |
| 938 | Explain how trinucleotide repeats expand | SPM CSS | 302 | Trinucleotide Repeat Diseases/Huntington Disease |

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| 940 | Describe the methods used to test for premutations and full mutations in families affected by trinucleotide repeats diseases | SPM CSS | 302 | Trinucleotide Repeat Diseases/Huntington Disease |
| 942 | Describe three potential mechanisms underlying the pathogenesis of trinucleotidediseases. | SPM CSS | 302 | Trinucleotide Repeat Diseases/Huntington Disease |
| 943 | Recognise tourette syndrome using the DSM-IV-R criteria | SPM CSS | 303 | Gilles de la Tourette Syndrome |
| 944 | Compare and contrast Tourette Syndrome with other disorders (Obsessive compulsive Disorder, Tardive Dyskinesia, Restless Legs Syndrome, Huntington) using clinical cases | SPM CSS | 303 | Gilles de la Tourette Syndrome |
| 964 | Be able to describe excitation-contraction coupling and the role of the transverse tubule (T-tubule), sarcoplasmic reticulum (SR), dihydropyridine and ryanodine receptors, and the relationship between calcium and ATP with troponin and tropomyosin in this process. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| | | | 257 | IMN Integrated Session |
| 965 | Be able to describe the relationship between actin, tropomyosin, and troponin in a relaxed and in a contracted muscle fiber and illustrate the relationship between the thick and thin filaments in a relaxed sarcomere and in a contracted sarcomere. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| | | | 257 | IMN Integrated Session |
| 966 | Be able to illustrate and explain the sarcomere length-tension relationship. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| | | | 257 | IMN Integrated Session |
| 967 | Describe the differences between isometric and isotonic contractions. | SPM IMN | 257 | IMN Integrated Session |
| 968 | Explain what is meant by slow and fast twitch skeletal muscles and give an example of each. | SPM IMN | 257 | IMN Integrated Session |
| 969 | Be able to explain tetanization of skeletal muscle. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| | | | 257 | IMN Integrated Session |
| 970 | Sketch a class 1, 2, and 3 biomechanical lever system in the human body and explain how muscle origin and insertion alter force development and the rate of movement in each. | SPM IMN | 257 | IMN Integrated Session |
| 971 | Be able to describe rigor mortis and the time course of events associated in this process. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| | | | 257 | IMN Integrated Session |
| 972 | | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |

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| | Be able to describe the neuromuscular junction and how it functions to produce a muscle contraction, as well as the effects of myasthenia gravis, botulinus toxin, curare, neostigmine, black willow spider venom, and hemicholinium on neuromuscular function. | | 257 | IMN Integrated Session |
| 973 | Describe the Henneman size principle of muscle recruitment and how it affects coordination of fine movement. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| | | | 257 | IMN Integrated Session |
| 974 | Describe the neuromuscular junction and how it functions to produce a muscle contraction. | SPM IMN | 257 | IMN Integrated Session |
| 975 | Describe the effects of botulinus toxin, curare, neostigmine, and hemicholinium on neuromuscular function. | SPM IMN | 257 | IMN Integrated Session |
| 976 | Describe the mechanisms that store, release, and reuptake calcium in skeletal muscle. | SPM IMN | 257 | IMN Integrated Session |
| 977 | Explain the events that can result in muscle hypertrophy and muscle atrophy. | SPM IMN | 257 | IMN Integrated Session |
| 978 | Explain the actions of curare and botulinum toxin and describe to effect of these compounds on muscle contraction. | SPM IMN | 257 | IMN Integrated Session |
| 979 | Describe excitation-contraction coupling and the role of the transverse tubule (T-tubule) and sarcoplasmic reticulum (SR) in this process and then describe the role of the dihydropyridine and ryanodine receptors in the process. | SPM IMN | 257 | IMN Integrated Session |
| 991 | Relate principles of impaired neurotransmission along the nigrostriatal pathway with therapeuticallyexploitable drug targets to manage Parkinson's disease | SPM CSS | 301 | Pharmacology of Movement Disorders |
| 992 | Rationalize the strategy for administering L-dopa rather than dopamine to correct a dopaminesynthesis deficit in the central nervous system, in combination with carbidopa, a drug that inhibits theconversion of L-dopa to dopamine | SPM CSS | 301 | Pharmacology of Movement Disorders |

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| 997 | Predict undesirable effects of dopaminergic drugs when used to treat Parkinson's disease, on other CNS processes (e.g., thought and perception) as well as unwanted peripheral effects on cardiovascular physiology | SPM CSS | 301 | Pharmacology of Movement Disorders |
| 998 | Explain why some antipsychotic agents have greater propensity than others to cause Parkinsonian (extrapyramidal) movement disorder that responds to anticholinergic agents | SPM CSS | 301 | Pharmacology of Movement Disorders |
| 1000 | Recall the common mechanisms and etiologies of deformity and limp | SPM IMN | 230 | Deformity and Limp Scheme Presentation |
| | | | 231 | Case Discussions of Limp |
| 1016 | Describe intramembraneous vs. endochondral bone formation | SPM IMN | 181 | Development of the Musculoskeletal System |
| 1029 | Describe the role of lateral plate mesoderm and somitic/paraxial mesoderm in the formation of the musculoskeletal system. | SPM IMN | 181 | Development of the Musculoskeletal System |
| 1033 | Define Hox genes and summarize their role in body pattern development and limb formation | SPM IMN | 181 | Development of the Musculoskeletal System |
| 1034 | Define a morphogen and list three examples involved in limb formation | SPM IMN | 181 | Development of the Musculoskeletal System |
| 1072 | Outline in detail the sequence of steps in the biosynthesis, post-translational modification and trafficking of collagen, including the synthesis, structure and function of crosslinks. | SPM IMN | 201 | Biochemistry of Collagen |
| 1073 | Relate the physicochemical properties of collagen modifications to collagen function. | SPM IMN | 201 | Biochemistry of Collagen |
| 1079 | Provide a detailed explanation for the genetic and biochemical basis of osteogenesis imperfecta (OI). | SPM IMN | 201 | Biochemistry of Collagen |
| 1080 | Explain the autosomal dominance of OI and use your biochemical understanding of collagen structure and function to rationalize the relative severity of different OI types. | SPM IMN | 201 | Biochemistry of Collagen |

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| 1099 | Define migraine headache and contrast the common presentations of migraine with those of tension headache | SPM CSS | 307 | SCHEME - Headache |
| | | | 318 | Headache & Seizure WCE |
| 1100 | Identify the pathophysiologic mechanisms that are specific to headache following head trauma | SPM CSS | 307 | SCHEME - Headache |
| | | | 318 | Headache & Seizure WCE |
| 1109 | Define the terms encephalitis, meningitis, and brain abscess and be able to identify gross or microscopic examples of each. | SPM CSS | 310 | Acute Meningitis |
| 1114 | Differentiate between four of the most common viral types known to cause meningitis (Enteroviruses, Arbovirus, Herpesvirus, Mumps virus) based on epidemiology, molecular characteristics, and the availability of immunoprophylaxis (vaccine). | SPM CSS | 310 | Acute Meningitis |
| 1115 | Compare the symptoms and severity of bacterial vs. viral meningitis. | SPM CSS | 310 | Acute Meningitis |
| 1116 | Describe what a Karyogram is, how it is prepared and how it is used for diagnosis | SPM IMN | 199 | Detection of Genetic Variation Part II |
| 1117 | Describe ways to identify chromosomes and distinguished them from one another | SPM IMN | 199 | Detection of Genetic Variation Part II |
| 1118 | Be familiar with the basic methods of molecular biology used in genetics including: PCR, DNA sequencing, Nucleic acid hybridization, and DNA cloning (use of restriction enzymes). | SPM IMN | 197 | Detection of Genetic Variations Part I/ Genetics of Bone Diseases |
| 1119 | Discuss the utility of PCR and be able to outline the general steps involved | SPM IMN | 197 | Detection of Genetic Variations Part I/ Genetics of Bone Diseases |
| 1120 | Explain how a microarray works and how it can be helpful in characterizing a disease | SPM IMN | 197 | Detection of Genetic Variations Part I/ Genetics of Bone Diseases |
| 1165 | Describe the developmental lineage of chondrocytes and osteoblasts. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1166 | List the major components of cartilage matrix. | SPM IMN | 196 | Structure and Function of Bone Tissue |

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| 1167 | Describe the chemical structure of aggrecans. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1168 | Describe the clonal nature of chondrocytes. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1169 | List the major steps in chondrogenesis. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1170 | Identify the 3 types of cartilage in light micrographs (LMs). | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1171 | Identify the perichondrium, chondrocytes and chondroblasts in hyaline cartilage in LMs. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1172 | List the functions and derivation of osteocytes, osteoclasts and osteoblasts, and list the hormones and factors that regulate these cell types. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1173 | Compare and contrast endochondral and intramembranous bone formation. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1174 | List the major components of bone matrix. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1175 | Define lacunae and other structural specializations of bone matrix. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1176 | Compare and contrast compact bone and immature or woven bone. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1177 | Identify the periosteum, canaliculi, lamellae, osteoblasts, osteocytes, osteoclasts, a Haversian system and a Volkmann's canal in LMs. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1178 | Identify the zones present within the epiphyseal plate and describe unique structural and functional features of chondrocytes within each zone. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1222 | List the common mechanisms and etiologies for seizures/spells/fits, epileptic seizures, and the epilepsies | SPM CSS | 308 | SCHEME - Seizure and Epilepsy |
| | | | 318 | Headache & Seizure WCE |
| 1224 | Distinguish between "primary"/"idiopathic" and "secondary"/"acquired" forms of epilepsy | SPM CSS | 308 | SCHEME - Seizure and Epilepsy |
| | | | 318 | Headache & Seizure WCE |

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| 1226 | Recall the basic clinical features that distinguish epileptic seizures due to epilepsy from other types of spells and attacks | SPM CSS | 308 | SCHEME - Seizure and Epilepsy |
| | | | 318 | Headache & Seizure WCE |
| 1227 | Identify the clinical conditions that may provoke epileptic seizures in patients without epilepsy (acute reactive epileptic seizures) | SPM CSS | 308 | SCHEME - Seizure and Epilepsy |
| | | | 318 | Headache & Seizure WCE |
| 1235 | Review the cellular mechanism of calcium transport including the roles of PTH and calcitonin. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1240 | Describe the interaction of hormones that control calcium and phosphate levels in the bone and plasma. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1241 | Explain the mechanisms responsible for the absorption of calcium from the gut. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1242 | Describe the distribution of calcium in the body and the mechanisms used to maintain calcium balance. | SPM IMN | 196 | Structure and Function of Bone Tissue |
| 1255 | Know that mitochondrial diseases can be caused by mutations of nuclear and mitochondrial DNA (mtDNA) | SPM CSS | 313 | Mitochondrial Diseases |
| 1256 | Provide an overview of the mtDNA characteristics (chromosome structure, copy number, coding genes etc) | SPM CSS | 313 | Mitochondrial Diseases |
| 1263 | Recognize the common mechanisms and etiologies of bone fractures and dislocations | SPM IMN | 195 | Bone Fractures Scheme Presentation |
| | | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 1264 | Identify the components of a "primary survey" in the evaluation of all injured patients | SPM IMN | 195 | Bone Fractures Scheme Presentation |
| | | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 1265 | Distinguish the injuries affecting joint stability: sprain, subluxation, dislocation, fracture dislocation | SPM IMN | 195 | Bone Fractures Scheme Presentation |
| | | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 1266 | | SPM IMN | 195 | Bone Fractures Scheme Presentation |

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| | Outline major types (based on loading mode), localizations, and potential complications of fractures | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 1267 | Formulate and prioritize the evaluation of the patient presenting with multiple trauma. | SPM IMN | 195 | Bone Fractures Scheme Presentation |
| | | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 1323 | Describe the Kirby Bauer test how it can be used to determine antibiotic susceptibility. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 1346 | Name the common mechanisms and etiologies for weakness | SPM IMN | 251 | Weakness and Loss of Motion Scheme Presentation |
| | | | 261 | Weakness WCE |
| 1347 | Describe the patterns of weakness associated with lesions affecting the major motor pathways throughout the segmental components of the nervous system (brain, brainstem, spinal cord, root, plexus, peripheral nerve, neuromuscular junction, muscle) | SPM IMN | 251 | Weakness and Loss of Motion Scheme Presentation |
| | | | 261 | Weakness WCE |
| 1348 | Identify and contrast the non-neurological causes of weakness | SPM IMN | 251 | Weakness and Loss of Motion Scheme Presentation |
| | | | 261 | Weakness WCE |
| 1442 | Define the following genetic terms; allele,genetic locus,pleiotropy, heterozygote, homozygote,hemizygote, allele and locus heterogeneity. | SPM IMN | 212 | Pedigree Analysis |
| 1443 | Recognize and track disease alleles in distinctive pedigree patterns associated with autosomal dominant, autosomal recessive, X-linked dominant and X-linked recessive inheritance. | SPM IMN | 212 | Pedigree Analysis |
| 1444 | Recognize obligate carrier in a pedigree | SPM IMN | 212 | Pedigree Analysis |
| 1445 | Determine risk assesment in a pedigree assuming when necessary that outsiders are homozygous normal or | SPM IMN | 247 | Recurrent Risks for Mendelian Disorders |

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| | that outsiders have the same carrier frequency than the population | | | |
| 1446 | Explain how penetrance and expressivity affect pedigree patterns | SPM IMN | 212 | Pedigree Analysis |
| 1542 | Compare the two types of poliovirus vaccine in terms of advantages and drawbacks, administration and composition. | SPM IMN | 255 | Microbiology of Weakness |
| 1609 | Explain why atropine minimizes adverse effects without compromising the therapeutic effects of an acetylcholinesterase inhibitor in treatment of myasthenia gravis | SPM IMN | 260 | Neuromuscular Pharmacology |
| 1610 | Differentiate how depolarizing and non-depolarizing neuromuscular agents produce paralysis of skeletal muscles by virtually opposite mechanisms. | SPM IMN | 260 | Neuromuscular Pharmacology |
| 1611 | Explain why indirect cholinergic drugs can reverse the effects of nondepolarizing neuromuscular blockers, but intensify the skeletal muscle paralyzing effects of succinylcholine | SPM IMN | 260 | Neuromuscular Pharmacology |
| 1630 | Describe the different levels of protein structure. | SPM IHD | 21 | The Lives of a Cell |
| 1632 | Discriminate between globular and fibrous proteins. | SPM IHD | 21 | The Lives of a Cell |
| 1697 | Define stroke | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1699 | Identify the common mechanisms and etiologies of stroke | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1700 | Outline the functional relationships of the major cortical areas responsible for language | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1701 | Identify the predominate patterns of functional impairment related to ischemic strokes involving the major vascular territories of the brain | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1702 | | SPM CSS | 319 | SCHEME - Stroke - Aphasia |

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| | Distinguish between brain and brainstem patterns of impairment due to stroke | | 324 | Stroke and Aphasia WCE |
| 1703 | Formulate the immediate diagnostic assessment for an adult presenting with stroke | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1704 | Identify candidates for intravenous thrombolytic treatment for acute stroke | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1705 | Recall the distinctive clinical and anatomic features of lacunar infarction | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1706 | List the modifiable and non-modifiable risk factors for stroke in adulthood | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 1781 | Describe the role of CD4+ T cells, macrophages, B cells, and TNF-alpha in the pathogenesis of rheumatoid arthritis (RA) | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1782 | Define rheumatoid factor | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1784 | Describe and compare the serology, immune mechanisms, etiology and therapy for RA and juvenile idiopathic arthritis (JIA) | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1785 | Identify the HLA allele that is strongly associated with ankylosing spondylitis | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1786 | Describe the possible role of the immune system in the pathogenesis of ankylosing spondylitis | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1787 | Describe the immunologic features, etiology, immunopathogenesis, diagnosis and treatment of systemic lupus erythematosus (SLE) | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1788 | Explain the role of complement deficiencies and impaired clearance of apoptotic cells in SLE | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |

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| 1789 | Classify RA and SLE in terms of the type of hypersensitivity (Type II, III or IV) that best exemplifies the disease | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 1922 | Define genomic imprinting and describe its effect on gene expression | SPM IMN | 212 | Pedigree Analysis |
| 1923 | Explain how imprinting can be involved in human genetic diseases | SPM IMN | 212 | Pedigree Analysis |
| 1925 | Explain how mosaicism and new mutation can account for unusual inheritance pattern | SPM IMN | 212 | Pedigree Analysis |
| 2025 | Define and distinguish neoplastic and non-neoplastic mechanisms of lump/mass formation | SPM IMN | 224 | Musculoskeletal Lumps and Masses Scheme Presentation |
| | | | 237 | Musculoskeletal Lumps and Masses WCE |
| 2026 | Define abscess and describe how inflammation produces lumps and masses | SPM IMN | 224 | Musculoskeletal Lumps and Masses Scheme Presentation |
| | | | 237 | Musculoskeletal Lumps and Masses WCE |
| 2034 | List the common mechanisms and etiologies of joint pain | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |
| 2035 | Identify the most common organisms responsible for infectious arthritis | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |
| 2036 | Recognize the clinical features that suggest arthritis due to systemic disorders | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |
| 2037 | Describe the clinical features that often distinguish osteoarthritis from inflammatory arthritis (and, more specifically, rheumatoid arthritis) | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |
| 2038 | Outline the common crystal-associated arthropathies and the laboratory tests used to distinguish these diagnoses | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |
| 2041 | List the common mechanisms and etiologies of numbness | SPM IMN | 240 | Numbness and Tingling Scheme Presentation |

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| | | | 250 | Numbness and Pain WCE |
| 2042 | Describe the patterns of numbness associated with lesions affecting the major sensory pathways throughout the segmental components of the nervous system (brain, brainstem, spinal cord, root, plexus, peripheral nerve) | SPM IMN | 240 | Numbness and Tingling Scheme Presentation |
| | | | 250 | Numbness and Pain WCE |
| 2043 | Formulate the diagnostic evaluation of an adult presenting with indolent progressive distal symmetric numbness and tingling | SPM IMN | 240 | Numbness and Tingling Scheme Presentation |
| | | | 250 | Numbness and Pain WCE |
| 2044 | Identify the distinguishing clinical features of entrapment neuropathy | SPM IMN | 240 | Numbness and Tingling Scheme Presentation |
| | | | 250 | Numbness and Pain WCE |
| 2047 | Know the basic physiological and anatomical factors required for gait | SPM CSS | 283 | SCHEME - Gait Disturbances |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 2048 | Recall the essential diagnostic components of the clinical history in a patient presenting with a gait disturbance | SPM CSS | 283 | SCHEME - Gait Disturbances |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 2049 | Identify the distinguishing clinical features of gait disturbances due to sensory ataxia and cerebellar ataxia | SPM CSS | 283 | SCHEME - Gait Disturbances |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 2050 | Outline the effects of spasticity on gait and recall the different types of spastic gait | SPM CSS | 283 | SCHEME - Gait Disturbances |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 2246 | Describe the family Rhabdoviridae in terms of family members, morphology, structure, genomic architecture and replication. | SPM CSS | 329 | Encephalitis |
| 2248 | Describe the 'pros and cons' of five methods used to diagnose rabies including the hallmark diagnostic finding. | SPM CSS | 329 | Encephalitis |

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| 2249 | Differentiate between the clinical manifestations of the prodromal phase and the neurologic phase of rabies virus infection. | SPM CSS | 329 | Encephalitis |
| 2250 | Explain the mechanism used by the rabies virus to evade the immune system. | SPM CSS | 329 | Encephalitis |
| 2251 | Outline the progression of the rabies disease in humans including symptoms, timing, viral load, and immunologic status. | SPM CSS | 329 | Encephalitis |
| 2252 | Classify the JC-virus in terms of the characteristics shared by the viral family to which it belongs. | SPM CSS | 329 | Encephalitis |
| 2253 | Describe the clinical syndrome (PML) produced by the JC-virus and the pathogenesis of this virus. | SPM CSS | 329 | Encephalitis |
| 2254 | Compare the frequency of JC-virus dissemination to the frequency of progressive multifocal leukoencephalopathy and explain the discrepancy. | SPM CSS | 329 | Encephalitis |
| 2287 | Differentiate between selected members of genus Streptococcus based on the results of biochemical tests and cultures grown on differential and selective media. | SPM IHD | 94 | Staph vs. Strep |
| 2289 | Differentiate between pathogenic and non-pathogenic members of the Staphylococcus genera based on coagulase test results. | SPM IHD | 94 | Staph vs. Strep |
| 2290 | Describe the application and theory behind the coagulase test, catalase test, oxidase test and special growth media including PEA, MAC, BAP, BSA, MSA, and Bile Esculin agar. | SPM IHD | 94 | Staph vs. Strep |
| 2291 | Differentiate between the alpha-hemolytic S. pneumoniae and other alpha-hemolytic streptococci based on Optochin sensitivity test. | SPM IHD | 94 | Staph vs. Strep |
| 2292 | Explain how bacitracin discs can be used to differentiate between certain gram positive cocci species. | SPM IHD | 94 | Staph vs. Strep |

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| 2388 | Translate a cDNA or RNA nucleotide sequence into a protein amino acid sequence using the genetic code table | SPM IHD | 21 | The Lives of a Cell |
| 2389 | Provide an overview of RNA translation identifying the major players involved | SPM IHD | 21 | The Lives of a Cell |
| 2395 | Explain the basic system of chromosome nomenclature | SPM GIS | 171 | Genetic Inheritance Part II |
| 2396 | Define karyotype | SPM GIS | 171 | Genetic Inheritance Part II |
| 2397 | Describe how abnormalities in chromosome number and structure occur | SPM GIS | 171 | Genetic Inheritance Part II |
| 2398 | Explain the etiology of somatic and germline mosaicism | SPM GIS | 170 | Genetic Inheritance Part I |
| 2400 | Describe the difference between balanced and unbalanced chromosome rearrangement | SPM GIS | 171 | Genetic Inheritance Part II |
| 2401 | Define reciprocal and robertsonian translocations | SPM GIS | 171 | Genetic Inheritance Part II |
| 2417 | List at least 10 dietary sources of vitamin C, describe the role of vitamin C in collagen biosynthesis, identify the most common symptoms of scurvy, and outline the pathogenesis of this disease. | SPM IMN | 201 | Biochemistry of Collagen |
| 2418 | Identify the molecular etiologies and symptoms of collagen diseases commonly affecting the bones and joints, including osteogenesis imperfecta, Ehlers-Danlos syndrome, osteolathyrism and achondrogenesis. | SPM IMN | 201 | Biochemistry of Collagen |
| 2467 | Know the major factors that determine the potential for injury by musculoskeletal trauma | SPM IMN | 195 | Bone Fractures Scheme Presentation |
| | | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 2468 | Know the preferred methods for assessment of the structural integrity of bones and joints during emergency treatment and subsequent treatment following musculoskeletal trauma | SPM IMN | 195 | Bone Fractures Scheme Presentation |
| | | | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| 2469 | Outline the basic steps in the diagnostic investigation of non-traumatic monoarticular, polyarticular and periarticular joint pain presentations | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |

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| 2470 | Identify the common akinetic-rigid syndromes and know how they are distinguished from each other and from Idiopathic Parkinson’s Disease | SPM CSS | 296 | SCHEME - Movement Disorders |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 2471 | Identify and distinguish the major causes of developmental limp according to the joint most often affected | SPM IMN | 230 | Deformity and Limp Scheme Presentation |
| | | | 231 | Case Discussions of Limp |
| 2472 | Know the major mechanisms and etiologies responsible for pre-natal non-genetic developmental musculoskeletal deformity | SPM IMN | 230 | Deformity and Limp Scheme Presentation |
| | | | 231 | Case Discussions of Limp |
| 2473 | Identify and distinguish the common mechanisms and etiologies of headache | SPM CSS | 307 | SCHEME - Headache |
| | | | 318 | Headache & Seizure WCE |
| 2474 | Identify the common types of epileptic seizures and their electrophysiological (EEG) correlates | SPM CSS | 308 | SCHEME - Seizure and Epilepsy |
| | | | 318 | Headache & Seizure WCE |
| 2480 | Identify and describe upper motor neuron and lower motor neuron manifestations of weakness | SPM IMN | 251 | Weakness and Loss of Motion Scheme Presentation |
| | | | 261 | Weakness WCE |
| 2481 | Identify the classically described major aphasia syndromes | SPM CSS | 319 | SCHEME - Stroke - Aphasia |
| | | | 324 | Stroke and Aphasia WCE |
| 2687 | Recognize bacterial, parasitic and fungal agents that can be responsible for chronic meningitis and differentiate between them based on clinical syndrome, morphology, and laboratory tests. | SPM CSS | 311 | Chronic Meningitis |
| 2689 | Compare and contrast the morphology of the saprobic and parastic phases of Coccidioides immitis and Cryptococcus neoformans. | SPM CSS | 311 | Chronic Meningitis |
| 2696 | Distinguish the brain infections caused by Acanthamoeba compared to Naegleria and recognize the most likely route of acquisition for each. | SPM CSS | 311 | Chronic Meningitis |

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| 2697 | Describe and/or recognize <i>Cryptococcus neoformans</i> based on taxonomic classification, morphology, epidemiology, clinical syndromes and laboratory test(s). | SPM CSS | 311 | Chronic Meningitis |
| 2698 | Describe and/or recognize <i>Coccidioides immitis</i> based on taxonomic classification, morphology, epidemiology, clinical syndromes and/or laboratory tests. | SPM CSS | 311 | Chronic Meningitis |
| 2769 | Compare the epidemiology of acute bacterial meningitis caused by <i>Streptococcus pneumoniae</i> , <i>Listeria monocytogenes</i> , <i>Haemophilus influenzae</i> and <i>Neisseria meningitidis</i> in patients 16 years old and over in the United States in terms of route of transmission, major risk groups, frequency of occurrence. | SPM CSS | 310 | Acute Meningitis |
| 2770 | Differentiate between <i>Listeria monocytogenes</i> , <i>Streptococcus pneumoniae</i> , <i>Neisseria meningitidis</i> , and <i>Haemophilus influenzae</i> based on cell shape, virulence factors, and biochemical/enzymatic tests. | SPM CSS | 310 | Acute Meningitis |
| 2844 | Know the general anatomical organization of the digestive system. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2845 | Know the general histological organization of the digestive system. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2846 | Know the arrangement of tunics within the esophagus. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2847 | Know the histology and function of the esophagogastric junction. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2848 | Know the histology and function of the gastric glands. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2849 | Know the histology, ultrastructure and function of gastric chief cells. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2850 | Know the histology, ultrastructure and function of gastric parietal cells. | SPM GIS | 107 | Histology of the Upper GI Tract |
| 2851 | Know the histology, ultrastructure and function of enteroendocrine cells. | SPM GIS | 107 | Histology of the Upper GI Tract |

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| 2889 | Define the general components of the GI tract proper and the accessory organs. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2892 | Describe the basic operation functions of the GI tract: Motility, Secretion, Digestion and Absorption. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2897 | Define the source of salivary secretions (detailed by gross anatomy). | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2898 | Describe the control of salivary secretions. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2899 | Define the basic components of saliva, describe their function and describe how rate of secretion alters composition. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2903 | Describe the physiologic function of the upper and lower esophageal sphincters. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2904 | Define the events, stimulus and function of primary and secondary peristalsis. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2906 | Relate esophageal functions or malfunctions to achalasia and gastro-esophageal reflux disease (GERD). | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 2933 | Differentiate between members of the Reoviridae, Caliciviridae, astrovirus, and Adenoviridae families based on morphology, genomic architecture and replication strategy. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 2935 | Describe the characteristics of Reoviridae, norovirus, adenoviruses which make them resistant to primary defenses and give them access to the gastrointestinal tract. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 2937 | Explain the role of the E1A and E1B viral early genes in the pathogenesis of the adenoviruses. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 2938 | Describe the ways adenovirus interferes with host defenses. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |

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| 2960 | Describe the risk factors (including genetic), immune mechanisms responsible for the disease, and immunodiagnosis of multiple sclerosis (MS) | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |
| 2965 | Explain and compare the immune mechanisms, autoantibodies, immunodiagnosis and treatments for the immune-mediated neuropathies: Guillain-Barre syndrome (GBS) and chronic inflammatory demyelinating polyneuropathy (CIDP) | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |
| 2968 | Compare the immune mechanisms in myasthenia gravis (MG) and Lambert-Eaton myasthenic syndrome | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |
| 2970 | Describe the immune mechanisms in polymyositis and dermatomyositis | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |
| 3030 | Classify nausea and vomiting according to the emetic mechanisms that are likely provoked in different circumstances, and use that knowledge as a basis for selecting appropriate antiemetic therapy | SPM GIS | 122 | Antiemetics |
| 3031 | Identify alternative routes for administration of antiemetic drugs when vomiting makes oral dosing impractical | SPM GIS | 122 | Antiemetics |
| 3032 | List two agents used as emetics (to induce vomiting) and describe their putative mechanisms of action | SPM GIS | 122 | Antiemetics |
| 3124 | Differentiate between the listed parasites known to cause diarrhea (<i>Giardia lamblia</i> , <i>Cryptosporidium parvum</i> , <i>Entamoeba histolytica</i> , <i>Balantidium coli</i> , <i>Strongyloides stercoralis</i> , <i>Trichuris trichiura</i>) and be able to outline the life cycle of each, including the mode of transmission, identifying features, diagnostic specimens, site of maturation, and duration of infection. | SPM GIS | 160 | Parasitic Causes of Diarrhea |
| 3125 | Recognize typical CSF findings in patients with bacterial meningitis as compared to viral meningitis. | SPM CSS | 310 | Acute Meningitis |

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| 3126 | Recognize the signs and symptoms characteristic of acute meningitis (headache, neck pain, Kernig and Brudzinski signs). | SPM CSS | 310 | Acute Meningitis |
| 3135 | Explain how psilium [Metamucil] may be useful in treating mild cases of both constipation and diarrhea. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3136 | Compare and contrast the mechanism of action and safety of two opioid agonist used to manage diarrhea: diphenoxylate and loperamide | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3137 | Propose two reasons why atropine has been included in fixed dose combination with the narcotic opioid agonist, diphenoxylate. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3138 | Explain why some antimicrobial agents have more propensity than others to induce diarrhea. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3139 | Explain why vancomycin is usually an effective and well tolerated therapy for toxigenic Clostridium difficile associated diarrhea, noting that vancomycin is generally associated with a number of adverse effects when used for most other indications. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3200 | Review morphine and atropine potential to cause constipation. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3201 | Compare the pharmacokinetics of methylnaltrexone and naloxone to injectable naloxone as treatments for opioid-induced constipation. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3202 | Describe the different mechanisms by which drugs promote laxation and catharsis: osmotic, stimulant/irritant, bulk forming, stool softener, lubricant, prokinetic, and opioid antagonists. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3203 | Define laxatives according to the mechanisms by which they promote net fecal fluid content. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 3204 | Explain why erythromycin might be useful for chronically constipating conditions such as diabetic gastroparesis or an elderly hypothyroid patient. | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |

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| 3205 | Recall and restate the formula for capillary filtration. | SPM GIS | 135 | Ascites Development |
| 3206 | Demonstrate which components of capillary filtration would influence liver function in producing ascites. | SPM GIS | 135 | Ascites Development |
| 3207 | Describe how the development of ascites leads to abdominal distension. | SPM GIS | 135 | Ascites Development |
| 3228 | Describe the mechanisms of action and adverse effects of drugs for peptic ulcer disease, including drug regimens for Helicobacter pylori eradication | SPM GIS | 173 | Peptic Ulcer Disease |
| 3230 | Explain how NSAIDs and aspirin induce peptic ulcers, and propose ways to mitigate NSAID-induced gastric mucosal toxicity | SPM GIS | 173 | Peptic Ulcer Disease |
| 3244 | Explain why the virulence of Campylobacter fetus is different from other Campylobacter species. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 3245 | Define the term zoonotic infection and describe how this term applies to the epidemiology of three different Campylobacter species. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 3246 | Describe the bacterial morphology, biochemical characteristics, risk factors for infection, and epidemiology of disease caused by Helicobacter pylori. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 3247 | List four diseases associated with Helicobacter pylori infections and describe the currently accepted therapy used to treat H.pylori infections. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 3248 | Describe the mechanisms of each of the H. pylori virulence factors, mucinase, VacA, CagA and PAI which contribute to gastritis and gastric ulcers. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 3249 | Compare the efficacy of invasive and non-invasive methods commonly used to detect H.pylori infection considering the fact that it is not recovered from stool or blood specimens for culture. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 3254 | Describe the alterations of the host gut epithelium that have been associated with H.pylori colonization. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |

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| 3256 | Entry objective: Differentiate between nematodes, cestodes and trematodes and provide at least one example of each group which may be the etiology of abdominal discomfort. | SPM GIS | 129 | Abdominal Discomfort - Flukes and Worms |
| 3268 | Make a correct diagnosis of a parasitic (trematode, cestodes, nematodes) GI infection based on the size and shape adult worms, larvae, eggs or proglottides present in fecal specimens. | SPM GIS | 129 | Abdominal Discomfort - Flukes and Worms |
| 3291 | Discuss and differentiate between a direct and an indirect inguinal hernia. | SPM IHD | 86 | Inguinal Hernias |
| 3477 | Differentiate between <i>P. vivax</i> , <i>P. ovale</i> , <i>P. malariae</i> , and <i>P. falciparum</i> based on appearance in a blood smear (ring forms, Schüffner dots, malarial pigment, rosette schizonts, Maurer dots, Ziemann dots, applique position, bar forms, merozoite number), variations in disease they cause, the vector of transmission and epidemiological characteristics. | SPM HEM | 1081 | Infection and Anemia |
| 3480 | Recognize the risk factors for a Babesia infection in terms of regional prevalence and transmission vector or natural reservoir and recognize diagnostic test results for Babesia. | SPM HEM | 1081 | Infection and Anemia |
| 3481 | Diagram or outline the life cycle of the hookworms <i>A. duodenale</i> and <i>N. americanus</i> including mode of transmission | SPM HEM | 1081 | Infection and Anemia |
| 3482 | Explain how microcytic hypochromic anemia can develop in the course of an infection of <i>A. duodenale</i> and <i>N. americanus</i> . | SPM HEM | 1081 | Infection and Anemia |
| 3485 | Explain how Megaloblastic anemia can develop in the course of a <i>D. latum</i> infection and be able to recognize symptoms and epidemiological characteristics of a <i>D. latum</i> infection. | SPM HEM | 1081 | Infection and Anemia |
| 3487 | Describe the epidemiology of <i>B. bacilliformis</i> including the regional prevalence and transmission vector and | SPM HEM | 1081 | Infection and Anemia |

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| | describe how a B. Bacilliformis infection can lead to acute anemia. | | | |
| 3490 | Describe human parvovirus B19 and explain how B19 infection can lead to aplastic anemia in adults, fetal anemia and potentially fetal loss. | SPM HEM | 1081 | Infection and Anemia |
| 3492 | ENTRY:Review the role of iron, cobalamin (vitamin B12), folate and erythropoietin in erythropoiesis | SPM HEM | 1082 | Drugs for Anemia |
| 3493 | EXIT:relate red blood cell indices, components of iron transport (ferritin), and hemoglobin synthesis (B12,folate, erythropoietin) to address the pathogenesis of anemia with rational pharmacologic interventions. | SPM HEM | 1082 | Drugs for Anemia |
| 3676 | Differentiate between those infectious etiologies of lymphadenopathy that are acute, chronic, regional, generalized, ulcerating, or oculogranular or with inguinal Bubo formation. | SPM HEM | 1103 | Infectious Lymphadenitis |
| 3708 | Define allele and genotype frequencies | SPM HEM | 1106 | Genotype and Allele Frequencies in Populations |
| 3709 | Use the Hardy-Weinberg formula to calculate carrier frequency for recessive conditions | SPM HEM | 1106 | Genotype and Allele Frequencies in Populations |
| 3710 | Know how assortive mating, consanguinity, genetic drift, founder effect, heterozygote advantage, selection and mutations affect gene frequencies | SPM HEM | 1106 | Genotype and Allele Frequencies in Populations |
| 3711 | Give an example of Heterozygote advantage | SPM HEM | 1106 | Genotype and Allele Frequencies in Populations |
| 3735 | Recognize the clinical features of the viral hemorrhagic fever (VHF) syndrome. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 3736 | Identify/recognize nine (Lassa, Crimean Congo HF, Marburg, Ebola, Dengue, Yellow fever, Rift Valley fever, La Crosse, Hantavirus) viral agents known to cause VHF and/or encephalitis, based on geography, viral structure, vector of transmission, clinical illness and classify them according to viral family. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |

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| 3737 | Describe the viral mechanisms that can lead to hemorrhage | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 3738 | Compare the interactions of Dengue, Lassa, Crimean Congo and Filoviruses with the host describe how these interactions contribute to the progression of the disease to hemorrhagic disease. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 3739 | Differentiate between Flaviviruses, Filoviridae, Bunyaviridae and Arenaviridae viral families based on viral structure and genomic architecture. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 3740 | Define what an “emerging virus” is and discuss five possible mechanisms from which they can emerge or originate. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 3741 | Describe the role of pathogen vectors (arthropods, birds, rodents etc) in the pathogenesis of emerging viruses including those that cause hemorrhagic disease. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 3794 | Recognize that the most effective way to prevent HBV infection is the HBV vaccine. | SPM GIS | 128 | Viral Hepatitis |
| 3797 | Recognize the risk factors for contracting HCV, the risk for chronic hepatitis or hepatocellular carcinoma and describe the clinical and serological markers for a Hepatitis C infection over time. | SPM GIS | 128 | Viral Hepatitis |
| 3798 | Describe the relationship between HDV and HBV and clearly differentiate between coinfection and superinfection | SPM GIS | 128 | Viral Hepatitis |
| 3799 | Recognize the etiological agent that causes of enterically transmitted water borne viral Hepatitis. (HEV) | SPM GIS | 128 | Viral Hepatitis |
| 3800 | Identify HEV as the most important (serious) etiology of hepatitis in pregnant females due to the high level of mortality. | SPM GIS | 128 | Viral Hepatitis |
| 3802 | Identify those Hepatitis viruses that have self-limiting disease and those that do not. | SPM GIS | 128 | Viral Hepatitis |

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| 3805 | Describe and differentiate the unique blood supply to the liver. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 3806 | Relate this unusual blood flow pattern to liver function. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 3807 | Describe the flow of bile in the liver and relate this to biliary recycling. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 3808 | Explain the handling of bilirubin in the liver and how this is altered in a diseased liver | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 3809 | Explain how liver disease can alter blood flow and how this can alter patient health. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 3851 | Summarize the key biochemical laboratory findings that can be used to differentiate between hemolytic, cholestatic and hepatocellular causes of jaundice. | SPM GIS | 125 | Metabolic Aspects of Liver Disease |
| 3860 | List the most common bacterial isolates from pyogenic liver abscess and be able to recognize them based on morphology, metabolic requirements, virulence factors, and staining characteristics or cell wall structure. | SPM GIS | 142 | Liver Infections |
| 3862 | Recognize the most common parasitic etiologies of liver and biliary disease based on their eggs, morphology, stages of development, life cycle, pathogenesis, and epidemiology (Cryptosporidium parvum, Fasciola hepatica, Opisthorchis sinensis, Schistosoma sp., Fasciolopsis buski, and Echinococcus granulosus). | SPM GIS | 142 | Liver Infections |
| 3878 | Be able to use the history and physical as well as any additional laboratory or imaging data to navigate through the scheme to a final diagnostic category. | SPM GIS | 110 | Nausea and Vomiting Scheme Presentation |
| | | | 127 | Abdominal Distention Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| | | | 147 | Vomiting and Nausea WCE |
| | | | 151 | Diarrhea Scheme Presentation |
| | | | 157 | Constipation Scheme Presentation |

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| | | | 166 | Blood from Gastrointestinal Tract Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| | | | 692 | WCE Diarrhea & Constipation |
| 3879 | Describe the relevance of the albumin gradient and state how it is obtained. | SPM GIS | 127 | Abdominal Distention Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 3880 | Describe the use of cytology in the assessment of ascites. | SPM GIS | 127 | Abdominal Distention Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 3881 | Describe the clinical findings in an individual with bowel obstruction. | SPM GIS | 127 | Abdominal Distention Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 3882 | Define diarrhea and be able to categorize as acute or chronic. | SPM GIS | 151 | Diarrhea Scheme Presentation |
| | | | 692 | WCE Diarrhea & Constipation |
| 3883 | Describe the differences among watery diarrhea, inflammatory diarrhea, and fatty diarrhea. | SPM GIS | 151 | Diarrhea Scheme Presentation |
| | | | 692 | WCE Diarrhea & Constipation |
| 3884 | List the clinical findings in an individual with acute diarrhea that indicate a need for further diagnostic evaluation. | SPM GIS | 151 | Diarrhea Scheme Presentation |
| | | | 692 | WCE Diarrhea & Constipation |
| 3891 | Define the following terms and explain their possible implications: hematemesis, melena, hematochezia. | SPM GIS | 166 | Blood from Gastrointestinal Tract Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 3892 | Describe the clinical findings that can be used to assess for the severity of blood loss. | SPM GIS | 166 | Blood from Gastrointestinal Tract Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 3893 | | SPM GIS | 166 | Blood from Gastrointestinal Tract Scheme Presentation |

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| | Name the most common cause of upper GI bleeding and the most common cause of lower GI bleeding and briefly describe their pathophysiology. | | 174 | Abdominal Pain & GI Bleed WCE |
| 3894 | Define constipation and list the criteria for its diagnosis. | SPM GIS | 157 | Constipation Scheme Presentation |
| | | | 692 | WCE Diarrhea & Constipation |
| 3895 | Describe the major diagnostic studies used to evaluate patients with constipation. | SPM GIS | 157 | Constipation Scheme Presentation |
| | | | 692 | WCE Diarrhea & Constipation |
| 3896 | List some of the major categories of drugs that may cause constipation. | SPM GIS | 157 | Constipation Scheme Presentation |
| | | | 692 | WCE Diarrhea & Constipation |
| 3897 | Define the following terms: nausea, vomiting, regurgitation, retching, and rumination. | SPM GIS | 110 | Nausea and Vomiting Scheme Presentation |
| | | | 147 | Vomiting and Nausea WCE |
| 3898 | Name the general disease categories listed underneath the "GI disease" and "Non-GI disease" segments of the nausea and vomiting scheme and be familiar with the names of the diseases within these categories. | SPM GIS | 110 | Nausea and Vomiting Scheme Presentation |
| | | | 147 | Vomiting and Nausea WCE |
| 3899 | Describe complications that can arise secondary to vomiting. | SPM GIS | 110 | Nausea and Vomiting Scheme Presentation |
| | | | 147 | Vomiting and Nausea WCE |
| 3921 | Describe the presence of autoantibodies and lymphocytes in Sjogren's syndrome. | SPM CSS | 338 | Immunology of the Eye |
| 3923 | Be able to use the history and physical as well as any additional laboratory or imaging data to navigate through the scheme to a final diagnostic category/disease. | SPM GIS | 103 | Dysphagia Scheme Presentation |
| 3923 | Be able to use the history and physical as well as any additional laboratory or imaging data to navigate through the scheme to a final diagnostic category/disease. | SPM GIS | 690 | Dysphagia - WCE |
| 3924 | | SPM GIS | 103 | Dysphagia Scheme Presentation |

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| | Name 5 key initial questions for evaluating a patient presenting with dysphagia. | | 690 | Dysphagia - WCE |
| 3925 | Briefly describe the major diagnostic studies used in the evaluation of dysphagia. | SPM GIS | 103 | Dysphagia Scheme Presentation |
| | | | 690 | Dysphagia - WCE |
| 3926 | Describe the differences on the clinical presentation of oropharyngeal dysphagia and esophageal dysphagia. | SPM GIS | 103 | Dysphagia Scheme Presentation |
| | | | 690 | Dysphagia - WCE |
| 3927 | Be familiar with the following terms: dysphagia, odynophagia, globus pharyngeus. | SPM GIS | 103 | Dysphagia Scheme Presentation |
| | | | 690 | Dysphagia - WCE |
| 3939 | Know the signs, symptoms, epidemiological factors and laboratory results that help distinguish viral from bacterial gastroenteritis. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 3947 | Describe five factors that are responsible for causing large scale out breaks of Cryptosporidium parvum | SPM GIS | 160 | Parasitic Causes of Diarrhea |
| 3969 | Propose a rationale for the oral administration of rotavirus and polio vaccines | SPM GIS | 161 | Immunity and the GI Tract |
| 3970 | Describe the primary immunodeficiencies [Common variable immunodeficiency disorder (CVID), Hyper-IgM Syndrome, IgA and IgG subclass deficiencies, X-linked agammaglobulinemia (Bruton's disease), Severe combined immunodeficiency disease (SCID) and IL-12 pathway deficiencies] that cause diarrhea, the specific defect(s) (if known), the arm of the immune system compromised by the defect, and the immunodiagnosis(note: you are not responsible for immunodiagnosis of IL-12 pathway deficiencies) | SPM GIS | 161 | Immunity and the GI Tract |
| 3979 | Recognize Hepatitis A virus as potential agent causing nausea and vomiting and describe this virus according to its family, morphology, molecular characteristics, pathology and epidemiology. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |

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| 3993 | List the primary germ layers that form the gut and the major organs that arise from the embryonic gut (the liver, biliary system, and pancreas). | SPM GIS | 1344 | Development and Organization of the Gut |
| 3994 | Define the peritoneum and describe its relationship to mesenteries, ligaments, omenta, sacs, pouches and gutters; and describe the relationship of mesenteries to the nerves and vessels that serve the gut and the liver. | SPM GIS | 1344 | Development and Organization of the Gut |
| 3996 | Describe the relationship of lateral plate mesoderm to the abdominal wall, peritoneum, mesenteries, peritoneal cavity, walls of the gut, and stroma of organs that arise from the embryonic gut. | SPM GIS | 1344 | Development and Organization of the Gut |
| 3997 | Define and describe the septum transversum and explain its role in generating the diaphragm, the ventral mesentery, and the stroma of the liver. | SPM GIS | 1344 | Development and Organization of the Gut |
| 3999 | Define the foregut, midgut and hindgut; list the organs (and parts of organs) of the GI tract that arise from each; state the major artery that supplies each region (i.e., the foregut, midgut and hindgut); and describe the innervation of each region. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 1344 | Development and Organization of the Gut |
| 4000 | Describe the formation of the stomach and relate how stomach rotations account for adult locations of structures such as the ventral mesentery (e.g., the lesser omentum and falciform ligament), liver, spleen, dorsal mesentery (e.g., the mesogastrium, greater omentum and gastrosplenic ligament), and the vagal trunks. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 1344 | Development and Organization of the Gut |
| 4004 | Describe the role of neural crest cells in the development of the enteric nervous system; consider separately the sources of neural crest cells for the sympathetic and parasympathetic components. | SPM GIS | 1344 | Development and Organization of the Gut |
| 4086 | Describe the arrangement of the heart, the major arteries and the major veins (also, be able to name the three pairs of large embryonic veins) in the middle of the fourth week of development. | SPM CVR | 1143 | Vascular Development |

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| 4088 | Describe the normal folding of the heart tube during week 4 of development. | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4089 | Describe how septum primum, septum secundum and the intermediate septum separate the primitive atrium into right and left atria free of primum-, secundum-, or sinus venosus-type septal defects. | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4091 | Describe the separation of the primitive ventricle and the outflow tract into right and left ventricles, an aorta, and a pulmonary trunk by the muscular ventricular septum and the truncoconal septae. Describe how Tetralogy of Fallot, transposition of the great vessels, persistent truncus arteriosus and ventricular septal defects can arise from failure of these events to occur normally. | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4095 | Explain why the phrenic nerves are associated with the pericardium | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4096 | Explain the developmental basis of why the leaves of the semilunar valves are designated as right, left and anterior in the pulmonary trunk, and right, left and posterior in the aorta. | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4097 | Define: atrial septum, intermediate septum, and ventricular septum | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4098 | Identify the foramen ovale and ductus arteriosus and explain their functions. | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4099 | Describe the unique relationship of the inferior vena cava (IVC) to the foramen ovale as compared to the superior vena cava (SVC) in the embryonic / fetal heart. | SPM CVR | 1124 | Development of the Heart and Pericardium |
| 4141 | Define the fed, fasting, and starved state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |
| 4142 | Outline the fate of carbohydrates, fats, and proteins in the fed state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |

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| 4145 | Discuss metabolic changes that occur as our body transitions from the fasting to starved state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |
| 4156 | Explain the role of Coombs' tests in the diagnosis of immunohemolytic anemia and distinguish between the Direct and Indirect Coombs' tests | SPM HEM | 1080 | Immune-mediated Anemia |
| 4168 | Know the histology, ultrastructure and function of Paneth cells. | SPM GIS | 152 | Histology of Lower GI Tract |
| 4171 | Know the histology and general function of the small intestine. | SPM GIS | 152 | Histology of Lower GI Tract |
| 4172 | Know the histology and general function of the large intestine. | SPM GIS | 152 | Histology of Lower GI Tract |
| 4173 | Know the histology and general function of the appendix. | SPM GIS | 152 | Histology of Lower GI Tract |
| 4174 | Know the histology and general function of the anorectal junction. | SPM GIS | 152 | Histology of Lower GI Tract |
| 4175 | Know the histology, ultrastructure and function of enterocytes | SPM GIS | 152 | Histology of Lower GI Tract |
| 4176 | Know the histology, ultrastructure and function of goblet cells. | SPM GIS | 152 | Histology of Lower GI Tract |
| 4193 | Describe the orientation of the heart and its four chambers in relation to surface landmarks and within the mediastinum. | SPM CVR | 1125 | The Heart & Mediastinum |
| 4200 | Describe the conducting system of the heart. | SPM CVR | 1125 | The Heart & Mediastinum |
| 4202 | Identify on medical images: mediastinum, pericardium, heart and its chambers and valves, aortic arch, pulmonary trunk, superior and inferior venae cavae. | SPM CVR | 1125 | The Heart & Mediastinum |
| 4207 | Describe the interior anatomy of each chamber of the heart and explain the role of each anatomical feature. | SPM CVR | 1125 | The Heart & Mediastinum |
| 4210 | Define the boundaries of the mediastinum. | SPM CVR | 1125 | The Heart & Mediastinum |

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| 4216 | Be able to use the history and physical as well as any additional laboratory or imaging data to navigate through the schemes to a final diagnostic category. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| | | SPM HEM | 1069 | Abnormal Hemoglobin Scheme Presentation |
| | | | 1085 | Coagulation Abnormalities Scheme Presentation |
| | | | 1094 | White Blood Cells Abnormal Scheme Presentation |
| 1100 | Lymphadenopathy Scheme Presentation | | | |
| 4217 | Know the definition of microcytic, normocytic, and macrocytic anemia. Be able to classify different types of anemia as microcytic, normocytic, and macrocytic. | SPM HEM | 1069 | Abnormal Hemoglobin Scheme Presentation |
| 4218 | Understand the use of a bone marrow biopsy in the evaluation of anemia. Know the use of the terms cellularity, marrow aspiration, marrow biopsy, etc. | SPM HEM | 1069 | Abnormal Hemoglobin Scheme Presentation |
| 4219 | Understand the use of the reticulocyte count in the evaluation of anemia. | SPM HEM | 1069 | Abnormal Hemoglobin Scheme Presentation |
| 4220 | Understand the use of the peripheral blood smear in the evaluation of anemia and be able to discuss pertinent findings such as teardrop cells, rouleaux formation, and nucleated red blood cells. | SPM HEM | 1069 | Abnormal Hemoglobin Scheme Presentation |
| 4221 | Define polycythemia and differentiate between polycythemia vera and secondary erythrocytosis. | SPM HEM | 1069 | Abnormal Hemoglobin Scheme Presentation |
| 4230 | Know the definitions of leukopenia, leukocytosis, leukemoid reaction, and leukoerythroblastosis. | SPM HEM | 1094 | White Blood Cells Abnormal Scheme Presentation |
| 4231 | Describe the laboratory studies that can be useful in the differentiating CML from reactive leukocytosis. | SPM HEM | 1094 | White Blood Cells Abnormal Scheme Presentation |
| 4232 | Be familiar with the peripheral blood smear findings that can occur in the various neoplastic diseases and | SPM HEM | 1094 | White Blood Cells Abnormal Scheme Presentation |

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| | reactive conditions that are discussed in the process worksheet and scheme. | | | |
| 4233 | Be familiar with the distribution of neutrophils and be able to name the various pools (storage pool ,marginating pool,etc). | SPM HEM | 1094 | White Blood Cells Abnormal Scheme Presentation |
| 4234 | Describe the associated physical consistency of lymph nodes with a given disease process. For example, tender and fluctuant nodes associated with infections. | SPM HEM | 1100 | Lymphadenopathy Scheme Presentation |
| 4235 | Given a region of the body affected by lymphadenopathy provide a summary of possible diagnoses. | SPM HEM | 1100 | Lymphadenopathy Scheme Presentation |
| 4236 | Be familiar with the various diagnostic tests that are useful in the evaluation of lymphadenopathy. | SPM HEM | 1100 | Lymphadenopathy Scheme Presentation |
| 4237 | Be able to name conditions that are associated with generalized lymphadenopathy. | SPM HEM | 1100 | Lymphadenopathy Scheme Presentation |
| 4247 | Describe the various genetic changes that lead to tumor development including activation of oncogene or inactivation of tumor suppressor, apoptotic and DNA repair genes by somatic mutation, epigenetic changes or chromosomal rearrangements. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4248 | Define oncogene, proto-oncogene and tumor suppressor, giving examples. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4249 | Discuss the relationship between inherited and sporadic cancers. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4251 | Discuss how mutations in genes encoding growth factors, growth factor receptors, and components of signal transduction cascades influence cell proliferation. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4252 | Discuss the major phases of the cell cycle and how cyclins, cyclin-dependent kinases (CDKs), and cyclin-dependent kinase inhibitors (CKIs) contribute to cell cycle progression. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |

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| 4253 | Discuss the means by which cancer cells bypass the normal mechanisms of cell cycle control. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4254 | Compare and contrast the intrinsic and extrinsic pathways of apoptosis in terms of activation signals and downstream effects. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4255 | Discuss mechanisms by which cancer cells evade normal apoptotic signaling pathways. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4256 | Describe how cancer arises by an accumulation of mutations in a single somatic cell lineage. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4257 | Compare the two types of hereditary colon cancer: hereditary nonpolyposis colorectal cancer (HNPCC) and familial adenomatous polyposis (FAP). | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4258 | Describe the phenomenon of loss of heterozygosity (LOH) in carcinogenesis. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4259 | Discuss how loss of APC function can lead to deregulated cell proliferation. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4260 | Describe the difference between an adenoma and an invasive carcinoma. | SPM IMN | 234 | Molecular Biology and Genetics of Cancer |
| 4266 | Characterize the following bacterial agents that are uniquely characterized by causing lymphadenitis or edema according to family, cell morphology, pathology, transmission, epidemiology and virulence factors: <i>Streptococcus pyogenes</i> or <i>Staphylococcus aureus</i> , <i>Y. pestis</i> , <i>F. tularensis</i> , <i>Bartonella henselae</i> , <i>Rickettsia</i> . | SPM HEM | 1103 | Infectious Lymphadenitis |
| 4275 | Explain the concept and uses of agglutination reactions | SPM HEM | 1077 | Agglutination and Transfusion Reactions |
| 4276 | Explain the immunological principles of ABO and Rh blood groups and blood typing | SPM HEM | 1077 | Agglutination and Transfusion Reactions |
| 4277 | Relate mismatches to RBC destruction in transfusion reactions | SPM HEM | 1077 | Agglutination and Transfusion Reactions |

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| 4298 | Explain which pharmacological effects of morphine are desirable and which effects are undesirable in treating acute unremitting chest pain. | SPM CVR | 1133 | Drugs Used in Cardiac Ischemia |
| 4326 | Associate the cytokines (IL-3, IL-5, IL-6, IL-11, GM-CSF, G-CSF, and M-CSF) with the maturation of granulocytes (including eosinophils and basophils) and monocytes from stem cells, by identifying the cell type(s) most strongly influenced by each | SPM HEM | 1096 | Leukocyte Biology |
| 4327 | Describe the most common causes of neutropenia | SPM HEM | 1096 | Leukocyte Biology |
| 4328 | Explain the effects of infection on the production and release of neutrophils from the bone marrow | SPM HEM | 1096 | Leukocyte Biology |
| 4329 | Describe the characteristics of neutrophil granules, including the major components found in each type | SPM HEM | 1096 | Leukocyte Biology |
| 4330 | Explain the process of phagocytosis and describe the consequences of impaired phagolysosome formation (Chediak-Higashi syndrome). | SPM HEM | 1096 | Leukocyte Biology |
| 4331 | Explain the burst in oxygen consumption (respiratory burst) and describe the generation of the reactive oxygen intermediates that kill and degrade infectious agents within phagocytic cells | SPM HEM | 1096 | Leukocyte Biology |
| 4332 | Explain the role of NADPH oxidase in microbial killing and the mutations that can cause Chronic Granulomatous Disease (CGD) | SPM HEM | 1096 | Leukocyte Biology |
| 4333 | Explain the use of the NBT and DHR assays in diagnosis of CGD | SPM HEM | 1096 | Leukocyte Biology |
| 4334 | Explain the steps in leukocyte migration, including the role of selectins and integrins, and their corresponding ligands, relating these molecules to the congenital defects in the diseases LAD-1 and LAD-2 | SPM HEM | 1096 | Leukocyte Biology |
| 4335 | Explain the role of inflammatory cytokines in leukocyte migration and phagocytosis | SPM HEM | 1096 | Leukocyte Biology |

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| 4340 | Associate the cytokines (IL-6, IL-7 and IL-15) with maturation of lymphocytes from stem cells, by identifying the cell type(s) most strongly influenced by each | SPM HEM | 1102 | Lymph Nodes |
| 4341 | Briefly outline the maturation of B cells (in the bone marrow) and T cells (in the bone marrow and thymus) and their migration into lymph nodes | SPM HEM | 1102 | Lymph Nodes |
| 4342 | Summarize the steps in a T-dependent antibody response including where each occurs in the lymph node: localization of naïve B and T cells, activation and proliferation of T and B cells, interaction of activated B and T cells, and germinal center formation and reactions, including the role of follicular dendritic cells | SPM HEM | 1102 | Lymph Nodes |
| 4343 | Compare the phenotype and membrane immunoglobulin isotype of the B cells in a lymph node responding to an antigen with that of the B cells in a lymphoma | SPM HEM | 1102 | Lymph Nodes |
| 4360 | Recall the concentration of gases in the atmosphere. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4361 | Define partial pressure of gases and how they are calculated. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4362 | Describe how O ₂ is carried on the hemoglobin molecule. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4363 | Describe how CO ₂ is carried in Blood. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4364 | Explain the exchange of gasses in the lungs. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4365 | Draw and explain the oxygen disassociation curve. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4366 | Explain the effect of pH, PCO ₂ , temperature, and 2,3 BGP on the oxygen disassociation curve. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4367 | Describe the Bohr and Haldane effect. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |
| 4368 | Analyze the effect of exercise on O ₂ consumption and CO ₂ production. | SPM HEM | 1076 | Oxygen-carrying Transport of Blood |

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| 4372 | Differentiate between cardiac and non-cardiac causes of chest discomfort. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4373 | Under cardiac causes of chest discomfort, differentiate between the ischemic and non-ischemic categories and the final pathology/disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4374 | Under the ischemic category differentiate between acute coronary syndrome, chronic stable angina and left ventricular outflow obstruction and the final pathology/disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4375 | Under acute coronary syndrome, differentiate ST segment elevation, new left bundle branch block and NO ST segment elevation and the final pathology and disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4376 | Under non-cardiac causes of chest discomfort differentiate between pulmonary/chest wall, GIT and psychiatric causes of chest discomfort and the final pathology/disease in each category | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4377 | Under pulmonary/ chest wall differentiate between vascular, parenchymal and chest wall/pleura causes of chest discomfort and the final pathology/disease in each category. | SPM CVR | 1126 | Chest Discomfort Scheme Presentation |
| 4379 | Describe the molecular basis of sickle cell disease. | SPM HEM | 1083 | Anemia Case Studies |
| 4380 | Describe the biochemical tests used to diagnose sickle cell disease. | SPM HEM | 1083 | Anemia Case Studies |
| 4382 | Provide biochemical explanations for the following conditions related to anemia: glucose-6-phosphate dehydrogenase deficiency, folate deficiency, hereditary spherocytosis, iron deficiency, vitamin B6 deficiency, vitamin B12 deficiency, pyruvate kinase deficiency, and lead poisoning. | SPM HEM | 1083 | Anemia Case Studies |
| 4383 | Classify the anemias on the basis of red cell morphology (microcytic hypochromic; macrocytic | SPM HEM | 1083 | Anemia Case Studies |

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| | normochromic; normocytic normochromic), functional deficit and possible cause. | | | |
| 4385 | Describe the mechanisms underlying hereditary persistence of fetal hemoglobin and hemoglobin switching. | SPM HEM | 1083 | Anemia Case Studies |
| 4386 | Understand the general organisation of the globin gene family. | SPM HEM | 1083 | Anemia Case Studies |
| 4387 | Understand the concept of globin chain imbalance that underlies the thalassemys. | SPM HEM | 1083 | Anemia Case Studies |
| 4388 | Describe molecular genetic testing methods used to diagnose sickle cell disease and thalassemys. | SPM HEM | 1083 | Anemia Case Studies |
| 4389 | Using the information from a clinical vignette, be able to navigate the abnormal heart sounds scheme in order to arrive at the correct diagnostic category or condition. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |
| 4390 | When listening to the heart sounds, describe bedside exam techniques that identify which sound is S1 and which is S2. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |
| 4391 | Explain the mechanism that generates the audible first heart sound (S1), and the influences on this mechanism that can change the loudness of S1. List several conditions that increase the loudness of S1, and several that decrease the loudness of S1. Also, name a condition that causes S1 to be split, and describe how this condition causes the splitting. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |
| 4392 | Explain the mechanism that generates the audible second heart sound (S2). Describe the normal splitting of S2, and the mechanism that causes this splitting. Name a condition that causes fixed splitting of S2, and describe how this condition causes the splitting. Describe the cause of a loud P2, and name several conditions that cause this finding. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |

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| 4393 | Describe the third heart sound, S3, the mechanism that produces it, and name a condition in which S3 is likely to be heard. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |
| 4394 | F. Describe the fourth heart sound, S4, the mechanism that produces it, and name a condition in which S4 is likely to be heard.. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |
| 4395 | Describe the finding of a midsystolic click, and the mechanism that produces it. | SPM CVR | 1139 | Abnormal Heart Sounds Clinical Scheme Presentation |
| 4398 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of, the student shall use the mediastinal mass scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1205 | Mediastinal Mass Scheme Presentation |
| 4399 | Differentiate between anterior, middle and posterior cause's mediastinal mass. | SPM CVR | 1205 | Mediastinal Mass Scheme Presentation |
| 4400 | Under anterior causes of mediastinal mass, differentiate between the categories of tumors, cardiovascular, and other causes of mediastinal mass and the final pathology/disease in each category. | SPM CVR | 1205 | Mediastinal Mass Scheme Presentation |
| 4401 | Under middle causes of mediastinal mass, differentiate between the categories of tumors, cardiovascular, and other causes of mediastinal mass and the final pathology/disease in each category. | SPM CVR | 1205 | Mediastinal Mass Scheme Presentation |
| 4402 | Under posterior causes of mediastinal mass, differentiate between the categories of tumors, cardiovascular, and other causes of mediastinal mass and the final pathology/disease in each category. | SPM CVR | 1205 | Mediastinal Mass Scheme Presentation |
| 4403 | Use the information from a clinical vignette to navigate the heart murmur scheme in order to arrive at the | SPM CVR | 1141 | Heart Murmurs Scheme Presentation |

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| | correct diagnostic category or condition causing the heart murmur. | | | |
| 4404 | When listening to a heart murmur, describe how to use bedside exam techniques that discriminate between a systolic, diastolic, or continuous murmur. | SPM CVR | 1141 | Heart Murmurs Scheme Presentation |
| 4405 | For the murmurs caused by the following valvular abnormalities, describe the nature of the valve abnormality, the hemodynamic mechanism that is producing the murmur, the characteristics of the murmur on physical exam, and the disease process that produces the valvular pathology: aortic insufficiency, mitral stenosis, mitral regurgitation, tricuspid regurgitation, aortic stenosis, innocent murmur, and mitral valve prolapse. | SPM CVR | 1141 | Heart Murmurs Scheme Presentation |
| 4406 | Describe the physical exam characteristics of a continuous murmur and explain why continuous murmurs cannot be produced by intracardiac structures. Name two conditions that can generate continuous murmurs. | SPM CVR | 1141 | Heart Murmurs Scheme Presentation |
| 4407 | Describe the mechanism that generates a pericardial friction rub, and describe the typical physical exam findings of a pericardial friction rub. Name several conditions that can cause a pericardial friction rub. | SPM CVR | 1141 | Heart Murmurs Scheme Presentation |
| 4410 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of syncope, the student shall use the syncope scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4411 | Differentiate between disorders that resemble syncope, cerebrovascular disorders and cardiovascular disorders causing syncope and the final pathology/disease in each category. | SPM CVR | 1150 | Syncope Scheme Presentation |

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| 4412 | Under disorders that resemble syncope, differentiate between seizures, psychogenic, and metabolic/endocrine causes and the final pathology/disease in each category. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4413 | Under cerebrovascular disorders causing syncope, identify the final pathology/disease in the category. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4414 | Under the cardiovascular causes of syncope differentiate between the category of decreased cardiac output and disorders of vascular tone/blood volume. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4415 | Under the category of decreased cardiac output, differentiate syncope into those caused by arrhythmias and structural and obstructive causes. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4416 | Under the category of arrhythmias differentiate the category of syncope between tachyarrhythmias and bradyarrhythmias and the final pathology/disease in each category. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4417 | Under the category of structural and obstructive causes syncope differentiate between, outflow, inflow, and myocardial causes of syncope and the final pathology/disease in each category. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4418 | Under the disorders of vascular tone/blood volume causes of syncope differentiate between the category of reflex (neurocardiogenic) and orthostatic causes of syncope and the final pathology/disease in each category. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4419 | Under the category of reflex (neurocardiogenic) cause of syncope, differentiate between "the simple faint, situational, and carotid hypersensitivity causes of syncope and the final pathology/disease in each category. | SPM CVR | 1150 | Syncope Scheme Presentation |
| 4431 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of palpitations, the student shall use the | SPM CVR | 1151 | Palpitations Clinical Scheme Presentation |

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| | palpitation scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | | | |
| 4432 | Differentiate the causes of palpitations into cardiac, other medical disorders, and psychiatric disorders and the final pathology/disease in each category. | SPM CVR | 1151 | Palpitations Clinical Scheme Presentation |
| 4433 | Under cardiac causes of palpitations, differentiate between the arrhythmia, valve disease and underlying heart condition categories and the final pathology/disease in each category. | SPM CVR | 1151 | Palpitations Clinical Scheme Presentation |
| 4434 | Under the arrhythmia causes of palpitations, differentiate between slow heart rate, rapid heart rate and irregular heart rate categories and the final pathology/disease in each category. | SPM CVR | 1151 | Palpitations Clinical Scheme Presentation |
| 4435 | Under the category for other medical disorders causing palpitation differentiate between palpitations caused by medication and drugs, metabolic disorders, and those caused by increased cardiac output and the final pathology/disease in each category. | SPM CVR | 1151 | Palpitations Clinical Scheme Presentation |
| 4444 | The remainder of hypertension will be covered in Unit 6. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 4454 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of dyspnea, the student shall use the dyspnea scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1172 | Dyspnea Scheme Presentation |

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| 4455 | Differentiate between ventilatory pump, ventilatory load and pulmonary circulation causes of dyspnea and the final pathology/disease in each category. | SPM CVR | 1172 | Dyspnea Scheme Presentation |
| 4456 | Under the category of ventilatory pump, differentiate between the categories of central nervous system, peripheral nervous system, and muscles causes for dyspnea the final pathology/disease in each category. | SPM CVR | 1172 | Dyspnea Scheme Presentation |
| 4457 | Under the category of ventilatory load differentiate between obstructive (airways), restrictive (chest wall and parenchyma), and minute ventilation (metabolic) causes of dyspnea. | SPM CVR | 1172 | Dyspnea Scheme Presentation |
| 4458 | Under the category of obstructive (airways), differentiate between upper airway and lower airway causes of dyspnea and the final pathology and disease in each category. | SPM CVR | 1172 | Dyspnea Scheme Presentation |
| 4459 | Under the category of restrictive chest wall and parenchyma differentiate between chest wall, parenchymal/cardiac, and parenchymal/non-cardiac causes of dyspnea and the final pathology and disease in each category. | SPM CVR | 1172 | Dyspnea Scheme Presentation |
| 4460 | Under the category of minute ventilation (metabolic) differentiate between metabolic acidosis, low arterial O ₂ , psychiatric, and other causes of dyspnea and the final pathology and disease in each category. | SPM CVR | 1172 | Dyspnea Scheme Presentation |
| 4468 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of cough, the student shall use the cough scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |

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| 4469 | Cough:B. Differentiate between acute and chronic causes of cough. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 4470 | Cough:C. Under the category of acute cough, differentiate between the infection, environmental, and exacerbation of pre-existing condition categories/causes of acute cough and the final pathology/disease in each category. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 4473 | Wheezing:A. After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of wheezing, the student shall use the wheezing scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 4477 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of cyanosis, the student shall use the cyanosis scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4478 | Differentiate between peripheral (normal arterial oxygen saturation) and central (low arterial oxygen saturation) causes of cyanosis. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4479 | Under peripheral (normal arterial oxygen saturation) causes of cyanosis, differentiate between the decreased venous outflow and decreased arterial inflow categories/causes of peripheral (normal arterial oxygen saturation) cyanosis and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |

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| 4480 | Under central low arterial oxygen saturation cause of cyanosis, differentiate between the no hypoxemia normal PaO2 and hypoxemia (low PaO2) categories/causes of central (low arterial oxygen saturation) cyanosis and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4481 | Under the hypoxemia (low PaO2)-central category of central cyanosis, differentiate between the normal A-a O2 gradient and high A-a O2 gradient categories/causes of hypoxemia low PaO2-central cyanosis and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4482 | Under the normal A-a O2 gradient category, differentiate between low atm.PO2 and hypoventilation increased PaCO2 categories/causes of normal A-a O2 gradient and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4483 | Under hypoventilation (increased PaCO2), differentiate between central (central nervous system) and peripheral (peripheral nervous system) and categories/causes of cyanosis and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4486 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of hemoptysis, the student shall use the hemoptysis scheme and process work sheets to navigate (be able to use the history and physical as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM CVR | 1201 | Hemoptysis Scheme Presentation |
| 4487 | Differentiate between pulmonary, vascular disorders and other medical disorders causes of hemoptysis and the final pathology/disease in each category. | SPM CVR | 1201 | Hemoptysis Scheme Presentation |

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| 4488 | Under pulmonary causes of hemoptysis, differentiate between the infection/inflammation, neoplasm, and trauma categories/causes of hemoptysis and the final pathology/disease in each category. | SPM CVR | 1201 | Hemoptysis Scheme Presentation |
| 4489 | Under the vascular disorders category of hemoptysis, differentiate between congestive heart failure left-side, pulmonary embolic, and vasculitis categories/causes of hemoptysis and the final pathology/disease in each category. | SPM CVR | 1201 | Hemoptysis Scheme Presentation |
| 4494 | List and explain factors that alter interstitial fluid formation and lymph flow. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4495 | Discuss the relationship between plasma, interstitial fluid and lymph fluid. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4496 | Recall the Starling Equilibrium equation and explain how it relates to interstitial fluid and lymph formation. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4497 | Explain the importance of capillary permeability and the reflection coefficient in the regulation of interstitial fluid pressure, interstitial fluid composition and lymph fluid composition. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4498 | Describe how we can determine reflection coefficient. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4499 | Evaluate the hypothesis of negative and positive interstitial hydrostatic fluid pressure. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4500 | Describe the formation of local edema, general edema, pitting edema and non-pitting edema. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4501 | Relate edema formation to interstitial hydrostatic fluid pressure and lymph flow. | SPM HEM | 1101 | Interstitial Fluid Dynamics and Lymph Flow |
| 4512 | Under the high A-a gradient O ₂ - hypoxemia (low PaO ₂) category, differentiate between right to left (R to L) shunt and ventilation/perfusion (V/Q) mismatch categories/causes of cyanosis and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |

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| 4513 | Under the right to left (R to L) shunt category, differentiate between intra-cardiac and intra-pulmonary categories/causes of cyanosis and the final pathology/disease in each category. | SPM CVR | 1197 | Cyanosis Scheme Presentation |
| 4531 | Compare and contrast prototype immunosuppressant agents based on their mechanism of action, uses and major adverse effects | SPM HEM | 1097 | Drugs that Affect Leukocytes |
| 4532 | Identify potential for drugs to cause neutropenia, particularly if neutropenia is a consequence of the pharmacologic effect of the drug, but also drugs where neutropenia is an idiosyncratic reaction that requires strategies for surveillance and treatment to prevent complications of infection. | SPM HEM | 1097 | Drugs that Affect Leukocytes |
| 4533 | Describe the seven differentiated formed elements present in blood. | SPM HEM | 1070 | Blood Histology |
| 4534 | Describe the histology, ultrastructure and function of erythrocytes. | SPM HEM | 1070 | Blood Histology |
| 4535 | Describe the histology, ultrastructure and function of neutrophils. | SPM HEM | 1070 | Blood Histology |
| 4536 | Describe the histology, ultrastructure and function of eosinophils. | SPM HEM | 1070 | Blood Histology |
| 4537 | Describe the histology, ultrastructure and function of basophils. | SPM HEM | 1070 | Blood Histology |
| 4538 | Describe the histology, ultrastructure and function of monocytes. | SPM HEM | 1070 | Blood Histology |
| 4539 | Describe the histology, ultrastructure and function of lymphocytes. | SPM HEM | 1070 | Blood Histology |
| 4540 | Describe the histology, ultrastructure and function of platelets. | SPM HEM | 1070 | Blood Histology |
| 4541 | Describe the basic structure of bone marrow. | SPM HEM | 1070 | Blood Histology |

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| 4542 | Describe the five committed precursors derived from the myeloid stem cell. | SPM HEM | 1070 | Blood Histology |
| 4543 | Describe the two committed precursors derived from the lymphoid stem cell. | SPM HEM | 1070 | Blood Histology |
| 4544 | Describe the differentiation occurring in the erythroid lineage. | SPM HEM | 1070 | Blood Histology |
| 4545 | Describe the differentiation occurring in the granulocyte lineages. | SPM HEM | 1070 | Blood Histology |
| 4546 | Know how mechanism by which erythropoietin stimulates erythropoiesis. | SPM HEM | 1070 | Blood Histology |
| 4547 | Describe the bleeding pattern due to defects in primary hemostasis. | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4548 | Describe the PT and PTT and their utility in the evaluation of bleeding disorders. | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4549 | Be familiar with the clinical presentation of DIC and be able to describe the expected findings with coagulation testing. | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4550 | Be familiar with the clinical presentation of von Willebrand disease and be able to describe the expected findings with coagulation testing. | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4551 | Be familiar with the clinical presentation of hemophilia and be able to describe the expected findings with coagulation testing. | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4552 | Be familiar with the clinical presentations of ITP and TTP and be able to describe the expected findings with coagulation testing | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4553 | Understand the effects of liver disease and anticoagulants on the coagulation system and describe the expected changes in coagulation testing. | SPM HEM | 1085 | Coagulation Abnormalities Scheme Presentation |
| 4560 | Describe the organisms belonging to the Rickettsia genus and how the life cycle of the almost all the | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |

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| | Rickettsia can lead to vasculitis, and hemorrhagic necrosis. | | | |
| 4572 | Explain the mechanism of warfarin anticoagulant activity, principles for adjusting the dose to achieve the desired effect (target PT – INR), the major adverse effects, and options to rapidly reverse the effects of warfarin. | SPM HEM | 1087 | Drugs for Coagulation |
| 4573 | Explain the mechanism of heparin anticoagulant activity, principles for adjusting the dose to achieve the desired effect (target aPTT), the major adverse effects, and options to rapidly reverse the effects of heparin. | SPM HEM | 1087 | Drugs for Coagulation |
| 4574 | Explain the mechanisms by which aspirin and clopidogrel inhibit platelet-driven thrombosis. | SPM HEM | 1087 | Drugs for Coagulation |
| 4575 | Explain the (plasminogen activating fibrinolytic) mechanism of thrombolytic drugs, the two main indications for use (acute ST elevation myocardial infarction and acute thromboembolic stroke), and the major adverse effect (bleeding). | SPM HEM | 1087 | Drugs for Coagulation |
| 4599 | Be able to define cirrhosis and provide examples of common causes. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4600 | Be able to provide the names of diseases that cause acute liver failure. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4601 | Provide the names of the markers of synthetic function of the liver. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4602 | | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |

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| | Provide the names of laboratory tests that are used to evaluate for hemolysis as a cause of elevated indirect bilirubin. | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4603 | Be familiar with the names of diseases listed on the scheme that result in elevated indirect bilirubin due to decreased uptake or conjugation. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4604 | Be familiar with the names of diseases listed on the scheme that result in elevated direct bilirubin. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4605 | Name the enzymes that indicate hepatocellular injury. | SPM GIS | 126 | Abnormal Liver Function Tests and Jaundice Scheme Presentation |
| | | | 145 | Liver Function Tests and Abdominal Distention WCE |
| 4606 | Explain how atropine (and other muscarinic cholinergic antagonists), metoprolol (and other beta adrenergic antagonists) and digoxin effect pacemaker cells of the SA and AV nodes. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 4608 | Relate the effects of antiarrhythmic drugs to cardiac cycle specific ion conductance at relevant sites along cardiac conduction pathways. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 4611 | Explain how antiarrhythmic drugs act to terminate re-entry circuits. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 4616 | Know the underlying mechanism of liver cirrhosis. | SPM GIS | 131 | Liver Histology |
| 4617 | Know the structural organization of the liver sinusoid and Space of Disse. | SPM GIS | 131 | Liver Histology |
| 4618 | Know the structural organization of bile canaliculi and the Canal of Hering. | SPM GIS | 131 | Liver Histology |

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| 4619 | Know the derivation, location and function of Kupffer cells. | SPM GIS | 131 | Liver Histology |
| 4620 | Know the general ultrastructure and function of the hepatocyte. | SPM GIS | 131 | Liver Histology |
| 4621 | Know the general organization of the hepatic lobule. | SPM GIS | 131 | Liver Histology |
| 4637 | Recognize and describe the pathogens that are responsible for AIDS-related sclerosing cholangitis. | SPM GIS | 142 | Liver Infections |
| 4638 | Recognize and describe the organism most commonly associated with liver abscesses in patients with hemochromatosis. | SPM GIS | 142 | Liver Infections |
| 4642 | Recognize the signs and symptoms of liver abscess. | SPM GIS | 142 | Liver Infections |
| 4643 | Describe the route of hepatic invasion leading to pyogenic liver abscess. | SPM GIS | 142 | Liver Infections |
| 4645 | Relate edema formation and ascites to interstitial hydrostatic fluid pressure and oncotic pressure. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4646 | Explain how decreased plasma protein levels can result in ascites. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4647 | Explain the difference in acute and chronic liver failure and how these are evaluated. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4648 | Explain the causes of cholestasis | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4649 | Describe the difference between prehepatic, intrahepatic, and posthepatic. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4650 | Explain the consequences of hepatic encephalopathy. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4651 | Describe the consequences of esophagogastric varices. | SPM GIS | 134 | Normal and Abnormal Liver Functions |
| 4652 | Recognize the primary cause of amebic liver abscess according to morphology and appearance of different stages of development, life cycle, methods of diagnosis and pathogenesis. | SPM GIS | 142 | Liver Infections |

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| 4653 | List the bacterial and parasitic pathogens that have been associated with biliary system infections (Cholecystitis and Cholangitis). | SPM GIS | 142 | Liver Infections |
| 4656 | Identify notable adverse effects and pharmacokinetic characteristics of the prototype antiarrhythmic agents. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 4657 | List factors that make the liver particularly vulnerable to toxic injury by drugs. As an example, explain the toxicokinetics of acetaminophen, and the rationale for using N-acetylcysteine as an antidote. | SPM GIS | 144 | Drugs in Liver Disease and Hepatotoxic Drugs |
| 4658 | Provide rationale and limitations for therapeutic use of bile acids to dissolve gall stones. | SPM GIS | 144 | Drugs in Liver Disease and Hepatotoxic Drugs |
| 4659 | Explain the role of non-absorbable disaccharides [example: lactulose] and broad-spectrum antimicrobials that are not orally bioavailable [example: rifaximin] in the treatment of liver failure. | SPM GIS | 144 | Drugs in Liver Disease and Hepatotoxic Drugs |
| 4660 | Describe the mechanisms of selective toxicity of drugs used to treat chronic hepatitis C [examples: interferon alpha 2a or b and ribavirin] and chronic hepatitis B [examples: lamivudine and entecavir]. | SPM GIS | 144 | Drugs in Liver Disease and Hepatotoxic Drugs |
| 4661 | Explain the rationale for therapeutic use of protease and uncoated lipase with a proton pump inhibitor to treat the steatorrheic diarrhea and pain of chronic pancreatitis. | SPM GIS | 144 | Drugs in Liver Disease and Hepatotoxic Drugs |
| 4681 | Identify the antihypertensive mechanism of action of the diuretics (prototype: hydrochlorothiazide), calcium channel blockers (prototype: amlodipine), angiotensin-converting enzyme (ACE) inhibitors (prototype: captopril), angiotensin receptor antagonists (prototype: losartan), renin inhibitor (prototype: aliskirin), central acting alpha-2 adrenergic agonists (prototype: clonidine), alpha-1 adrenergic antagonists (prototype: prazosin), beta adrenergic antagonists (prototype: metoprolol), direct vasodilators (prototype: | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |

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| | hydralazine), NO releasing drugs (prototype: nitroprusside). | | | |
| 4682 | Understand the major adverse effects and antihypertensive clinical uses of the major antihypertensive classes (prototypes: aliskirin, amlodipine, captopril, clonidine, hydralazine, hydrochlorothiazide, losartan, metoprolol, nitroprusside, and prazosin). | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |
| 4683 | Explain why diuretics are an appropriate 1st line therapy for most patients confirmed as having essential hypertension not responding to lifestyle interventions. | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |
| 4684 | Outline possible reasons for poor response to antihypertensive therapy. | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |
| 4685 | Define conditions when pharmacological antihypertensive therapy should be considered. | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |
| 4686 | Define antihypertensive treatment goals in terms of target blood pressure and lowering composite cardiovascular risk. | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |
| 4720 | Describe how the aortic sac and aortic arches are arranged in the embryo and how they remodel to generate the main arteries of the chest, upper limbs, head and neck. | SPM CVR | 1143 | Vascular Development |
| 4721 | Describe the formation of the systemic venous system from cardinal, subcardinal and supracardinal veins. | SPM CVR | 1143 | Vascular Development |
| 4722 | Describe the formation of the hepatic portal veins from the vitelline veins. | SPM CVR | 1143 | Vascular Development |
| 4723 | Describe the general pattern of fetal blood flow from the placenta, to the heart, lungs and body, and back to the placenta. Describe the roles of the foramen ovale, ductus arteriosus and the ductus venosus in fetal versus postnatal circulation and explain the effects of a | SPM CVR | 1143 | Vascular Development |

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| | patent ductus arteriosus and an atrial septal defect at the foramen ovale. | | | |
| 4724 | Describe the difference between an action potential in a nerve or skeletal muscle and an action potential in a ventricular cardiac muscle cell. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4725 | Compare and contrast an action potential in a cardiac ventricular muscle cell with a sinoatrial node muscle cell. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4726 | Correlate Sodium, Potassium and Calcium permeabilities in cardiac muscle cells and how this relates to action potential tracings | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4727 | Compare rates of action potential generation by cells in the SA node, atrial muscle, AV node, Purkinje system and the ventricular muscle. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4728 | Describe the pattern of electrical activity in the heart. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4729 | Delineate the role of gap junctions in the propagation of electrical activity in the heart. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4730 | Describe how sympathetic and parasympathetic nerve activity modulates heart rate. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4731 | Discuss how the individual heart cell action potential relates to the ECG tracing from the heart. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4732 | Define the basic components of an ECG tracing. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4733 | Begin to recognize the events associated in a Wigger's diagram of the cardiac cycle. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4734 | Describe the physiologic anatomy of the cardiac muscle cell. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4735 | Compare the duration of action potentials and contractions in skeletal and cardiac muscle cells. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |

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| 4736 | Compare and contrast the excitation contraction coupling mechanisms in skeletal, smooth and cardiac muscle cells. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4737 | Relate the cardiac action potential to the mechanical events of cardiac muscle contraction. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4738 | Discuss the concept of refractory period for action potentials and contractions related to cardiac muscle contraction. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4739 | Compare and contrast the length-tension curves for skeletal and cardiac muscle cells. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4740 | Correlate the pattern of electrical activity and contraction in cardiac muscle with the flow of blood in the heart. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4741 | Correlate the contraction of cardiac muscle to the generation of pressure in the chambers of the heart on the Wigger's diagram. | SPM CVR | 1127 | Cardiac Muscle Cells: Action Potentials, Pacemaker and Muscle Contraction |
| 4751 | Name the three bipolar, three augmented, and six precordial leads of the standard ECG, and indicate the direction from which each of these "view" the electrical activity of the heart. | SPM CVR | 1128 | Making Sense of the 12-Lead - ECG |
| 4752 | Indicate by marking on an ECG trace which of these are inferior, which are anterior, and which are lateral leads. | SPM CVR | 1128 | Making Sense of the 12-Lead - ECG |
| 4753 | Name the three coronary arteries, and describe the region(s) of myocardium typically perfused by each of these arteries. Correlate changes in regional blood flow in the myocardium with changes in the corresponding group of ECG leads. | SPM CVR | 1128 | Making Sense of the 12-Lead - ECG |
| 4754 | Illustrate a normal ECG waveform, ST segment elevation and depression, T wave inversion, and Q wave formation. Correlate each of these changes to the stages of evolution of a myocardial infarction. | SPM CVR | 1128 | Making Sense of the 12-Lead - ECG |

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| 4755 | Describe the primary immunodeficiency found in DiGeorge Syndrome. | SPM CVR | 1204 | The Thymus |
| 4757 | Describe the association of thymic disorders with myasthenia gravis (MG). | SPM CVR | 1204 | The Thymus |
| 4763 | Recall the cardiac cycle and relate left ventricular pressure to pressure in the aorta. | SPM CVR | 1144 | Hemodynamics |
| 4764 | Sketch and label a diagrammatic drawing of the human circulatory system. | SPM CVR | 1144 | Hemodynamics |
| 4765 | Relate the volume, pressure, and flow velocity in each major segment of the circulatory system. | SPM CVR | 1144 | Hemodynamics |
| 4766 | Compare the anatomy of the arteries, veins and capillaries and relate their structure to the function of each. | SPM CVR | 1144 | Hemodynamics |
| 4767 | Describe how Ohm's law relates to blood flow. | SPM CVR | 1144 | Hemodynamics |
| 4768 | Describe Reynold's number as it related to blood flow. | SPM CVR | 1144 | Hemodynamics |
| 4769 | Explain the calculation and importance of vascular resistance. | SPM CVR | 1144 | Hemodynamics |
| 4770 | Recall Poiseuille's Law and explain how it related to blood flow. | SPM CVR | 1144 | Hemodynamics |
| 4771 | Explain how to sum the resistance of vascular beds arranged in series or parallel. | SPM CVR | 1144 | Hemodynamics |
| 4772 | Define systolic and diastolic pressures in the arteries. | SPM CVR | 1144 | Hemodynamics |
| 4773 | Be able to calculate and explain mean arterial pressure. | SPM CVR | 1144 | Hemodynamics |
| 4774 | Define vascular compliance and distensibility. | SPM CVR | 1144 | Hemodynamics |
| 4775 | Know the general organization of the cardiovascular system. | SPM CVR | 1130 | Histology of the Heart |
| 4776 | Know the basic cellular features of cardiac muscle. | SPM CVR | 1130 | Histology of the Heart |

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| 4777 | Know the histology of the heart walls, valves and vessels. | SPM CVR | 1130 | Histology of the Heart |
| 4778 | Know the general organization and histology of the heart conduction system. | SPM CVR | 1130 | Histology of the Heart |
| 4779 | Know the histology of elastic and muscular arteries and arterioles. | SPM CVR | 1130 | Histology of the Heart |
| 4780 | Know the histology of large veins, muscular veins and venules. | SPM CVR | 1130 | Histology of the Heart |
| 4781 | Know the histology of continuous, fenestrated and discontinuous capillaries. | SPM CVR | 1130 | Histology of the Heart |
| 4782 | Know the histology of lymphatic vessels. | SPM CVR | 1130 | Histology of the Heart |
| 4826 | Identify and explain the four heart sounds | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4827 | Correlate heart sounds to the cardiac cycle events on Wigger’s diagram | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4828 | Define a valvular stenosis or valvular regurgitation related to flow of blood in the heart | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4831 | Examine the factors that determine cardiac output | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4832 | Determine how alterations in sympathetic and parasympathetic nervous system activity influence cardiac output | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4833 | Define ejection fraction and examine the factors that influence ejection fraction in the heart | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4834 | Define contractility and relate contractility to heart function | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4835 | Define the special circulation pattern associated with fetal life and how this pattern of flow is changed at birth | SPM CVR | 1140 | Physiology of Heart Sounds |
| 4836 | Draw a cardiac function curve and a vascular function curve and explain how they interact. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4837 | | SPM CVR | 1145 | Cardiac Output and Venous Return I |

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| | Explain how changing blood volume or total peripheral resistance will alter the vascular function curve. | | 1152 | Cardiac Output and Venous Return II |
| 4838 | If given appropriate values, calculate MAP, CVP, TPR, and CO for normal and pathological conditions. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4839 | Describe the Frank-Starling Law of the heart. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4840 | Develop a cardiac function and vascular function curve for an individual in hemorrhagic shock, vascular overhydration, and congestive heart failure. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4841 | Explain the factors that alter filling pressure. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4842 | Describe in detail why a general sympathetic discharge will alter CO, vascular compliance and TPR. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4843 | Describe filling pressure of the vascular system and explain the problems encountered in measuring this value. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4844 | Describe and explain problems associated with the development of cardiac function and vascular function curves. | SPM CVR | 1145 | Cardiac Output and Venous Return I |
| | | | 1152 | Cardiac Output and Venous Return II |
| 4855 | Describe the difference between physiological, psychological, and pathological palpitations. | SPM CVR | 1157 | Cerebral Blood Flow |
| 4856 | Briefly discuss common factors involved in syncope related to aging and the health related problems such as broken bones, hip fractures, and concussions. | SPM CVR | 1157 | Cerebral Blood Flow |
| 4857 | Explain factors that control brain blood flow. | SPM CVR | 1157 | Cerebral Blood Flow |
| 4858 | Compare the factors that control blood flow to the brain and other organs. | SPM CVR | 1157 | Cerebral Blood Flow |
| 4860 | Explain the Cushing reflex. | SPM CVR | 1157 | Cerebral Blood Flow |

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| 4864 | Review the cardiac cycle diagram and compare it to a pressure volume loop. | SPM CVR | 1158 | Control of Heart Activity |
| 4865 | Explain how to construct a pressure volume loop and identify the significance of each portion. | SPM CVR | 1158 | Control of Heart Activity |
| 4866 | Identify end diastolic volume, end systolic volume, and stroke volume on the pressure volume loop. | SPM CVR | 1158 | Control of Heart Activity |
| 4867 | Describe used dp/dt to estimate cardiac contractility. | SPM CVR | 1158 | Control of Heart Activity |
| 4868 | Explain the effect of preload and afterload on the pressure volume loop. | SPM CVR | 1158 | Control of Heart Activity |
| 4869 | Describe how the pressure volume loop can be used to predict cardiac performance. | SPM CVR | 1158 | Control of Heart Activity |
| 4870 | Explain the major factor that regulates blood flow to tissues. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4871 | Describe the relation of local tissue flow to cardiac output and blood pressure. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4872 | Briefly explain the "special" role of the brain and kidney in the regulation of cardiovascular function. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4873 | Describe the role of anemia in the regulation of local tissue blood flow. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4874 | Explain the metabolic and myogenic theories of blood flow control. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4875 | Compare and contrast the role of the sympathetic and parasympathetic nervous system in the regulation of blood pressure and blood flow. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4876 | Discuss the role of norepinephrine, epinephrine, angiotensin II, vasopressin, endothelin, bradykinin, and histamine in the regulation of blood pressure and blood flow. | SPM CVR | 1155 | Local Control of Blood Flow |
| 4877 | Discuss the role of calcium, potassium, H^+ , and CO_2 on blood flow. | SPM CVR | 1155 | Local Control of Blood Flow |

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| 4888 | Identify the mechanisms and sites of action of dopamine in its use to treat shock. | SPM CVR | 1167 | Drugs for Essential Hypertension And Shock |
| 4925 | Define shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4926 | Explain the difference between hyper-dynamic and hypo-dynamic shock states. | SPM CVR | 1162 | Cardiovascular Shock |
| 4927 | Explain the physiological basis of current and past shock treatments [steroids, catecholamines, intravenous fluids (or blood), respiratory support, MAST trousers, antibiotics (septic), anticoagulants, cyclooxygenase inhibitors, and specific receptor antagonist]. | SPM CVR | 1162 | Cardiovascular Shock |
| 4928 | Explain the how and why the body shifts control of the cardiovascular system from the autonomic nervous system to endocrine control. | SPM CVR | 1162 | Cardiovascular Shock |
| 4929 | Explain why the acid-base status of a person in shock can shift from respiratory alkalosis to metabolic acidosis. | SPM CVR | 1162 | Cardiovascular Shock |
| 4930 | Explain the physiological difference between exsanguination and hemorrhagic shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4931 | Discuss the importance of continuously monitoring and understanding cardiovascular parameters during shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4932 | Explain the effect of capillary permeability and third-spacing of fluids during cardiovascular shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4933 | Draw and explain cardiac function/vascular function curves in the hyperdynamic and hypodynamic stages of shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4934 | Discuss the consequences of disseminated intravascular coagulation (DIC) during shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4935 | Explain the role of the lungs and pulmonary vascular function in shock. | SPM CVR | 1162 | Cardiovascular Shock |

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| 4936 | Discuss the potential role of interleukins, PAF, TNF, histamine, oxygen radicals, prostaglandins, and endorphins in shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4937 | Discuss the possible role the cyclo-oxygenase pathway may play in shock. | SPM CVR | 1162 | Cardiovascular Shock |
| 4944 | Explain the development of CD4+ TH2 cells and define "atopic" | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4947 | Describe the development and distribution of mast cells and the sensitization phase of Type I Hypersensitivity | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4948 | Describe the roles of IgE, antigen, Fc epsilon RI and mast cells in anaphylaxis | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4950 | Describe the products released from activated mast cells and the roles they play in anaphylaxis | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4953 | Describe the contribution of basophils to type I hypersensitivity (and anaphylaxis) | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4954 | Explain the mechanism by which superantigens can cause septic shock | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4955 | Explain the mechanism by which Pattern Recognition Receptors (PRRs) can cause septic shock | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4956 | Describe the role of C5a and C3a (called anaphylatoxins) in shock | SPM CVR | 1163 | Immune Mechanisms Leading to Shock |
| 4957 | Locate the cardiovascular control center in the brainstem | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4958 | Delineate the interconnections of various locations in the brain with the cardiovascular control center | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4959 | Identify the various inputs to the cardiovascular control center | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4960 | Compare and contrast the Sympathetic and Parasympathetic outputs from the cardiovascular control center | SPM CVR | 1154 | Neuro Control of Vascular Tone |

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| 4961 | Describe the need for central cardiovascular control of blood flow given that generally the main control of blood flow to the tissues is by local control | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4962 | Describe the importance of tonic vasomotor control in the vasculature | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4963 | Relate baroreceptor function to the cardiovascular control center | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4964 | Correlate the regulation of blood pressure to the function of the cardiovascular control center | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4965 | Describe the influence of carotid body and aortic arch input to the cardiovascular control center | SPM CVR | 1154 | Neuro Control of Vascular Tone |
| 4966 | Identify all of the different factors influencing blood pressure regulation | SPM CVR | 1165 | Temporal Relationships of Vascular Control |
| 4967 | Relate the different factors influencing blood pressure regulation in a temporal time frame | SPM CVR | 1165 | Temporal Relationships of Vascular Control |
| 4968 | Identify which blood pressure altering mechanisms work in seconds versus minutes versus hours versus days | SPM CVR | 1165 | Temporal Relationships of Vascular Control |
| 4969 | Explain the way each of the factors listed in figure 19-15 regulates blood pressure (volume details presented in year 2 unit 6) | SPM CVR | 1165 | Temporal Relationships of Vascular Control |
| 4970 | In relation to the cardiovascular system, describe the influence of the Renin-Angiotensin system related to blood pressure control | SPM CVR | 1165 | Temporal Relationships of Vascular Control |
| 4984 | Describe changes in the cardiac and vascular curves for: 1) dehydration, 2) exsanguination 3) hypo-dynamic hemorrhagic shock, 4) septic shock, 5) hypertension, and 6) congestive heart failure . | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 4985 | Describe the physiological rationale for the treatment of: 1) dehydration, 2) exsanguination 3) hypo-dynamic hemorrhagic shock, 4) septic shock, 5) hypertension, and 6) congestive heart failure . | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |

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| 4986 | Be able to estimate physiological changes and the physiological response to: 1) dehydration, 2) exsanguination 3) hypo-dynamic hemorrhagic shock, 4) septic shock, 5) hypertension, and 6) congestive heart failure . | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 4987 | Be able to calculate (estimate) changes in blood volume and blood pressure if given necessary values. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 4988 | Determine changes in body fluid compartments and why these changes occur. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 4989 | Be able to tell the difference between exsanguination and hemorrhagic shock. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5000 | Calculate mean arterial pressure (MAP) from systolic and diastolic pressure and explain why this calculation approximates true MAP. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5001 | Explain the true measure of mean arterial pressure and how this could be determined. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5002 | Discuss the shape of the arterial pressure tracing and the factors influence this tracing. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5003 | Explain the effect of exercise on arterial blood pressure and heart rate. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5004 | Discuss how drugs can alter arterial pressure by altering cardiac output, total peripheral resistance and/or blood volume. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5005 | Explain has the effect of blood viscosity on blood flow and blood pressure. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5006 | Explain the effect of exercise on blood pressure in a well trained athletic and in a person who lives a sedentary life style. | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 5021 | Explain the underlying physiology disturbances that result in the development of congestive heart failure. | SPM CVR | 1183 | Congestive Heart Failure |

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| 5022 | Explain the physiological mechanisms responsible for the normal regulation of sodium, potassium, magnesium and hydrogen ions. | SPM CVR | 1183 | Congestive Heart Failure |
| 5023 | Explain how congestive heart failure can alter the normal regulation of sodium, potassium, magnesium and hydrogen ions in the body. | SPM CVR | 1183 | Congestive Heart Failure |
| 5024 | Evaluate a treatment plan for a patient in congestive heart failure and explain how this could alter the plasma concentration of electrolytes and the patient's acid-base status. | SPM CVR | 1183 | Congestive Heart Failure |
| 5025 | Discuss the physiological role of atrial natriuretic peptide (ANP) and brain natriuretic peptide (BNP) in a normal patient and a patient with congestive heart failure. | SPM CVR | 1183 | Congestive Heart Failure |
| 5026 | Draw a cardiac function curve and a vascular curve and use this graph to explain the development of a patient with congestive heart failure. | SPM CVR | 1183 | Congestive Heart Failure |
| 5027 | Identify the site and mechanism of action of cardiac glycosides (prototype: digoxin), beta adrenergic agonists (prototype: dobutamine), thiazide (prototype: hydrochlorothiazide) and loop (prototype: furosemide) diuretics, beta adrenergic antagonists (prototype: carvedilol), ACE inhibitors (prototype: captopril), and aldosterone receptor antagonists (prototype: spironolactone) that cause beneficial and detrimental effects on the heart. | SPM CVR | 1184 | Drugs used in Heart Failure |
| 5028 | Explain when use of beta adrenergic agonists (prototype: dobutamine) and when use of beta adrenergic antagonists (prototype: carvedilol) are appropriate to use to treat heart failure. | SPM CVR | 1184 | Drugs used in Heart Failure |
| 5029 | Explain how the drugs that modulate the renin-angiotensin-aldosterone system (prototype: captopril) and drugs that modulate sympathetic tone (prototype: carvedilol) most directly address the pathogenesis of congestive heart failure and their role in countering | SPM CVR | 1184 | Drugs used in Heart Failure |

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| | detrimental effects of normally compensatory physiological mechanisms. | | | |
| 5030 | Explain why beta adrenergic receptor antagonists (prototype: carvedilol) must not be discontinued abruptly and why it is important to monitor heart rate, blood pressure, and body weight while taking these agents. | SPM CVR | 1184 | Drugs used in Heart Failure |
| 5031 | Give examples of select heart failure patient situations where cardiac glycoside (prototype: digoxin) could be beneficial but why monitoring serum potassium is important when they are used. | SPM CVR | 1184 | Drugs used in Heart Failure |
| 5032 | Identify heart failure patient situations where a loop diuretic (prototype: furosemide) could be beneficial over thiazide diuretic (prototype: hydrochlorothiazide) and when potassium sparing diuretics such as aldosterone receptor antagonists (prototype: spironolactone) should be considered to be used. | SPM CVR | 1184 | Drugs used in Heart Failure |
| 5033 | Know the general organization of the pulmonary system. | SPM CVR | 1174 | Pulmonary Histology |
| 5034 | Know the spatial and histological organization of the nasal and paranasal sinuses | SPM CVR | 1174 | Pulmonary Histology |
| 5035 | Know the spatial and histological organization of epiglottis, larynx and vocal cords | SPM CVR | 1174 | Pulmonary Histology |
| 5036 | Know the spatial and histological organization of the trachea | SPM CVR | 1174 | Pulmonary Histology |
| 5037 | Know the spatial and histological organization of the bronchi and conducting bronchioles | SPM CVR | 1174 | Pulmonary Histology |
| 5038 | Know the definition of the respiratory lobule and respiratory acinus. | SPM CVR | 1174 | Pulmonary Histology |
| 5039 | Know the spatial and histological organization of the terminal and respiratory bronchioles | SPM CVR | 1174 | Pulmonary Histology |

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| 5040 | Know the spatial and histological organization of the alveoli ducts and alveoli | SPM CVR | 1174 | Pulmonary Histology |
| 5041 | Know the site of production, composition and function of surfactant | SPM CVR | 1174 | Pulmonary Histology |
| 5049 | Identify the mechanisms and sites of action of muscarinic cholinergic antagonists (prototype: ipratropium), beta-2 adrenergic agonists (prototypes: albuterol and salmeterol) and corticosteroids (prototype: beclomethasone) in relieving dyspneic symptoms for chronic obstructive pulmonary disease (COPD). | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5050 | Identify the adverse effects that muscarinic cholinergic antagonists, beta-2 adrenergic agonist and corticosteroids are predicted to have when used in dyspneic symptom relief for COPD. | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5051 | Identify antimicrobial therapies that are used to treat pulmonary infections that more commonly found to occur in persons with COPD. | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5052 | Identify the mechanisms and sites of action and adverse effects of possible pharmacological adjuncts to smoking-cessation programs (prototypes: nicotine, bupropion and varenicline). | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5053 | Know Dalton’s Law, Boyle’s Law and Fick’s Law in relation to pulmonary function | SPM CVR | 1173 | Ventilatory Mechanics |
| 5054 | Define Dyspnea, Tachypnea, Apnea, Hyperpnea, Hypoxia, Hypercapnea, hypoventilation and Hyperventilation | SPM CVR | 1173 | Ventilatory Mechanics |
| 5055 | Describe the mechanism of ventilation of the lungs | SPM CVR | 1173 | Ventilatory Mechanics |
| 5056 | Define the role of intercostal muscles and the diaphragm to ventilation mechanics in active and passive ventilation | SPM CVR | 1173 | Ventilatory Mechanics |

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| 5057 | Relate ventilation mechanics to respiratory control by the brainstem control areas | SPM CVR | 1173 | Ventilatory Mechanics |
| 5058 | Define partial pressure | SPM CVR | 1173 | Ventilatory Mechanics |
| | | SPM CVR | 1181 | Gas Transport |
| 5059 | Discuss the concept of partial pressures to the delivery of oxygen to the alveoli and blood | SPM CVR | 1173 | Ventilatory Mechanics |
| 5060 | Relate atmospheric, intraalveolar and intrapleural pressures to ventilation mechanics | SPM CVR | 1173 | Ventilatory Mechanics |
| 5061 | Define the various respiratory volumes and how they are altered by exercise, respiratory rate and COPD | SPM CVR | 1173 | Ventilatory Mechanics |
| 5062 | Define and calculate Alveolar minute volume. | SPM CVR | 1173 | Ventilatory Mechanics |
| 5063 | Compare and contrast Alveolar minute volume and cardiac output | SPM CVR | 1173 | Ventilatory Mechanics |
| 5064 | Describe the effect of blood flow on ventilation | SPM CVR | 1173 | Ventilatory Mechanics |
| 5065 | Identify the cause and discuss the concept of ventilation perfusion mismatch | SPM CVR | 1173 | Ventilatory Mechanics |
| 5066 | Define pulmonary compliance and describe how it is altered in various disease states such as emphysema or fibrosis | SPM CVR | 1173 | Ventilatory Mechanics |
| 5067 | Define the effect of left heart failure and right heart failure on ventilation. | SPM CVR | 1173 | Ventilatory Mechanics |
| 5068 | Describe the influence of pulmonary edema on breathing | SPM CVR | 1173 | Ventilatory Mechanics |
| 5069 | Describe how muscle pathologies influence lung ventilation | SPM CVR | 1173 | Ventilatory Mechanics |
| 5070 | Describe the effects of COPD, asthma and sepsis on ventilation | SPM CVR | 1173 | Ventilatory Mechanics |
| 5075 | Delineate the partial pressures for oxygen and carbon dioxide in the blood throughout the vascular system | SPM CVR | 1181 | Gas Transport |

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| 5076 | In general terms, describe the factors that influence gas exchange in the alveoli of the lungs | SPM CVR | 1181 | Gas Transport |
| 5077 | Describe the exchange of oxygen and carbon dioxide at the alveolar / capillary interface | SPM CVR | 1181 | Gas Transport |
| 5078 | Diagram how oxygen is carried in the blood | SPM CVR | 1181 | Gas Transport |
| 5079 | Revisit the Oxygen hemoglobin dissociation curves and explain how temperature, carbon dioxide, pH and 2,3 DPG influence oxygen loading in the lung and delivery in the tissue | SPM CVR | 1181 | Gas Transport |
| 5080 | Explain how exercise and unusual environments like high altitude and diving influence oxygen delivery | SPM CVR | 1181 | Gas Transport |
| 5081 | Analyze how high oxygen content in the atmosphere influences oxygen delivery | SPM CVR | 1181 | Gas Transport |
| 5082 | Diagram the equilibration of alveolar and capillary oxygen partial pressures in the alveoli of the lung | SPM CVR | 1181 | Gas Transport |
| 5083 | Discuss the factors that influence the equilibration of alveolar and capillary oxygen partial pressures | SPM CVR | 1181 | Gas Transport |
| 5084 | Describe the influence of carbon monoxide on oxygen delivery to tissue | SPM CVR | 1181 | Gas Transport |
| 5085 | Describe and Diagram how carbon dioxide is carried in the blood | SPM CVR | 1181 | Gas Transport |
| 5086 | Describe the relationship between arterial chemoreceptors, central chemoreceptors and partial pressures of oxygen and carbon dioxide | SPM CVR | 1181 | Gas Transport |
| 5100 | Identify the pneumotaxic center and the apneustic center in the brain. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5101 | Describe the regions of the brain responsible for rhythmic breathing. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5102 | Explain the location of the respiratory centers in the brain and compare their location to the regions that | SPM CVR | 1175 | Regulation of Respiratory Rhythm |

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| | regulate cardiovascular function and higher cognitive processing. | | | |
| 5103 | Explain the regulation of respiration in a person with brain damage or drug overdose. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5104 | Explain the Hering-Breuer reflex and its usefulness in controlling respiration. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5105 | List the factors that activate the chemosensitive regions of the brain. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5106 | Compare the regulation of respiration to the regulation of brain blood flow. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5107 | Compare the importance of H ⁺ , CO ₂ and O ₂ in the regulation of respiration. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5108 | Describe the role of peripheral chemosensors in the control of breathing. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5109 | Describe and explain the effect of exercise on respiration. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5110 | Explain Cheyne-Stokes breathing. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5111 | Discuss respiratory issues related to Sudden Infant Death syndrome (SIDS). | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5112 | Discuss issues related to sleep apnea in adults. | SPM CVR | 1175 | Regulation of Respiratory Rhythm |
| 5113 | Draw and label a Davenport diagram. | SPM CVR | 1182 | Respiratory Control of pH |
| 5114 | Explain the major causes of acute respiratory acidosis and alkalosis and chronic respiratory acidosis and alkalosis. | SPM CVR | 1182 | Respiratory Control of pH |
| 5115 | Explain the difference between acidemia and acidosis and alkalemia and alkalosis. | SPM CVR | 1182 | Respiratory Control of pH |
| 5116 | Explain why the plasma bicarbonate concentration will increase or decrease with a change in respiration. | SPM CVR | 1182 | Respiratory Control of pH |

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| 5117 | Compare the units used to measure plasma hydrogen concentration and bicarbonate concentration. | SPM CVR | 1182 | Respiratory Control of pH |
| 5118 | Explain the equation that allows the body to generate bicarbonate from CO ₂ . | SPM CVR | 1182 | Respiratory Control of pH |
| 5119 | Explain how the respiratory system attempts to correct for metabolic acidosis problems. | SPM CVR | 1182 | Respiratory Control of pH |
| 5120 | Briefly explain how the kidney attempts to compensate for respiratory induced changes in acid-base status. | SPM CVR | 1182 | Respiratory Control of pH |
| 5121 | Explain how travel to high altitude will alter acid base status. | SPM CVR | 1182 | Respiratory Control of pH |
| 5122 | List the consequences of respiratory acidosis and alkalosis and explain a physiological basis for the treatment of each condition. | SPM CVR | 1182 | Respiratory Control of pH |
| 5125 | Define and identify the different lung compartments: volumes and capacities | SPM CVR | 1180 | Clinical Pulmonary Function Test |
| 5126 | Identify the abnormalities that characterize obstructive and restrictive patterns in spirometry and lung volumes measurements | SPM CVR | 1180 | Clinical Pulmonary Function Test |
| 5127 | Understand the clinical utility of spirometry, lung volumes and diffusing capacity measurements | SPM CVR | 1180 | Clinical Pulmonary Function Test |
| 5132 | Identify the mechanism of action of the bronchodilating (prototypes: albuterol, salmeterol, ipratropium and theophylline) and anti-inflammatory agents (prototypes: beclomethasone, cromolyn, montelukast, zileuton and omalizumab) used in the treatment of asthma. | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5133 | Define initial treatment of uncomplicated asthma based on frequency, severity and circumstances of asthmatic occurrences. | SPM CVR | 1199 | Drugs for COPD and Asthma |

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| 5134 | Consider the role of leukotriene receptor antagonists as an alternative for inhaled corticosteroids. | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5135 | Consider the role that anti-IgE (omalizumab) might have in treatment of severe asthma | SPM CVR | 1199 | Drugs for COPD and Asthma |
| 5136 | Identify the mechanism of antitussive effects of weak opiate agonists (prototype: codeine) and adverse effects with attention to pharmacogenetic variation in the pharmacokinetics of codeine. | SPM CVR | 1193 | Drugs affecting Respiratory Secretions and Influenza |
| 5137 | Explain the presumed mechanism of action of expectorants (guaifenesin). | SPM CVR | 1193 | Drugs affecting Respiratory Secretions and Influenza |
| 5138 | Explain how amantidine acts to prevent or treat influenza A, and its adverse effects. | SPM CVR | 1193 | Drugs affecting Respiratory Secretions and Influenza |
| 5139 | Explain how a neuraminidase inhibitor (prototype: zanamavir) acts to prevent or treat influenza. | SPM CVR | 1193 | Drugs affecting Respiratory Secretions and Influenza |
| 5140 | Compare the mechanisms of action of acetylcysteine and dornase alpha as mucolytics for treatment of patients with plug/cast forming disease conditions such as cystic fibrosis | SPM CVR | 1193 | Drugs affecting Respiratory Secretions and Influenza |
| 5141 | Define how the following three buffering systems function to maintain physiological pH: proteins, phosphate, and bicarbonate. | SPM CVR | 1182 | Respiratory Control of pH |
| 5151 | Describe the respiratory infections caused by influenza and identify characteristics of the viruses | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 5201 | Recall the number of airway branches and the size of particles that settle in each. | SPM CVR | 1179 | Airway Control |
| 5202 | Explain the afferent nerves arising from the respiratory system and how these influence sneezing and cough. | SPM CVR | 1179 | Airway Control |
| 5203 | Explain the efferent nerve input to the respiratory system and how they alter the function of the respiratory system. | SPM CVR | 1179 | Airway Control |

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| 5204 | Explain how epinephrine alters the airways in the lungs. | SPM CVR | 1179 | Airway Control |
| 5205 | Recall the location of the cough center in the brain and compare its location to the cardiovascular and respiratory centers. | SPM CVR | 1179 | Airway Control |
| 5206 | Explain how the coughing and sneezing are defense mechanisms. | SPM CVR | 1179 | Airway Control |
| 5207 | Explain the stimuli that activate coughing and sneezing. | SPM CVR | 1179 | Airway Control |
| 5208 | Recall the anatomical and physiological steps that are involved in a cough or sneeze. | SPM CVR | 1179 | Airway Control |
| 5209 | Discuss the concerns related to administration of a beta-blocker to a person with asthma. | SPM CVR | 1179 | Airway Control |
| 5210 | Discuss the effect of high altitude on the respiratory system. | SPM CVR | 1179 | Airway Control |
| 5215 | High altitude: Explain possible causes and consequences of pulmonary hypertension caused by high altitude | SPM CVR | 1194 | Unusual Environments |
| 5216 | High altitude: Describe the physiological basis of treatment for pulmonary edema caused by high altitude. | SPM CVR | 1194 | Unusual Environments |
| 5217 | Diving: Describe the mechanisms responsible for development of the "bend" after an underwater dive. | SPM CVR | 1194 | Unusual Environments |
| 5218 | Diving: Explain the use of Helium/oxygen mixtures used in very deep underwater dives. | SPM CVR | 1194 | Unusual Environments |
| 5219 | Space and aviation: Describe the effects of G-forces on the cardiovascular system. | SPM CVR | 1194 | Unusual Environments |
| 5220 | Space and aviation: Describe the effects of microgravity on the cardiovascular and musculoskeletal systems. | SPM CVR | 1194 | Unusual Environments |
| 5221 | Space and aviation: Explain techniques used to offset the physiological effects of G forces. | SPM CVR | 1194 | Unusual Environments |

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| 5222 | Smoke filled environments: Describe the effect of smoke inhalation on the lung. | SPM CVR | 1194 | Unusual Environments |
| 5223 | Smoke filled environments: Describe the physiological effect of toxins often found in burning buildings. | SPM CVR | 1194 | Unusual Environments |
| 5224 | Smoke filled environments: Describe the effect of thermal injury on the lungs. | SPM CVR | 1194 | Unusual Environments |
| 5250 | Define Cyanosis | SPM CVR | 1198 | Oxygen Transport Issues |
| 5251 | Differentiate between central and peripheral causes of cyanosis | SPM CVR | 1198 | Oxygen Transport Issues |
| 5252 | Describe how alterations in blood flow can cause cyanosis | SPM CVR | 1198 | Oxygen Transport Issues |
| 5253 | Describe how alterations in oxygenation of blood can cause cyanosis | SPM CVR | 1198 | Oxygen Transport Issues |
| 5254 | Differentiate between the mechanisms causing cyanosis as a result of decreased cardiac output, cold exposure, flow redistribution, and vascular blockage. | SPM CVR | 1198 | Oxygen Transport Issues |
| 5255 | Differentiate between the mechanisms causing cyanosis as a result of ventilation perfusion mismatch, alveolar hypoventilation, abnormal hemoglobin, and right to left anatomical shunts. | SPM CVR | 1198 | Oxygen Transport Issues |
| 5265 | Distinguish latent tuberculosis infection from active tuberculosis disease. | SPM CVR | 1202 | Tuberculosis |
| 5269 | Describe the mechanism of interferon-gamma release assays. | SPM CVR | 1202 | Tuberculosis |
| 8826 | Describe the architecture of the bacterial genome including the extrachromosomal elements. | SPM IHD | 26 | Microbial Genetics |
| 8829 | Describe how prokaryotic microorganisms coordinate gene regulation of large groups of genes by modification of RNA polymerase specificity through the sigma subunit. | SPM IHD | 26 | Microbial Genetics |

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| 8830 | Describe positive and negative gene regulation of the bacterial LAC operon. | SPM IHD | 26 | Microbial Genetics |
| 8855 | Provide a general description of the steps of viral replication including adsorption, penetration, and uncoating. | SPM IHD | 59 | Viral Causes of Sore Throat |
| 8862 | List the most important microbial agents isolated from each of the following types of infected wounds: human and animal bites; burns; surgical sites; soil-contaminated soil-contaminated wounds. | SPM IHD | 93 | Bacterial Wound Infections |
| 8898 | Outline the structure, pathogenesis, epidemiology, manifestations and clinical disease stages associated with <i>Borrelia burgdorferi</i> infection and untreated Lyme disease. | SPM IHD | 83 | Chronic Relapsing Fever |
| 8900 | Provide an explanation for the periodic febrile and afebrile cycles of relapsing fever resulting from <i>Borrelia recurrentis</i> infection. | SPM IHD | 83 | Chronic Relapsing Fever |
| 8903 | Recognize <i>P. vivax</i> as the etiological agent for malaria and the associated paroxysms that reappear every 48 hours as the cycle of infection, replication and cell lysis progresses | SPM IHD | 83 | Chronic Relapsing Fever |
| 8904 | Diagram the life cycle of <i>P. vivax</i> detailing the different stages of development of this organism (sporozoites, merozoites, trophozoites, schizonts and hypnozoites) | SPM IHD | 83 | Chronic Relapsing Fever |
| 8910 | Recognize the etiology of brucellosis (undulant fever) including the structure, physiology, clinical signs and symptoms and epidemiologic characteristics of the causative organism including the animal reservoirs | SPM IHD | 83 | Chronic Relapsing Fever |
| 8911 | Recognize the diseases caused by <i>Bartonella</i> including the structure, clinical signs and symptoms, and epidemiologic characteristics. | SPM IHD | 83 | Chronic Relapsing Fever |
| 8937 | Outline the phases of an immune response beginning with the early innate response, followed by recognition, | SPM IHD | 15 | Introduction to the Immune System |

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| | elimination and memory of the microbe by the adaptive immune system | | | |
| 8938 | Identify the two stored forms of energy that are synthesized in the fed state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |
| 8939 | Discuss the role of glycogen during the fasting state | SPM IHD | 24 | Metabolism in the Fed, Fasting, and Starved States |
| 8947 | Describe essential components of wound assessment | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8948 | List the various etiologies of wounds | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8949 | Understand the mechanisms of tissue injury | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8950 | Describe the different stages of wounds | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8951 | Identify tissue involvement during wound assessment a. Classify burns according to depth | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8952 | Understand differences between acute and chronic wounds | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8953 | Identify systemic factors that contribute to development of chronic wound | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8954 | Describe and understand the phases and categories of wound healing | SPM IHD | 90 | Wound Scheme Presentation |
| | | | 100 | Wound WCE |
| 8958 | Define "adjuvant" and explain the role of innate immunity (signal #2) in initiating adaptive immune responses | SPM IHD | 28 | Innate Immunity and Complement System |
| 8966 | Describe the role of the complement cascade in localized inflammation | SPM IHD | 28 | Innate Immunity and Complement System |

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| 8967 | Describe the formation and function of the membrane attack complex | SPM IHD | 28 | Innate Immunity and Complement System |
| 9002 | Describe the development of T-independent antibody responses including the role of the spleen | SPM IHD | 98 | Immune Responses in Wound |
| 9051 | Demonstrate the ability to assess a patient who presents with sore throat. | SPM IHD | 50 | Sore Throat Scheme Presentation |
| | | | 61 | Sore Throat WCE |
| 9052 | Describe clinical clues that help to differentiate Group A beta-hemolytic streptococcus from viral or other causes of sore throat. | SPM IHD | 50 | Sore Throat Scheme Presentation |
| | | | 61 | Sore Throat WCE |
| 9053 | Describe clinical clues that support allergic rhinitis as a diagnosis. | SPM IHD | 50 | Sore Throat Scheme Presentation |
| | | | 61 | Sore Throat WCE |
| 9054 | Discuss indications for obtaining a Rapid Streptococcal Antigen Test. | SPM IHD | 50 | Sore Throat Scheme Presentation |
| | | | 61 | Sore Throat WCE |
| 9055 | List other causes of sore throat that are less common. | SPM IHD | 50 | Sore Throat Scheme Presentation |
| | | | 61 | Sore Throat WCE |
| 9065 | Relate the selective toxicity of cancer chemotherapeutic drugs to phase-specific and cell-cycle specific mechanisms of action. | SPM IMN | 226 | Cell Cycle Drugs |
| 9066 | Anticipate adverse effects of cancer chemotherapeutic agents, and particularly why the most rapidly proliferating normal cells are likely to suffer toxicity along with the tumor cells. | SPM IMN | 226 | Cell Cycle Drugs |
| 9067 | Propose why surgical debulking, radiation and CCNS agents increase the selective toxicity of cell cycle-specific cytotoxic cancer chemotherapy drugs by increasing the size of the growth fraction | SPM IMN | 226 | Cell Cycle Drugs |
| 9070 | Demonstrate familiarity with the parts of the compound light microscope and Köhler illumination. | SPM IHD | 82 | Gram Stain and Microscopy of Bacteria |
| 9071 | Visually recognize and differentiate between different gram positive and gram negative stain reactions and | SPM IHD | 82 | Gram Stain and Microscopy of Bacteria |

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| | bacterial cell morphologies including cocci, rods, diplococci, spirochetes. | | | |
| 9072 | Know how to perform a gram stain as well as define the role of each component of the gram stain procedure. | SPM IHD | 82 | Gram Stain and Microscopy of Bacteria |
| 9073 | Differentiate between budding yeast and bacteria using light microscopy. | SPM IHD | 82 | Gram Stain and Microscopy of Bacteria |
| 9074 | Recognize fungal hyphae using light microscopy. | SPM IHD | 82 | Gram Stain and Microscopy of Bacteria |
| 9075 | Demonstrate and describe the method for obtaining a pure culture of bacteria. | SPM IHD | 82 | Gram Stain and Microscopy of Bacteria |
| 9142 | Recognize normal body temperature | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9143 | Understand what affects measurement of normal temperature | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9144 | Define fever un understand how the body temperature is regulated | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9145 | Understand the pathogenesis of fever | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9146 | Understand how to diagnose the primary disease causing the fever | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9147 | Identify the symptoms associated with fever | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9148 | List the basis for the diagnosis of common bacterial, viral, or parasitic infection | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9149 | Understand the concept of non-infectious fever | SPM IHD | 68 | Fever Scheme Presentation |
| | | | 688 | Fever WCE |
| 9150 | List the conditions associated with fever that are non-infectious | SPM IHD | 68 | Fever Scheme Presentation |

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| | | | 688 | Fever WCE |
| 9171 | Present an overview of eukaryotic cellular organization and function, including the specialized functions of the subcellular organelles. | SPM IHD | 12 | Molecules and Cells II |
| 9172 | Identify eukaryotic cellular components in electron and light micrographs. | SPM IHD | 12 | Molecules and Cells II |
| 9173 | Describe and be able to identify in micrographs the following membrane specializations: tight junctions; adherens junctions; desmosomes; gap junctions; hemidesmosomes. | SPM IHD | 14 | Epithelium and Glands |
| 9175 | Describe and be able to identify in micrographs the following epithelium types: simple squamous; simple cuboidal; simple columnar; pseudostratified ciliated; stratified cuboidal; stratified squamous and stratified transitional. | SPM IHD | 14 | Epithelium and Glands |
| 9181 | Briefly describe the four types of hypersensitivity, especially recognize the role of CD4+ TH1 cells in Type IV Hypersensitivity | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9182 | Explain the role of CD4+ TH1 cells in Delayed-Type Hypersensitivity | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9183 | Compare the types of intracellular microbes eliminated by CD4+ TH1 cells and CD8+ cytotoxic T cells (CTLs) | SPM IHD | 85 | Effector Functions: Cell-mediated Immunity |
| 9185 | Contrast endogenous and exogenous pyrogens | SPM IHD | 63 | Pyrogens & The Immune System |
| 9186 | Describe the role of TLRs in the biologic response to endotoxins like lipopolysaccharide (LPS) | SPM IHD | 63 | Pyrogens & The Immune System |
| 9187 | Define the term superantigen and explain how a superantigen can activate such a large number of T cells | SPM IHD | 63 | Pyrogens & The Immune System |
| 9188 | List two types of bacteria that produce superantigens | SPM IHD | 63 | Pyrogens & The Immune System |
| 9189 | Compare the interactions with class II MHC molecules and TCRs of a "regular" antigen and a "super" antigen | SPM IHD | 63 | Pyrogens & The Immune System |

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| 9217 | List and describe the microscopic characteristics that commonly distinguish malignant from benign masses. | SPM IMN | 224 | Musculoskeletal Lumps and Masses Scheme Presentation |
| | | | 237 | Musculoskeletal Lumps and Masses WCE |
| 9218 | Construct a diagram showing the mechanism by which superantigens cause disease | SPM IHD | 63 | Pyrogens & The Immune System |
| 9219 | Describe immune deficiencies that lead to recurrent infections in children and adults, and categorize them as: primary (inherited) or secondary (acquired); innate or adaptive; defects in lymphocyte maturation or activation/function | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9220 | For the primary immune deficiencies list the pattern of inheritance, the immune defect and the most common type of infections | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9221 | List the common causes of acquired (secondary) immunodeficiency | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9222 | Define immune complex and describe methods for measuring immunoglobulins and complement components in serum that depend on the formation of immune complexes | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9223 | Explain the use of the enzyme linked immunosorbent assay (ELISA) and Western blot assay in the diagnosis of infection | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9224 | Describe the significance of an IgM vs IgG response or a rise in the titer of an IgG antibody in the diagnosis of an infection | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9225 | Describe serologic tests performed by precipitation | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9226 | Describe the principles that govern precipitation reactions by defining the three zones in an antigen-antibody precipitin curve and defining the term prozone | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 9232 | Define the processes of opsonization and neutralization | SPM IHD | 96 | Immune Mechanisms in Healing |

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| 9236 | Explain the role of IgE in protection against helminth infections and in Type I Hypersensitivity | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9237 | Define the term “alternative” macrophage activation and describe the role of CD4+ TH2 cytokines in wound healing | SPM IHD | 96 | Immune Mechanisms in Healing |
| 9238 | Describe and give at least one example of each of Hypersensitivity Types II and III | SPM IHD | 98 | Immune Responses in Wound |
| 9239 | Explain the differences in the antibody response between the primary and secondary exposure to an antigen | SPM IHD | 98 | Immune Responses in Wound |
| 9241 | Define the terms hapten and carrier, and draw the process of B and T cell and collaboration that results in a T-dependent antibody response to a conjugated hapten or polysaccharide antigen | SPM IHD | 98 | Immune Responses in Wound |
| 9242 | Distinguish between active and passive immunization and compare the types of vaccines used for active immunization | SPM IHD | 98 | Immune Responses in Wound |
| 9243 | Describe the effects of adjuvants on the immune response to a vaccine | SPM IHD | 98 | Immune Responses in Wound |
| 9244 | Distinguish between a polyclonal and a monoclonal antibody to an antigen | SPM IHD | 98 | Immune Responses in Wound |
| 9255 | Describe how the set point works in the body to help regulate core temperature. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |
| 9256 | Explain the difference between skin temperature (Ts) and core temperature (Tc) and how they are regulated. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |
| 9257 | Explain how shivering is used as a mechanism to help regulate body temperature. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |
| 9258 | Describe how the set point can be altered to induce fever in the human. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |

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| 9259 | Explain the difference between hyperthermia and pyrexia. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |
| 9260 | List several pathological and drug induced caused of fever. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |
| 9261 | Describe how sweating can lower body temperature. Explain the effect of sweating on body fluids. | SPM IHD | 80 | Hypothalamus: Center for Thermal Regulation |
| 9268 | Describe the major forms of immune-associated glomerular injury | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9269 | Describe the cellular and soluble immune mediators of glomerular injury | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9270 | Describe the major immunological mechanisms and immunodiagnosis of the following renal diseases: poststreptococcal glomerulonephritis, rapidly progressive glomerulonephritis (RPGN) including Goodpasture syndrome, membranous nephropathy, minimal change disease, membranoproliferative glomerulonephritis (MPGN), IgA nephropathy (Berger disease), and lupus nephritis | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9271 | Define cryoglobulin and distinguish three types of cryoglobulins by their antibody isotypes and associated diseases | SPM RNL | 1234 | Immune Mechanisms of Renal Disease |
| 9297 | Recognize which abnormalities represent life-threatening emergencies. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9298 | Be able to determine whether an abnormality is acute or chronic. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9299 | Identify the major categories of renal function abnormalities and describe how you make the distinction. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9300 | Identify the sub-categories of intrinsic renal disease, and know the clinical finding that is most helpful in choosing a sub-category. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |

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| 9301 | Describe what you would do to precisely identify a particular type of intrinsic renal abnormality. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9302 | Describe the purpose of the glomerulus. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9303 | 7. Describe the purpose of the tubule in a saltwater fish. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9304 | Describe the challenge that must be met by the nephron of a land mammal. | SPM RNL | 1219 | Abnormalities of Renal Function and their Consequences Scheme Presentation |
| 9305 | Using the starling equilibrium equation for capillary filtration, describe the forces that alter fluid movement across a capillary. | SPM IHD | 88 | Capillary Filtration |
| 9306 | Describe how inflammation can alter capillary permeability | SPM IHD | 88 | Capillary Filtration |
| 9307 | Explain how an increase in permeability can increase fluid and solute movement out of a capillary | SPM IHD | 88 | Capillary Filtration |
| 9308 | Describe how endogenous compounds released can alter capillary permeability. | SPM IHD | 88 | Capillary Filtration |
| 9309 | Explain how protein leakage from capillaries can result in edema. | SPM IHD | 88 | Capillary Filtration |
| 9310 | Investigate the concept of third spacing of fluids, decrease in blood pressure and the concept of shock. | SPM IHD | 88 | Capillary Filtration |
| 9320 | Identify and describe: the kidney (internal and external structures, and relationships to surrounding structures); the ureters; the bladder (internal and external structures, and relationships to surrounding structures); and the urethra and its sphincters (male and female urogenital membranes and their components); describe their blood supplies, lymph drainage, and their innervation; and discuss pathologies associated with these structures. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |

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| 9321 | Identify the prostate; describe its relationship to the bladder, urethra and rectum; and discuss pathologies associated with the prostate. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 9325 | Identify the major mechanisms of renal damage. | SPM RNL | 1235 | Intrinsic Renal Disease - Scheme Presentation |
| 9326 | Describe the sites of localization of immune complexes within the kidney. | SPM RNL | 1235 | Intrinsic Renal Disease - Scheme Presentation |
| 9327 | Identify patterns of intrinsic renal disease based on findings in the urine and associated clinical features | SPM RNL | 1235 | Intrinsic Renal Disease - Scheme Presentation |
| 9328 | Identify common primary glomerular and systemic glomerular diseases. | SPM RNL | 1235 | Intrinsic Renal Disease - Scheme Presentation |
| 9329 | Identify major non-glomerular disease processes. | SPM RNL | 1235 | Intrinsic Renal Disease - Scheme Presentation |
| 9330 | Describe the separation of the hindgut by Tourneux's and Rathke's folds; state the embryonic origin of the perineal body; and describe how errors can lead to developmental defects of hindgut derivatives such as fistulas involving the rectum, urinary system and reproductive system, and variations of the urachus. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 9331 | Define and describe intermediate mesoderm; identify it on a photograph or drawing; state what adult structures arise from it; describe the formation of the embryonic and the definitive kidneys and ureters; and explain the origin of developmental defects including renal agenesis, horseshoe kidney, pelvic kidneys, bifid or duplicated ureters. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 9332 | Describe formation of the urethra and bladder, describe how the trigone forms and how it relates to normal vs. duplicated ureters; and define exstrophy of the bladder. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 9339 | Explain how the Starling equilibrium equation can be used to predict glomerular filtration. | SPM RNL | 1222 | Glomerular Filtration Physiology |

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| 9340 | Compare the permeability of a glomerular capillary to a typical skeletal muscle capillary. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9341 | Describe how the forces that effect glomerular filtration rate differ from those found in a typical skeletal muscle capillary. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9342 | Explain what happens to plasma oncotic pressure as the plasma passes through the glomerulus. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9343 | Explain how can the tone of the afferent and efferent arteriole can be altered to increase or decrease plasma hydrostatic pressure in the glomerulus capillary. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9344 | Explain the concept of filtration equilibrium. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9345 | Compare the concentration of glucose in the afferent and efferent arterioles. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9346 | Define "freely filtered." | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9347 | Describe the factors that affect the ability of molecules to move across the glomerular capillary. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9348 | Explain the effect of molecular size and charge on the filtration process in the glomerulus. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9349 | Define the Donnan effect. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9350 | Explain how it is possible to increase glomerular filtration rate and decrease renal blood. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9352 | Explain what characteristic a compound must have before it can be used to calculate glomerular filtration rate using the standard clearance equation. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9353 | Explain how physicians estimate clearance using creatinine, age, weight, and gender. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9354 | Explain how physicians estimate glomerular filtration rate using creatinine clearance. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9355 | Explain why it is easier for a physician to use creatinine clearance instead of inulin to calculate GFR. | SPM RNL | 1222 | Glomerular Filtration Physiology |

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| 9356 | Explain why a reduction in GFR affects BUN and creatinine concentration in the plasma. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9357 | Explain why the plasma concentration of inulin does not affect the clearance of inulin. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9358 | Compare the tubular fluid to plasma ratio (TP/P) for inulin, glucose, and PAH. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9359 | Evaluate a GFR in a diabetic patient and explain in detail the changes related to altered Starling equation parameters. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9360 | Analyze renal function and describe how we might help reduce renal dysfunction in the diabetic patient. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9361 | Evaluate the condition of a patient's glomerular filtration capacity based on plasma and urine values of protein, creatinine and/or inulin. | SPM RNL | 1222 | Glomerular Filtration Physiology |
| 9362 | Define and explain the clinical significance of: clearance of a compound, GFR, extraction ratio, filtration fraction, renal blood flow, renal plasma flow, free water clearance, effective renal plasma flow, filtered load, freely filtered, glomerular tubular balance, transport maximum, renal fraction, and tubular fluid-to-plasma ratio (TF/P). | SPM RNL | 1223 | Clearance and Renal Math Physiology |
| 9363 | If given appropriate values, calculate clearance of a compound, GFR, extraction ratio, filtration fraction, renal blood flow, renal plasma flow, effective renal plasma flow, free water clearance, filtered load, glomerulotubular balance, transport maximum, renal fraction, and tubular fluid-to-plasma ratio (TF/P), and describe the interrelationship of these values. | SPM RNL | 1223 | Clearance and Renal Math Physiology |
| 9366 | Describe the key components of the nephron. | SPM RNL | 1209 | Disorders of Serum Sodium Scheme Presentation |

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| 9367 | Understand the significance of the physical design of the loop of Henle. | SPM RNL | 1209 | Disorders of Serum Sodium Scheme Presentation |
| 9368 | Describe the factors involved in the creation and maintenance of the medullary concentration gradient. | SPM RNL | 1209 | Disorders of Serum Sodium Scheme Presentation |
| 9369 | Be able to describe the changes in osmolality of tubular fluid as it progresses through the nephron. | SPM RNL | 1209 | Disorders of Serum Sodium Scheme Presentation |
| 9371 | Be able to describe how the kidney is able to produce both dilute and concentrated urine, including the role of aquaporins and ADH. | SPM RNL | 1209 | Disorders of Serum Sodium Scheme Presentation |
| 9374 | Discuss the filtration, reabsorption, and secretion of glucose in the kidney. | SPM RNL | 1226 | Tubular Transport |
| 9375 | Explain how the clearance of glucose is affected by the plasma concentration of glucose. | SPM RNL | 1226 | Tubular Transport |
| 9376 | Discuss why the clearance of glucose will never reach that of inulin in a normally functioning kidney. | SPM RNL | 1226 | Tubular Transport |
| 9377 | Show graphically what will happen to PAH clearance as its plasma concentration increases and explain why this occurs. | SPM RNL | 1226 | Tubular Transport |
| 9378 | Explain the concept of splay. | SPM RNL | 1226 | Tubular Transport |
| 9379 | Discuss transport maximum for reabsorbed and secreted compounds. | SPM RNL | 1226 | Tubular Transport |
| 9380 | Identify the tubular site where glucose, amino acid, bicarbonate, sodium, chloride, and PAH are transported. | SPM RNL | 1226 | Tubular Transport |
| 9381 | Describe how to determine the maximum clearance that can be reached for any compound. | SPM RNL | 1226 | Tubular Transport |
| 9382 | Describe the difference between effective renal plasma flow and true renal plasma flow. | SPM RNL | 1226 | Tubular Transport |
| 9383 | Calculate and explain extraction ratio for a given compound. | SPM RNL | 1226 | Tubular Transport |

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| 9384 | Demonstrate why the extraction ratio for inulin is equal to filtration fraction. | SPM RNL | 1226 | Tubular Transport |
| 9385 | Construct diagrams showing the amount of glucose and PAH that is filtered, secreted, reabsorbed, and excreted by the kidney. | SPM RNL | 1226 | Tubular Transport |
| 9386 | Explain how renal blood flow can be calculated from renal plasma flow. | SPM RNL | 1226 | Tubular Transport |
| 9387 | Calculate and explain filtration fraction. | SPM RNL | 1226 | Tubular Transport |
| 9393 | Define diuresis, osmotic diuresis, H ₂ O diuresis, antidiuresis, osmolarity, isosmotic, hyperosmotic, and hyposmotic. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9394 | Explain the cotransport of glucose and amino acids with Na ⁺ . | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9395 | Diagram the renal tubule showing the mechanism that explains how the reabsorption of glucose and amino acids occur. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9396 | Describe the transport processes that occur in the "early" proximal tubule and compare those to the transport that occurs in the "late" proximal tubule. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9397 | Explain why the concentration of chloride in the "late" proximal tubule helps promote the passive reabsorption of Na ⁺ . | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9398 | Discuss the concept of glomerulotubular (G-T) balance. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9399 | Explain the concept of isosmotic water reabsorption. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9400 | Be able to graph and explain the concentration of glucose, amino acid, HCO ₃ ⁻ , Cl ⁻ , and Na ⁺ along the length of the proximal tubule. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |
| 9401 | Develop a logical explanation for the events that would most likely occur in an individual if urine was formed by secretion alone and did not involve filtration. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubule |

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| 9405 | Explain why is the loop of Henle often referred to as the counter current multiplication system. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9406 | Describe the osmolarity of tubular fluid in the various segments of the loop of Henle when a concentrated urine is being produced. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9407 | Explain the permeability of the various segments of the loop of Henle to water, sodium, and urea. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9408 | List the factors which determine the ability of the loop of Henle to make a concentrated medullary gradient. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9409 | Explain how "loop diuretics" work. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9410 | Explain why is the vasa recta known as the counter-current exchange mechanism. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9411 | Explain the importance of the anatomical relationship between the loop of Henle and collecting tubule. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9412 | Explain how ADH helps the kidney to produce concentrated urine. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9413 | Explain the concept of urea recycling. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9414 | Explain why active sodium chloride reabsorption in the ascending limb is the primary step in the counter current multiplication process. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9415 | Explain the function of the vasa recta in the development of a concentrated urine. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9416 | Compare the excretion of urea to urine volume. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9417 | Explain briefly the mechanisms controlling the release of ADH. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9418 | Explain what factors determine the minimum and maximum urine osmolarity obtainable. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9419 | Explain and be able to calculate "free water clearance." | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9420 | Explain how ADH can affect the medullary gradient through urea recycling. | SPM RNL | 1211 | Introduction to the Loop of Henle |

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| 9421 | Discuss the feedback mechanism that controls the release of ADH. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9422 | Describe the mechanisms that would lead to the release of ADH and renin in a person suffering from dehydration and explain how the release of these hormones would be turned off by a feedback mechanism. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9423 | Evaluate a patient and determine if a diuretic drug can be used to reduce their complications from diabetes insipidus. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9424 | Describe how to distinguish between the different types of diabetes insipidus. | SPM RNL | 1211 | Introduction to the Loop of Henle |
| 9438 | Describe the mechanisms responsible for the secretion and reabsorption of potassium and sodium in the distal renal tubules. | SPM RNL | 1212 | Distal Nephron |
| 9439 | Explain the role of aldosterone in the regulation of plasma sodium and potassium concentration. | SPM RNL | 1212 | Distal Nephron |
| 9440 | Analyze a situation of a person in CHF and explain why their aldosterone levels would be elevated. | SPM RNL | 1212 | Distal Nephron |
| 9441 | Explain why a person in CHF would face a problem with potassium loss if given a loop diuretic. | SPM RNL | 1212 | Distal Nephron |
| 9442 | Describe what is meant by the distal delivery of sodium. | SPM RNL | 1212 | Distal Nephron |
| 9443 | Describe the influence of the various acid base conditions on the excretion of potassium. | SPM RNL | 1212 | Distal Nephron |
| 9444 | Draw and label a nephron showing where potassium is reabsorbed. | SPM RNL | 1212 | Distal Nephron |
| 9446 | Describe the location of potassium in the body and explain how this can be altered by acid base disturbances. | SPM RNL | 1212 | Distal Nephron |
| 9447 | Describe the effect of plasma pH on cellular K+. | SPM RNL | 1212 | Distal Nephron |

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| 9451 | Explain the role and regulation of aldosterone, antidiuretic hormone, renin, antiotensin I and II, atrial natriuretic hormone, and brain natriuretic hormone in the control of body fluid volume and concentration. | SPM RNL | 1213 | Renal Hormones |
| 9453 | Recall the mechanism involved in aldosterone escape. | SPM RNL | 1213 | Renal Hormones |
| 9454 | Explain pressure diuresis and pressure natiuresis and describe their role in fluid volume regulation. | SPM RNL | 1213 | Renal Hormones |
| 9455 | Describe the effects of altered hormonal control in congestive heart failure. | SPM RNL | 1213 | Renal Hormones |
| 9478 | Be able to recognize in light micrographs: red blood cells, skeletal muscle cells, epithelial cells, connective tissue. | SPM IHD | 13 | Normal Cells in Different Tissues |
| 9503 | Evaluate what would happen in an individual if the reabsorption of glucose was blocked. | SPM RNL | 1210 | Handling of Sodium in the Proximal Tubual |
| 9504 | Describe how tumors which release compounds with ADH and aldosterone like action can alter body fluid and electrolyte balance. | SPM RNL | 1213 | Renal Hormones |
| 9505 | Explain the fluid and electrolyte imbalances seen in patients with Cushing’s disease and Addison’s disease. | SPM RNL | 1213 | Renal Hormones |
| 9506 | Explain the symptoms that appear in a patient with syndrome of inappropriate antidiuretic hormone (SIADH). | SPM RNL | 1213 | Renal Hormones |
| 9516 | Explain the role of MHC (HLA) in rejection | SPM RNL | 1224 | Transplantation |
| 9517 | Compare direct and indirect pathway allorecognition in graft rejection | SPM RNL | 1224 | Transplantation |
| 9518 | Summarize the differences between hyperacute, acute, and chronic rejection | SPM RNL | 1224 | Transplantation |
| 9519 | Describe the treatments for graft rejection and their mechanisms of action | SPM RNL | 1224 | Transplantation |
| 9520 | Explain the immunologic problems that are unique to bone marrow and hematopoietic stem cell | SPM RNL | 1224 | Transplantation |

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| | transplantation, including the development of graft-versus host disease and infections | | | |
| 9521 | Outline the clinical and laboratory features that distinguish the major causes of acute monoarticular arthritis | SPM IMN | 210 | Joint Pain Scheme Presentation |
| | | | 222 | Joint Pain WCE |
| 9522 | List various tumors that can release compounds that alter renal control of sodium and water balance. | SPM RNL | 1213 | Renal Hormones |
| 9523 | Describe the alteration in the reabsorption of calcium, phosphate, and magnesium produced by volume constriction and volume expansion. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9524 | Explain the effect of PTH on bone and the handling of calcium and phosphate in the kidney. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9525 | Explain the effect of calcitonin on bone and the reabsorption of calcium and phosphate in the kidney. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9526 | Describe the effects of diuretics on the renal handling of calcium, phosphate, magnesium, and manganese. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9527 | List and describe the sites along the nephron where calcium, phosphate, magnesium, and manganese are reabsorbed. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9528 | Recall the percentages of calcium and phosphate found in bone. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9529 | Explain how the homeostasis of calcium, phosphate and magnesium occurs in the body. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9530 | Describe the effect of altered GI absorption on phosphate, magnesium, and calcium balance. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9531 | Explain the effect of volume overload and volume depletion on phosphate, magnesium, and calcium balance. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9532 | Describe the effect of diet on the balance of phosphate, magnesium, and calcium balance. | SPM RNL | 1214 | Ca, Mg, Mn, and P |

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| 9533 | Explain the role of the kidney in producing the active form of vitamin D. | SPM RNL | 1214 | Ca, Mg, Mn, and P |
| 9561 | Associate at least one drug example for each of the six traditional classes of diuretics: a. carbonic anhydrase inhibitors [acetazolamide] b. loop diuretics [furosemide] c. thiazide diuretics [hydrochlorothiazide] d. potassium-sparing diuretics: i. aldosterone antagonists [spironolactone] ii. distal tubular sodium antagonists [triamterene, amiloride] e. osmotic diuretics [mannitol] f. vasopressin receptor antagonists [conivaptan] | SPM RNL | 1215 | Diuretics |
| 9562 | For each class of diuretic, describe: a. site of action within the nephron b. mechanism of action c. main uses d. major side-effects | SPM RNL | 1215 | Diuretics |
| 9563 | Propose 2 ways to prevent hypokalemia when prescribing a thiazide-type diuretic | SPM RNL | 1215 | Diuretics |
| 9564 | Propose 2 ways to counteract resistance to the natriuretic effect of diuretic therapy | SPM RNL | 1215 | Diuretics |
| 9566 | Identify the key systems involved in the maintenance of acid-base balance | SPM RNL | 1228 | Abnormalities of Hydrogen Ion Concentration Scheme Presentation |
| 9567 | Describe the relative abilities of the buffer systems, the kidneys, and the lungs to respond to a disturbance in acid-base balance | SPM RNL | 1228 | Abnormalities of Hydrogen Ion Concentration Scheme Presentation |
| 9568 | Understand the concept of compensatory changes as they apply to acid-base changes. | SPM RNL | 1228 | Abnormalities of Hydrogen Ion Concentration Scheme Presentation |
| 9569 | Apply the concept of the anion gap to analysis of metabolic acidosis. | SPM RNL | 1228 | Abnormalities of Hydrogen Ion Concentration Scheme Presentation |
| 9570 | Utilize electrolytes and arterial blood gases to characterize acid-base disturbances | SPM RNL | 1228 | Abnormalities of Hydrogen Ion Concentration Scheme Presentation |
| 9605 | Recall the amounts of potassium secreted in a day. | SPM RNL | 1212 | Distal Nephron |
| 9629 | Describe the basic functions of fibroblasts. | SPM IHD | 25 | Connective Tissues and ECM |

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| 9630 | Describe the difference between a fibroblast and a fibrocyte. | SPM IHD | 25 | Connective Tissues and ECM |
| 9631 | Describe the basic functions of mast cells. | SPM IHD | 25 | Connective Tissues and ECM |
| 9632 | Describe the basic functions of macrophages. | SPM IHD | 25 | Connective Tissues and ECM |
| 9633 | Describe the biochemical properties of collagen. | SPM IHD | 25 | Connective Tissues and ECM |
| 9634 | Describe the biochemical properties of reticular and elastic fibers. | SPM IHD | 25 | Connective Tissues and ECM |
| 9635 | Describe the biochemical properties of glycosaminoglycans(GAGs). | SPM IHD | 25 | Connective Tissues and ECM |
| 9636 | Describe the biochemical properties of proteoglycans. | SPM IHD | 25 | Connective Tissues and ECM |
| 9637 | Describe the biochemical properties of fibronectin and laminin. | SPM IHD | 25 | Connective Tissues and ECM |
| 9638 | Describe the general properties of loose, dense regular and dense irregular connective tissue. | SPM IHD | 25 | Connective Tissues and ECM |
| 9639 | Draw a diagram of the cell cycle phases and describe what happens in each phases. | SPM IHD | 21 | The Lives of a Cell |
| 9672 | Explain the Henderson-Hasselbalch equation. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 9674 | Explain the calculation of pH and relate this to the hydrogen ion concentration. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 9685 | If given needed values, be able to identify the acid base condition. | SPM RNL | 1230 | Acid Base Physiology Lab- Classification of Acid Base Status |
| 9718 | Describe the evolving epidemiology of hypertension | SPM END | 395 | SCHEME - Hypertension |
| | | | 1385 | Hypertension WCE |
| 9719 | Recognize the arteriole as the site of development of vascular resistance in hypertension | SPM END | 395 | SCHEME - Hypertension |
| | | | 1385 | Hypertension WCE |
| 9720 | Identify the major inputs to hypertension as currently understood | SPM END | 395 | SCHEME - Hypertension |
| | | | 1385 | Hypertension WCE |

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| 9721 | Recognize which hypertensive patients are at greatest risk for CHD | SPM END | 395 | SCHEME - Hypertension |
| | | | 1385 | Hypertension WCE |
| 9722 | Identify the major causes of secondary hypertension | SPM END | 395 | SCHEME - Hypertension |
| | | | 1385 | Hypertension WCE |
| 9723 | Describe contemporary approach to the evaluation and management of hypertension | SPM END | 395 | SCHEME - Hypertension |
| | | | 1385 | Hypertension WCE |
| 9760 | Compare the function of an "artificial kidney" to that of the normal human nephron. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9761 | Explain the need for countercurrent flow in a hemodialyzer. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9762 | Compare hemodialysis to hemofiltration. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9763 | Describe the use of peritoneal dialysis. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9764 | Explain the problems associated with peritoneal dialysis. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9765 | Describe a fistula and a shunt used in gaining vascular access. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9766 | Develop an equation for determining clearance for a dialyzer. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9767 | Describe the factors that account for solute rebound after a dialysis treatment. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9768 | Describe the concept of dialysis disequilibrium syndrome. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9769 | Define and describe the concept of "middle molecule" as it related to dialysis treatment. | SPM RNL | 1237 | Mechanisms of Dialysis |
| 9813 | Review the Parathyroid Hormone (PTH), Bone, Renal, Kidney Axis. | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9814 | Review the controls for release of PTH | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9815 | Review the actions of PTH on its target tissues | SPM RNL | 1225 | Secondary Hyperparathyroidism |

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| 9816 | Describe the affects of chronic renal failure on calcium and phosphate excretion | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9817 | Describe the affect of progressive renal disease on alpha-1 hydroxylase activity and how that affects calcium metabolism | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9818 | Delineate the consequences of altered renal calcium and phosphate excretion on PTH secretion | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9819 | Describe how alterations in PTH, calcium and phosphate handling alter renal HCO ₃ ⁻ reabsortion | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9820 | Describe the interplay of progressive renal disease with calcium and phosphate metabolism | SPM RNL | 1225 | Secondary Hyperparathyroidism |
| 9859 | Apply an understanding of Vitamin D synthesis to the rational selection of Vitamin D supplements according to clinical situations such as liver failure or kidney failure. | SPM END | 440 | Abnormal Serum Calcium |
| 9860 | Explain the rationale for combining a calcium-sensing receptor agonist as an adjunct to first-line therapies for lowering extracellular calcium in patients with hypercacemia. | SPM END | 440 | Abnormal Serum Calcium |
| 9872 | Recognize risk factors for nephrotoxicity | SPM RNL | 1216 | Safety in Prescribing in Renal Failure |
| 9873 | Explain the mechanisms of drug-induced acute kidney injury | SPM RNL | 1216 | Safety in Prescribing in Renal Failure |
| 9874 | Identify strategies to avoid nephrotoxicity | SPM RNL | 1216 | Safety in Prescribing in Renal Failure |
| 9893 | Define goals for reducing blood pressure in the context of reducing a patient's composite cardiovascular risk factor profile. | SPM END | 400 | Drugs in Hypertension |
| 9894 | Compare and contrast the major therapeutic classes of drugs used to treat hypertension based on their putative mechanisms of action, major adverse effects, and clinically important pharmacokinetic differences: thiazide-type diuretics (hydrochlorothiazide), drugs that | SPM END | 400 | Drugs in Hypertension |

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| | impinge on the renin-angiotensin-aldosterone system (ramapril), drugs that reduce vascular L-type calcium channel conductance (amlodipine), drugs that impinge on the sympathetic nervous system | | | |
| 9895 | Outline compelling indications and contraindications for specific antihypertensive agents (age, race, diabetes, dyslipidemia, renovascular disease, chronic kidney disease, hyperaldosteronism, pheochromocytoma...) | SPM END | 400 | Drugs in Hypertension |
| 9896 | Consider the potential for commonly prescribed drugs to induce or aggravate hypertension: NSAIDs, sex hormones (oral contraceptives and androgens), corticosteroids, sympathomimetics (decongestants, bronchodilators, cocaine, erythropoietin, monoamine oxidase inhibitors. | SPM END | 400 | Drugs in Hypertension |
| 9897 | Define hypertension and essential hypertension and secondary hypertension. | SPM END | 397 | Physiology of Hypertension |
| 9898 | Describe the time frame for activation of various blood pressure altering mechanisms employed by the body. | SPM END | 397 | Physiology of Hypertension |
| 9899 | Explain pressure diuresis and pressure natriuresis. | SPM END | 397 | Physiology of Hypertension |
| 9900 | Describe the difference in blood pressure control in salt sensitive and salt insensitive individuals. | SPM END | 397 | Physiology of Hypertension |
| 9901 | Explain the implications of the one and two kidney Golblatt kidney model of hypertension. | SPM END | 397 | Physiology of Hypertension |
| 9902 | Describe the effect of kidney damage on its ability to regulate blood pressure. | SPM END | 397 | Physiology of Hypertension |
| 9903 | Explain the renin-angiotensin-aldosterone system in the regulation of blood pressure. | SPM END | 397 | Physiology of Hypertension |
| 9904 | Explain the effect of aortic coarctation and pregnancy on hypertension. | SPM END | 397 | Physiology of Hypertension |

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| 9905 | Draw and explain the mechanisms that respond to blood pressure changes in seconds, minutes, hours, and days. | SPM END | 397 | Physiology of Hypertension |
| 9906 | Explain the autoregulation of blood flow and glomerular filtration rate in the kidney. | SPM END | 397 | Physiology of Hypertension |
| 9907 | Define single nephron glomerular filtration rate (sngfr) and the implication this may have in the control of kidney function. | SPM END | 397 | Physiology of Hypertension |
| 9908 | Explain intra-renal shunting of blood flow in different physiological conditions. | SPM END | 397 | Physiology of Hypertension |
| 9909 | Explain oxygen consumption in the kidney and the physiological mechanisms that are responsible for oxygen consumption. | SPM END | 397 | Physiology of Hypertension |
| 9910 | List problems associated with measuring blood pressure. | SPM END | 397 | Physiology of Hypertension |
| 9911 | Explain several errors that can occur when measuring blood pressure with a cuff or direct catheter method. | SPM END | 397 | Physiology of Hypertension |
| 9912 | Demonstrate the ability to analyze clinical cases related to alteration in blood pressure and delineate mechanisms related to imitation and response to blood pressure changes. | SPM END | 397 | Physiology of Hypertension |
| 9914 | List the major classes of steroid hormones | SPM END | 430 | Steroid Biosynthesis |
| 9915 | Describe the key structural features that distinguish each class of steroid hormones. | SPM END | 430 | Steroid Biosynthesis |
| 9916 | List the key enzymes involved in steroid biosynthesis | SPM END | 430 | Steroid Biosynthesis |
| 9917 | Identify the functional zones of the adrenal glands and the principal hormones secreted from each zone. | SPM END | 430 | Steroid Biosynthesis |
| 9918 | List the major mineralocorticoids and identify their biological actions and target organs or tissues. | SPM END | 430 | Steroid Biosynthesis |
| 9919 | List the major glucocorticoids and identify their biological actions and target organs or tissues. | SPM END | 430 | Steroid Biosynthesis |

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| 9920 | Name the factors that can modulate the synthesis and secretion of mineralocorticoids | SPM END | 430 | Steroid Biosynthesis |
| 9921 | Name the factors that can modulate the synthesis and secretion of glucocorticoids | SPM END | 430 | Steroid Biosynthesis |
| 9922 | Identify the cell of origin for testosterone and its biosynthesis | SPM END | 430 | Steroid Biosynthesis |
| 9923 | List other physiologically produced androgens | SPM END | 430 | Steroid Biosynthesis |
| 9924 | Describe the regulation of estrogen and progesterone biosynthesis and secretion by the ovary | SPM END | 430 | Steroid Biosynthesis |
| 9925 | Identify the cell of origin for estrogen and progesterone | SPM END | 430 | Steroid Biosynthesis |
| 9926 | List other physiologically produced estrogens. | SPM END | 430 | Steroid Biosynthesis |
| 9927 | Explain steroid biosynthesis | SPM END | 430 | Steroid Biosynthesis |
| 9943 | Understand the hypothalamic-pituitary-adrenal axis and be able to differentiate between the anterior and posterior glands and understand the relevance of pituitary and adrenal secretions. | SPM END | 429 | Hypothalamic Pituitary Control of Endocrine |
| 9947 | Understand the feedback mechanism(s) involved in hypothalamic-pituitary-adrenal function(s). | SPM END | 429 | Hypothalamic Pituitary Control of Endocrine |
| 9948 | Define the target tissues and function of pituitary and adrenal gland hormones. | SPM END | 429 | Hypothalamic Pituitary Control of Endocrine |
| 9949 | Know the major endocrine tissues: location and primary hormone products. | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |
| 9950 | Know the organization and histology of the hypothalamus and pituitary gland. | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |
| 9957 | Locate and identify the hypothalamus in brains, photographs and medical images and describe its major functions (control of the pituitary, feeding, thirst, temperature, rage and fear, sleeping and waking, sexual arousal and memory). | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |

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| 9958 | List the twelve pairs of hypothalamic nuclei; describe their locations; and list the nuclei that control the posterior pituitary, the anterior pituitary and feeding. | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |
| 9959 | Describe the anatomical relationship of and among the hypothalamus, infundibulum, pituitary stalk, pituitary, hypophyseal portal vessels, cavernous sinus, sella turcica, diaphragma sella, and the optic chiasm. | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |
| 9960 | Describe the effects of lesions to the arcuate, ventromedial and dorsomedial nuclei vs. the lateral nucleus on satiety vs. hunger, respectively; describe the actions of leptin, ghrelin and insulin on the hypothalamic control of feeding and metabolism; describe the roles of POMC/CART and NPY/AgRP first order neurons and the MSH-, NPY-responsive second order neurons in the hypothalamic control of feeding and metabolism; and discuss the effects of loss-of-function of leptin, leptin receptor, MC4R, NPY or NPY receptor. | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |
| 9961 | Describe the roles of two circumventricular organs: the median eminence in the regulation of feeding and metabolism; and the vascular organ of the lamina terminalis in the regulation of blood volume. | SPM END | 432 | Structure and Function of Hypothalamus & Pituitary |
| 9964 | Describe the risk factors and immune mechanisms of Hashimoto thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 9965 | Describe the risk factors and immune mechanisms of Graves disease | SPM END | 438 | Pathology of the Thyroid |
| 9966 | Describe the immune mechanisms in subacute thyroiditis | SPM END | 438 | Pathology of the Thyroid |
| 10022 | Identify the steps and control factors of thyroid hormone biosynthesis, storage, and release and describe the distribution of iodine and the metabolic pathway involved in thyroid hormone synthesis. | SPM END | 437 | Regulation and Function of Thyroid Hormones |

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| 10023 | Describe how T3 and T4 are carried in the blood | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10024 | Describe how T3 and T4 are metabolized and eliminated from the body | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10025 | Define the half life for T3 and T4 | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10026 | Describe the interrelationship between T3 and T4 | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10040 | Provide options to conserve bone mineral density in patients that cannot avoid long-term glucocorticosteroid therapy | SPM IMN | 200 | Pharmacology of Bone Turnover and Bone Mineralization |
| 10041 | Describe what bisphosphonates are and how they work [example: alendronate]. | SPM IMN | 200 | Pharmacology of Bone Turnover and Bone Mineralization |
| 10042 | Describe how supraphysiologic doses of human and salmon calcitonin are used pharmacologically. | SPM IMN | 200 | Pharmacology of Bone Turnover and Bone Mineralization |
| 10043 | Explain the effects vitamin D and parathyroid hormone have on bone mineral homeostasis [examples: cholecalciferol, ergocalciferol, 25-hydroxycholecalciferol (alpha-calcidiol), 1,25-dihydroxycholecalciferol (calcitriol), teriparatide] | SPM IMN | 200 | Pharmacology of Bone Turnover and Bone Mineralization |
| 10044 | Explain why receptor activator of nuclear factor-Kappa B ligand (RANKL) is an important target to treat osteoporosis [example: denosumab] | SPM IMN | 200 | Pharmacology of Bone Turnover and Bone Mineralization |
| 10045 | Describe the role estrogen receptors play in maintenance of bone mineral homeostasis and the benefits/risks associated with estrogen replacement | SPM IMN | 200 | Pharmacology of Bone Turnover and Bone Mineralization |
| 10046 | Outline clinically important differences between these synthetic glucocorticosteroids: hydrocortisone, prednisone, triamcinolone, dexamethasone | SPM END | 433 | Pharmacology of Corticoids |

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| 10047 | Describe the actions and use of the mineralocorticoid, fludrocortisone | SPM END | 433 | Pharmacology of Corticoids |
| 10048 | Outline diagnostic use of adrenocorticotrophic hormone (ACTH) | SPM END | 433 | Pharmacology of Corticoids |
| 10050 | For hyperthyroidism, compare the roles and limitations of radioiodine, thyroidectomy, methimazole, propylthiouracil, inorganic iodine, beta-adrenergic antagonists | SPM END | 439 | Drugs for Thyroid Disorders |
| 10051 | For hypothyroidism, explain how tetraiodothyronine provides replacement for both T3 and T4, and how to regulate the dose | SPM END | 439 | Drugs for Thyroid Disorders |
| 10062 | Explain the function of the AIRE gene and its relationship to autoimmunity | SPM IMN | 184 | Control of Immune Responses |
| 10065 | Define anergy and explain the role of innate immunity and costimulation in preventing anergy | SPM IMN | 184 | Control of Immune Responses |
| 10066 | Describe the role of CTLA-4 and PD-1 in anergy | SPM IMN | 184 | Control of Immune Responses |
| 10070 | Describe two principle factors that contribute to the development of autoimmunity | SPM IMN | 184 | Control of Immune Responses |
| 10095 | Identify the steps involved in biosynthesis of thyroid hormones. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10096 | Describe the role of iodine in thyroid hormone synthesis. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10097 | Describe factors that control the synthesis, storage and secretion of thyroid hormones. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10098 | Understand the significance of the conversion of tetraiodothyronine (T4) to triiodothyronine (T3) and reverse T3 (rT3) in extrathyroidal tissues and how thyroid hormones produce their cellular effects. | SPM END | 437 | Regulation and Function of Thyroid Hormones |

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| 10099 | Describe thyroid hormones effect on development and metabolism and understand the causes and consequences of excess and deficiency of thyroid hormones. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10100 | Understand the causes and consequences of hypothyroidism. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10101 | Describe thyroid hormone feedback mechanism. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 10102 | Describe eating disorders like anorexia and bulimia. | SPM MHD | 1300 | Eating Disorder |
| 10105 | Given a eating disorder case study identify treatment courses. | SPM MHD | 1300 | Eating Disorder |
| 10106 | Describe the role of the immune system in Addison disease | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10107 | Describe and compare Autoimmune Polyendocrine Syndrome Type 1 (APS1 or APECED: Autoimmune Polyendocrinopathy, Candidiasis and Ectodermal Dystrophy) and Autoimmune Polyendocrine Syndrome Type 2 (APS2), including their classic triads, inheritance and relationship to Addison disease | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10108 | Relate the immune function of the AIRE gene to APS1 | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10109 | Describe IPEX (Immune dysregulation PolyEndocrinopathy X-linked inheritance) and explain the role of the FOXP3 gene | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10110 | Describe the risk factors for type I diabetes, including the possible role of HLA, CTLA-4 and CD25 | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10111 | Describe the possible role of viral infection in autoimmune diseases like type I diabetes | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10112 | Explain the effector mechanisms of beta-cell destruction and list the three major autoantigens in type I diabetes | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |

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| 10113 | Explain the relationship between obesity and inflammation in metabolic syndrome, including the role of TLRs and cytokines | SPM END | 422 | The Immune System in Endocrine Disease and Diabetes |
| 10159 | Describe the mechanism of action and the most important adverse effects of methotrexate when used for treatment of rheumatoid arthritis. | SPM IMN | 217 | Drugs for Arthritis |
| 10160 | Describe the mechanism of action and the most important adverse effects of an anti-tumor necrosis factor-alpha agent when used for treatment of rheumatoid arthritis. [examples: infliximab, etanercept] | SPM IMN | 217 | Drugs for Arthritis |
| 10162 | Recognize the clinical relevance of distinguishing gout (monosodium urate crystal arthropathy) from pseudogout (calcium pyrophosphate crystal arthropathy), based on the pathogenesis of crystal arthropathies, and why drug choices for gout may not be appropriate for pseudogout. [example: allopurinol, februxostat] | SPM IMN | 217 | Drugs for Arthritis |
| 10163 | Explain the mechanism of pegloticase in terms of why humans get gout, but few other animals get gout. | SPM IMN | 217 | Drugs for Arthritis |
| 10164 | Distinguish drug choices for acute gout [examples: NSAIDs, colchicine, prednisone] from drugs for chronic gout [examples: uricosurics (probenicid) and xanthine oxidase inhibitors (allopurinol)] | SPM IMN | 217 | Drugs for Arthritis |
| 10165 | Describe the mechanism of action and the most important adverse effects of non-steroidal anti-inflammatory drugs used for symptomatic relief of arthritic pain [example: ibuprofen] | SPM IMN | 217 | Drugs for Arthritis |
| 10166 | Describe the mechanism of action and the most important adverse effects of glucocorticosteroids used for symptomatic relief of arthritic pain. [example: prednisone] | SPM IMN | 217 | Drugs for Arthritis |
| 10167 | Describe the mechanism of action and the most important adverse effects of calcineurin/FKBP drugs | SPM IMN | 217 | Drugs for Arthritis |

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| | used for symptomatic relief of arthritic pain. [example: cyclosporine, tacrolimus] | | | |
| 10181 | Calculate low-density lipoprotein cholesterol based on total cholesterol, high-density lipoprotein cholesterol, and triglyceride serum concentrations to determine goals for lipid-lowering therapies. | SPM END | 421 | Drugs for Dyslipidemia |
| 10182 | Describe the mechanisms of action, lipid lowering profile, and the most frequent of serious adverse effects for niacin, HMG CoA reductase inhibitors ('statins'), fibric acid derivatives, and inhibitors of lipid absorption (bile acid sequestrants, and ezetimibe). | SPM END | 421 | Drugs for Dyslipidemia |
| 10183 | Describe in principle how genes interact with other genes and with environmental factors to produce phenotypes including disease. | SPM END | 419 | Multifactorial Disorders |
| 10184 | Describe the multifactorial nature of most human traits, both normal and abnormal, and the principles of multifactorial inheritance. | SPM END | 419 | Multifactorial Disorders |
| 10187 | Describe methods used to investigate the genetics of complex diseases. | SPM END | 419 | Multifactorial Disorders |
| 10188 | Explain the mechanism of action and potential adverse effects of insulin therapy | SPM END | 426 | Drugs for Diabetes |
| 10189 | Distinguish bolus insulins based on their rate of onset, peak and duration of action | SPM END | 426 | Drugs for Diabetes |
| 10190 | Distinguish basal insulins based on their rate of onset, peak and duration of action | SPM END | 426 | Drugs for Diabetes |
| 10191 | Define insulin therapy options for type 1 diabetes mellitus | SPM END | 426 | Drugs for Diabetes |
| 10192 | Describe the mechanism of action, potential adverse effects and role of drugs for treatment of type 2 diabetes mellitus | SPM END | 426 | Drugs for Diabetes |

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| 10210 | Recall the effect of patient age and defect size on cartilage healing potential. | SPM IMN | 211 | Cartilage Healing |
| 10211 | Describe factors that alter the ability of articular cartilage to heal without assistance. | SPM IMN | 211 | Cartilage Healing |
| 10212 | Explain why it is important for inducing bleeding into the articular cartilage defect to achieve healing. | SPM IMN | 211 | Cartilage Healing |
| 10213 | Recall the type of cartilage that develops in a defect after a microfracture technique. | SPM IMN | 211 | Cartilage Healing |
| 10214 | Explain the long term effects of articular cartilage damage. | SPM IMN | 211 | Cartilage Healing |
| 10215 | Recall the benefits attributed to, continual passive motion, growth hormones, drug administration, electrical stimulating and laser treatment for cartilage defects. | SPM IMN | 211 | Cartilage Healing |
| 10216 | Describe transplantation of autogenous chondrocytes to promote cartilage healing. | SPM IMN | 211 | Cartilage Healing |
| 10217 | Explain the potential benefits related to autogenous and allogenic transplants. | SPM IMN | 211 | Cartilage Healing |
| 10218 | Explain the use of a scaffold to hold transplanted cells in the articular cartilage defect. | SPM IMN | 211 | Cartilage Healing |
| 10219 | Explain the local environment of the articular cartilage including the blood supply, lymphatic drainage, and source of nutrients. | SPM IMN | 211 | Cartilage Healing |
| 10220 | Evaluate clinical scenarios and suggest approaches to the management of the patient based on the available information. | SPM IMN | 211 | Cartilage Healing |
| 10296 | Describe the methods used to diagnose a suspected case of Mycobacterium tuberculosis and explain the criteria needed to clear a patient diagnosed with TB to return to work. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |

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| 10297 | Describe how current global TB epidemic can directly affect the United States. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 10298 | Describe the current the concerns for the rise in MDR-TB and XDR-TB and the actions being taken to control their incidence in the US. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 10299 | Explain how fluorescence can be used in the identification of an infectious microbe. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 10301 | Define what is meant by minimal inhibitory concentration (MIC) and how it might be used in laboratory diagnostics. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 10314 | Define chromosomal sex, gonadal sex and phenotypic sex | SPM REP | 459 | All about Sex! Sex Determination, Sex Differentiation, and Gametogenesis |
| 10315 | Describe sex determination in human | SPM REP | 459 | All about Sex! Sex Determination, Sex Differentiation, and Gametogenesis |
| 10316 | Describe sexual differentiation in male and female | SPM REP | 459 | All about Sex! Sex Determination, Sex Differentiation, and Gametogenesis |
| 10317 | Compare and contrast oogenesis and spermatogenesis | SPM REP | 459 | All about Sex! Sex Determination, Sex Differentiation, and Gametogenesis |
| 10318 | Explain how chromosomal abnormalities affect sexual development | SPM REP | 459 | All about Sex! Sex Determination, Sex Differentiation, and Gametogenesis |
| 10319 | Describe disorders of sexual development presenting with ambiguous genitalias | SPM REP | 459 | All about Sex! Sex Determination, Sex Differentiation, and Gametogenesis |
| 10323 | Describe the three patterns of neurosyphilis, including meningovascular neurosyphilis, parietic neurosyphilis and Tabes dorsalis, in terms of the lesion and the clinical presentation. | SPM CSS | 311 | Chronic Meningitis |
| 10371 | Based on your understanding of the key differences between hepatic fructose and glucose metabolism, explain how elevated fructose consumption as seen in the modern Western diet may contribute to | SPM MHD | 1272 | Pediatric Metabolic Emergencies: Lactic Acidemias and Disorders of Carbohydrate Metabolism |

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| | nonalcoholic fatty liver disease (NAFLD) and the metabolic syndrome. | | | |
| 10372 | Explain immune privilege as it relates to the testis | SPM REP | 493 | Immunologic Causes of Infertility |
| 10373 | Describe the distribution of antisperm antibodies in infertile couples and in fertile men and women | SPM REP | 493 | Immunologic Causes of Infertility |
| 10374 | Discuss autoimmune polyendocrine disease as a cause of gonadal failure | SPM REP | 493 | Immunologic Causes of Infertility |
| 10375 | Define and describe how routine clinical electroencephalography (EEG) is performed and its major clinical applications | SPM CSS | 314 | Neurophysiology and Basic Clinical Applications of Electroencephalography |
| 10376 | State the major source of the brain activity recorded by electroencephalography and explain its relationship to cortical cytoarchitecture | SPM CSS | 314 | Neurophysiology and Basic Clinical Applications of Electroencephalography |
| 10377 | Explain the difference between recording electroencephalography using a bipolar montage and a referential montage and how this relates to the localization of an epileptic spike or sharp wave focus | SPM CSS | 314 | Neurophysiology and Basic Clinical Applications of Electroencephalography |
| 10378 | Describe the major features of electroencephalography of a normal awake adult | SPM CSS | 314 | Neurophysiology and Basic Clinical Applications of Electroencephalography |
| 10406 | Define and differentiate between primary and secondary dysmenorrhea. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10408 | Define primary and secondary infertility and list the most common causes of primary and secondary infertility . | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10411 | Interpret a semen analysis. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10412 | Differentiate between pre-testicular, testicular and post-testicular causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |

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| 10426 | List and explain genetic causes of male and female infertility. | SPM REP | 492 | Genetics and Infertility |
| 10465 | Describe the formation of the peripheral nervous system beginning in week 4, including motor neurons and the components of the nervous system that form from neural crest cells. | SPM IMN | 238 | PNS Development |
| 10466 | Describe the development of the ventricles and the choroid plexus. | SPM CSS | 287 | CNS Development |
| 10483 | Identify the risk factors for cervical neoplasia. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10484 | Know how to perform an adequate Pap smear. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10485 | Discuss the association of human papilloma virus infection with cervical intraepithelial neoplasia and invasive cancer. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10486 | List indications for HPV testing, colposcopy, endocervical curettage, cervical and endometrial biopsy and loop electrosurgical excision (LEEP). | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10487 | Describe the initial management of a patient with abnormal Pap smear. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10488 | List recommendations for prevention of cervical dysplasia/cervical cancer and identify health promotion strategies for sexually active women. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10489 | Discuss diagnostic approach to a woman with chief complaint of breast mass, nipple discharge and/or breast pain . | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |

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| 10490 | Know the three basic muscle types | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10491 | Describe the general organization and function of skeletal muscle cells | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10492 | Identify muscle fibers and connective tissue structures in light and electron micrographs | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10493 | Describe the organization of the conduction system in skeletal muscle cells | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10494 | Describe the structural organization of the neuromuscular junction | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10495 | Describe the three types of skeletal muscle fibers | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10496 | Describe the organization and function of the dystrophin-associated protein (DAP) complex | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10497 | Describe the localization and function of skeletal muscle satellite cells | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |
| 10502 | Explain the mechanisms of action and adverse effects of drugs used to treat skeletal muscle spasticity (onabotulinum toxin type A) | SPM IMN | 260 | Neuromuscular Pharmacology |
| 10506 | List clinical and physical findings that may suggest galactorrhea, mastitis and/or benign and malignant breast lesions. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10507 | Select women who are at high risk for breast cancer based on age, family history or the presence of other pre-existing risk factors, signs and symptoms for mammography and/or genetic screening. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10508 | Counsel/educate patients on the role of breast self-examination, mammography, ultrasound, fine needle aspiration, and core needle biopsy. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10509 | Differentiate between infectious and non-infectious vaginal discharge. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |

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| 10510 | Differentiate the signs and symptoms of the following sexually transmitted infections: Gonorrhea, Chlamydia, Herpes simplex virus, Chancroid, Syphilis and Trichomonas. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10512 | Select the patients for pH, wet mount, KOH smear, gram stain and cervical culture in yeast, bacterial, trichomonas and atrophic vaginitis | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10513 | Outline preventive measures for sexually transmitted diseases (e.g., limiting number of sexual partners, use of barrier contraceptives, especially condoms). | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10515 | Outline a management plan for candidiasis, trichomoniasis, and vaginitis due to gonorrhea and /or chlamydia including role of local hygiene in prevention. | SPM REP | 486 | SCHEME - Screening and Prevention |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 10518 | Differentiate between vaginal bleeding related to or unrelated to pregnancy. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10519 | List and interpret critical clinical and laboratory findings which are key in the processes of exclusion and differentiation between the causes of abnormal uterine bleeding. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10520 | List the most common causes of genital tract bleeding in premenarchal patients. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10521 | List the most common causes of genital tract bleeding in reproductive age patients. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10522 | List the most common causes of genital tract bleeding in peri- and postmenopausal patients. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |
| 10523 | Outline the appropriate evaluation and management of patients with premenarchal, reproductive age and postmenopausal vaginal bleeding. | SPM REP | 453 | SCHEME - Abnormal Uterine Bleeding |
| | | | 462 | Abnormal Uterine Bleeding WCE |

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| 10577 | Describe the hypothalamic-pituitary axis in the control of the female reproductive cycle. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10578 | Describe the events leading up to the release of the ovum from the ovary. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10579 | Explain the normal trip of the ovum after ovulation has occurred and what can happen if this movement is interrupted. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10580 | Explain the “trigger” hormone for ovulation and how this hormone can alter fertility. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10581 | Construct a drawing illustrating the hormonal levels during the menstrual cycle. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10582 | Explain the significance of the rise and fall in GnRH, FSH, LH, estrogen and progesterone during the menstrual cycle. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10583 | Describe the events that follow fertilization and implantation of the ovum. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10584 | Describe the events that occur if the ovum is not fertilized and implantation does not occur. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10585 | Explain the physical and hormonal changes in the female body that lead to menarche, the changes that continue during the reproductive years, and the events that occur after menopause. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10586 | Explain the events that can lead to disruption of the normal menstrual cycle. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10587 | Describe the age-related changes in the male and female reproductive systems, including the mechanisms responsible for these changes. | SPM REP | 454 | Physiology of Menstrual Cycle |
| 10661 | Apply diagnostic methods in patients with uterine fibroids (leiomyoma) and adenomyosis. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10664 | | SPM REP | 465 | SCHEME - Pelvic Masses |

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| | Compare the characteristics of functional (follicular, luteal and hemorrhagic) cysts, benign ovarian neoplasms (cystadenoma, dermoid cyst, endometriosis etc.) and ovarian malignancies. | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10665 | Describe the histological classification of ovarian neoplasms. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10666 | List the risk factors for ovarian carcinoma and counsel a woman at risk for ovarian cancer. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10667 | Define acute and chronic pelvic pain. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10668 | List the most common causes and clinical manifestations of acute and chronic pelvic pain. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10669 | List diagnostic and management options for patients presenting with acute and chronic pelvic pain. | SPM REP | 469 | SCHEME - Pelvic Pain |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10688 | Discuss the physiologic and anatomic changes associated with pregnancy, diagnose pregnancy, assess the gestational age and recognize the pregnancy at risk. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10689 | Describe appropriate diagnostic studies for each trimester of pregnancy, know how to perform a physical exam on obstetric patients and list the methods for prenatal diagnosis (antenatal care). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10690 | Know how to counsel patients concerning pregnancy, nutritional needs of pregnant women, exercise during pregnancy, immunization, adverse effects of drugs and the environment, labor and delivery. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10691 | List the signs, symptoms and stages of labor, and describe the techniques to evaluate the progress of the | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |

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| | labor and assess fetal wellbeing (intrapartum care: fetal auscultation, electronic fetal monitoring). | | | |
| 10692 | Discuss the physiologic changes of the postpartum period, and list the components of normal postpartum care. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10693 | List the normal physiologic and anatomic changes of the breast during pregnancy and lactation, and know how to recognize and treat common postpartum abnormalities of the breast (normal and abnormal lactation). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10694 | Recognize the following medical and surgical conditions that may alter the course of the pregnancy: fetal growth abnormalities (intrauterine growth restriction and fetal macrosomia), premature delivery, premature rupture of membranes, isoimmunization, diabetes mellitus, urinary tract disorders, anemia and surgical abdomen. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10695 | Define and classify hypertension in pregnancy, and recognize the symptoms and physical findings in patients with preeclampsia-eclampsia syndrome. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10696 | List abnormal labor patterns and discuss fetal and maternal complications of abnormal labor (non-reassuring fetal status). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10697 | List the most common causes of postpartum complications (postpartum hemorrhage, infection, mastitis and depression). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10726 | Explain the role, mechanism, and risks associated with pharmacological induction of ovulation with clomiphene and/or gonadotropins | SPM REP | 496 | Drugs for Infertility |
| 10727 | Propose rational treatment for infertility secondary to hyperprolactinemia | SPM REP | 496 | Drugs for Infertility |

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| 10728 | Propose rational treatment for infertility secondary to hypothyroidism | SPM REP | 496 | Drugs for Infertility |
| 10740 | Outline use, benefits, disadvantages and risks associated with combined hormonal contraceptives. | SPM REP | 457 | Pharmacology Contraception |
| 10741 | Suggest dose adjustments in estrogen and/or progestin components to mitigate common dose-related adverse effects of combined hormonal contraceptives. | SPM REP | 457 | Pharmacology Contraception |
| 10742 | Explain how a patient should start taking combined hormonal contraceptives in relation to her last menstrual period. | SPM REP | 457 | Pharmacology Contraception |
| 10743 | Explain what contingencies a patient should undertake to minimize risk of pregnancy if she misses one or more doses of her hormonal contraceptive pills. | SPM REP | 457 | Pharmacology Contraception |
| 10744 | Compare and contrast four currently available options for emergency contraception. | SPM REP | 457 | Pharmacology Contraception |
| 10752 | Know the organization and histology of the ovaries. | SPM REP | 456 | Histology: Female Reproductive System |
| 10753 | Know the histology of follicular development and degeneration. | SPM REP | 456 | Histology: Female Reproductive System |
| 10754 | Know the organization and histology of the fallopian tubes. | SPM REP | 456 | Histology: Female Reproductive System |
| 10756 | Know the dynamic histological changes the endometrium undergoes during the menstrual, proliferative and secretory phases. | SPM REP | 456 | Histology: Female Reproductive System |
| 10758 | Describe and/or recognize clinically significant fungi (<i>Histoplasma capsulatum</i> , <i>Cryptococcus neoformans</i> , <i>Coccidioides immitis</i>) based on taxonomic classification, morphology, epidemiology, clinical syndromes and laboratory test(s). | SPM CSS | 311 | Chronic Meningitis |
| 10780 | Know the organization and histology of the uterus, cervix and vagina. | SPM REP | 456 | Histology: Female Reproductive System |

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| 10799 | Describe the development and anatomy of the female breast, including the nipple, areola, suspensory ligaments of Cooper, lactiferous ducts, lactiferous sinuses, lobules, the retromammary space (bursa), and pectoral fascia. | SPM REP | 490 | Anatomy and Histology of the Breast |
| 10802 | Discuss the vascular and nervous supply of the breast. | SPM REP | 490 | Anatomy and Histology of the Breast |
| 10803 | Discuss the lymphatic drainage of the breast. | SPM REP | 490 | Anatomy and Histology of the Breast |
| 10843 | Predict how drugs acting at dopamine receptors might alter the lactating potential of the breast | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 10844 | Explain how drugs that impair oxytocin release might impair breastfeeding | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 10845 | Relate maternal and infant factors to explain the potential for maternal transfer of drugs to produce toxicity in a breastfed infant | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 10860 | List and interpret key clinical, laboratory and imaging findings which are key in the process of differentiation and diagnosis of threatened, missed, inevitable and septic abortion. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10862 | List and interpret Key clinical, laboratory and imaging findings which are key in the process of differentiation, diagnosis and evaluation of the patients with normal and abnormal intrauterine pregnancy, and ectopic pregnancy. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10863 | List and interpret key clinical, laboratory and imaging findings which are key in the process of evaluation of the patients with recurrent pregnancy loss (such as autoimmune screen, karyotyping, X ray HSG, 3D US, laparoscopy and hysteroscopy). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10864 | Conduct an effective plan of management for patients requiring pregnancy termination: expectative treatment, medical termination (such as misoprostol), and surgical termination (such as dilatation and curettage, D&C). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |

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| 10865 | Counsel patient about risks and complications of each management option for pregnancy termination. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10866 | Develop a differential diagnosis for bleeding and abdominal pain in the first (spontaneous abortion and ectopic pregnancy), second and third trimesters of pregnancy (bloody show, cervicitis, cervical trauma, placental abruption, placenta previa). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10868 | Describe the maternal complications of pregnancy loss and fetal death, including disseminated intravascular coagulopathy (DIC). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10869 | Counsel the patient experiencing pregnancy loss and fetal death. | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 10886 | After studying the assigned material given by scientific principles of medicine and medical skills for the clinical presentation of abdominal pain, the student shall use the abdominal pain scheme and process work sheets to navigate (be able to use the history and physical examination as well as any additional laboratory or imaging data) through the scheme to a final diagnostic category and or disease. Objective A applies to all subsequent objectives. | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10887 | Differentiate the patient into the categories of abdominal pain the adult, pediatrics and pregnant female category. | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10888 | Differentiate the patient into abdominal (abdominal cavity, retroperitoneum and abdominal wall) vs. extra-abdominal (Cardiothoracic/toxic metabolic or neurogenic psychiatric) causes of acute abdominal pain. Cardiothoracic, toxic metabolic and neurogenic psychiatric origins/diseases will be covered in the appropriate units | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10889 | | SPM GIS | 165 | Abdominal Pain Scheme Presentation |

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| | Under abdominal causes of acute abdominal pain differentiate between diffuse non- localized (incorporates all four quadrants), upper abdomen (right upper quadrant epigastric region and left upper quadrant), lower abdomen (right lower quadrant, suprapubic/pelvic region, left lower quadrant) and central (periumbilical) categories and the final pathology/disease in each category. | | 174 | Abdominal Pain & GI Bleed WCE |
| 10890 | Under the diffuse non- localized category, further differentiate into GI source, vascular/hematopoietic, and genitourinary and the final pathology/disease in each category (genitourinary diseases will be covered in units six and seven). | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10891 | Under the upper abdomen (right upper quadrant, epigastric region and left upper quadrant) category, further differentiate into GI Source, vascular/hematopoietic, and genitourinary and the final pathology/disease in each category (genitourinary diseases will be covered in units six and seven) | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10892 | Under the lower abdomen category (right lower quadrant, suprapubic/pelvic ,region, left lower quadrant), further differentiate into GI source, vascular/hematopoietic , and genitourinary and the final pathology/disease in each category (genitourinary diseases will be covered in units six and seven) | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10893 | Under the central (periumbilical) category, further differentiate into GI source, and vascular/hematopoietic categories, and the final pathology/disease in each category. | SPM GIS | 165 | Abdominal Pain Scheme Presentation |
| | | | 174 | Abdominal Pain & GI Bleed WCE |
| 10898 | Describe the disease trypanosomiasis and the flagellate, Trypanosoma brucei known to cause this disease; be able to distinguish the difference between Rhodesiense vs. Gambiense in terms of disease severity and significant clinical findings. | SPM CSS | 329 | Encephalitis |

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| 10908 | Define delirium, stupor, coma. | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10909 | Identify the common mechanisms and etiologies of altered mental status (delirium, stupor and coma). | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10910 | Outline and prioritize the urgent evaluation of the patient presenting with altered mental status (delirium, stupor and coma) | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10911 | Explain the oculovestibular and oculocephalic reflexes | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10912 | List the categories of causes of coma and delirium due to diffuse cerebral dysfunction and identify common examples in each category | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10913 | Recognize and explain the classic respiratory patterns encountered in stupor and coma | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10914 | Outline and distinguish the mechanisms of psychiatric unresponsiveness. | SPM CSS | 325 | SCHEME - Delirium, Stupor and Coma |
| | | | 340 | Delirium, Stupor and Coma WCE |
| 10925 | Define domestic violence and sexual assault. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10926 | Identify the patients at increased risk for domestic violence and sexual abuse. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10927 | Describe the medical management of a victim of sexual assault. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10928 | List screening questions for domestic violence. | SPM REP | 485 | Sexual Assault and Domestic Violence |
| 10946 | Outline the approach to a patient with an adnexal mass. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 10955 | Identify general characteristics shared by members of the Enterobacteriaceae. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 10956 | Distinguish between the typhoid and non-typhoid serovars of Salmonella. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |

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| 10957 | Summarize prominent virulence factors employed by Salmonella to establish infection. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 10958 | Distinguish between Shigella dysenteriae and Shigella sonnei in terms of clinical presentation. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 10959 | Discuss the mechanism by which Shigella invades intestinal epithelial cells. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 10961 | Distinguish between the five major groups of E.coli known to cause gastroenteritis. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 10975 | Recognize a normal reactive fetal heart tracing (FHT). | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10976 | Identify various fetal heart rate patterns and their significance. | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10977 | Develop a systematic approach to reading a fetal heart beat tracing. | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10978 | Identify the various patterns and causes of decelerations on fetal heart tracing. | SPM REP | 472 | Fetal Heart Rate Monitoring |
| 10982 | The hormonal control of reproduction by the hypothalamus and the pituitary gland | SPM REP | 474 | Physiology of Pregnancy |
| 10983 | The hormonal relationships of the menstrual cycle for FSH, LH, estrogen and progesterone | SPM REP | 474 | Physiology of Pregnancy |
| 10984 | Delineate and graph the changes in hormone composition and concentration following fertilization | SPM REP | 474 | Physiology of Pregnancy |
| 10985 | Describe the events of fertilization | SPM REP | 474 | Physiology of Pregnancy |
| 10986 | Correlate the events of fertilization and implantation to the production of hormones | SPM REP | 474 | Physiology of Pregnancy |
| 10987 | Correlate the events of each trimester to hormonal production (Relate to the site of production and hormone concentration) | SPM REP | 474 | Physiology of Pregnancy |
| 10988 | Define the source of production, timing and function of HCG, estrogen and progesterone during pregnancy | SPM REP | 474 | Physiology of Pregnancy |

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| 10989 | Correlate placental structure to the exchange of nutrients and waste from the mother to the fetus and vice-versa | SPM REP | 474 | Physiology of Pregnancy |
| 10990 | Discuss oxygen transport between maternal and fetal blood | SPM REP | 474 | Physiology of Pregnancy |
| 10991 | Discuss changes in maternal and fetal energy sources related to glucose and insulin | SPM REP | 474 | Physiology of Pregnancy |
| 10992 | Delineate the changes in maternal physiology in response to pregnancy | SPM REP | 474 | Physiology of Pregnancy |
| 10993 | Discuss to potential causes of the initiation of the birth process | SPM REP | 474 | Physiology of Pregnancy |
| 10994 | Describe the events and hormonal control of birth | SPM REP | 474 | Physiology of Pregnancy |
| 11018 | Differentiate between decreased cardiac output and decreased systemic vascular resistance as causes of abnormal blood pressure-shock. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11019 | Under the category of decreased cardiac output as a cause of shock, differentiate between hypovolemic and cardiogenic and extra-cardiac/obstructive causes of shock. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11020 | Under the category of hypovolemic causes of shock, differentiate between the categories of hemorrhagic and fluid losses and the final pathology/disease in each category. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11021 | Under the category of cardiogenic causes of shock differentiate between myopathic, and sustained refractory arrhythmias, as causes of shock and the final pathology/disease in each category. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11022 | Under the category of extra-cardiac obstructive causes of shock, differentiate to the final pathology/ disease. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11023 | Under the category of decreased systemic vascular resistance as a cause of abnormal blood pressure-shock, differentiate to the distributive causes of shock. | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |

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| 11024 | SHOCK H: Under the category of distributive causes of shock differentiate between the categories of septic, anaphylactic, neurogenic, and other causes of shock and the final pathology/disease in each category | SPM CVR | 1161 | Abnormal BP Hypertension and Shock Scheme Presentation |
| 11038 | Describe use of drugs to manage preterm labor: (1) parenteral beclomethasone for fetal lung maturation(2) tocolytics to delay delivery [terbutaline](3) progesterone to prevent preterm birth in women with previous Hx (4) magnesium sulfate to prevent cerebral palsy | SPM REP | 482 | Drugs for inducing/delaying labor |
| 11039 | Describe use of uterotonic drugs to induce labor and reduce obstetrical blood loss | SPM REP | 482 | Drugs for inducing/delaying labor |
| 11053 | List and interpret key clinical, laboratory and imaging findings for differentiation and diagnosis of anembryonic pregnancy and retained products of conception (incomplete abortion). | SPM REP | 473 | SCHEME - Pregnancy |
| | | | 484 | Pregnancy WCE |
| 11071 | Discuss genetic abnormalities associated with pregnancy losses, including cytogenetic abnormalities, parental chromosomal abnormalities, single gene disorders, skewed X inactivation, genomic Imprinting, molar pregnancies and confined placental mosaicism. | SPM REP | 481 | Genetics of Pregnancy Loss |
| 11099 | Describe the organization of the retroviral genome and the three genes common to all retroviruses Gag, Pol, Env. | SPM HEM | 1105 | HIV |
| 11100 | Differentiate between complex and simple retroviruses and provide an example of each. | SPM HEM | 1105 | HIV |
| 11101 | Describe the virion structure of the human immunodeficiency virus (HIV) and label each of the following proteins: Gp41, gp120, P17, p24, as well as the core, the envelope, RNA, Pol, nucleocapsid. | SPM HEM | 1105 | HIV |
| 11102 | Describe the stages of HIV infection including the initial symptoms following HIV infection (Stage 1 or acute phase, 2-4 weeks post infection), the latent period | SPM HEM | 1105 | HIV |

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| | (Stage2) characterized by subclinical immune dysfunction, and Stage 3 characterized by the progression to AIDS and systemic immune deficiency. | | | |
| 11104 | Describe HIV replication including attachment, fusion, reverse transcription, integration into the host genome, viral gene expression, assembly and budding. | SPM HEM | 1105 | HIV |
| 11181 | Describe the six urea cycle disorders including presenting features, biochemical defects, laboratory presentations and treatment options. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11182 | Provide a biochemical explanation for how hyperammonemia can lead to brain dysfunction. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11186 | For phenylketonuria and hyperphenylalaninemia, be able to describe the clinical manifestations, biochemical defects (e.g. phenylalanine hydroxylase deficiency versus defective biopterin synthesis and recycling; potential effects on tyrosine, serotonin and catecholamine synthesis), laboratory presentations and treatment options (including maternal/fetal versus pediatric considerations). | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11187 | Provide a biochemical rationale for impaired brain development in phenylketonuria and hyperphenylalaninemia. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11190 | Be familiar with the clinical presentations, biochemical abnormalities and laboratory findings associated with the following amino acid disorders: alkaptonuria, tyrosinemia, histidinemia, homocystinuria. | SPM MHD | 1265 | Pediatric Metabolic Emergencies: Inborn Errors of Nitrogen and Amino Acid Metabolism |
| 11194 | Recall the changes that occur in circulation at birth and explain how these occur. | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 11195 | Explain the consequences that develop if the circulation changes do not occur properly. | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 11196 | Recall how the respiration process is initiated at birth and explain the role of surfactant. | SPM MHD | 1259 | Physiologic Alterations at Birth |

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| 11197 | Explain what happens if the lungs are not appropriately developed at birth. | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 11198 | Recall the function of the liver in the handling of bilirubin and how this can be ineffective at birth. | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 11199 | Explain the differences between physiologic and pathologic neonatal jaundice including their causes, signs, symptoms and treatment. | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 11214 | Define short stature. | SPM MHD | 1274 | SCHEME - Abnormal Stature |
| 11215 | Be able discuss an approach to the evaluation of the child with short stature. | SPM MHD | 1274 | SCHEME - Abnormal Stature |
| 11216 | Discuss problems associated with short stature. | SPM MHD | 1274 | SCHEME - Abnormal Stature |
| 11221 | Define screening | SPM MHD | 1264 | Newborn Screening |
| 11222 | Discuss the criteria used to include disorders in newborn screening programs. | SPM MHD | 1264 | Newborn Screening |
| 11223 | Discuss some of the core conditions included in the NBS program from the state of Texas (Congenital Hypothyroidism (CH), Congenital Adrenal Hyperplasia (CAH) , sickle cell, PKU, biotinidase deficiency, CF, MSUD, Galactosemia, Medium-Chain Acyl-CoA Dehydrogenase and homocystinuria). | SPM MHD | 1264 | Newborn Screening |
| 11224 | Discuss some characteristics of the methods used to screen newborns by comparing bacterial inhibition assay and tandem mass spectroscopy technique. | SPM MHD | 1264 | Newborn Screening |
| 11249 | Cough D:Under the category of chronic cough differentiate between the upper airway, lower airway and other medical conditions causes of chronic cough and the final pathology/disease in each category. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 11250 | Cough E:Under the category of lower airway differentiate between obstructive lung disease, lung neoplasm, lung infection (chronic) and interstitial lung disease categories/causes of lower airway-chronic cough and the final pathology/disease in each category. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |

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| 11251 | Wheezing B: Differentiate between upper airway and lower airway causes of wheezing. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 11252 | Wheezing C: Under upper airway causes of wheezing, differentiate between infection, neoplasm and the "other" categories/causes of wheezing and the final pathology/disease in each category. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 11253 | Wheezing D: Under lower airway causes of wheezing, differentiate between obstructive lung disease and "the other medical conditions" categories/causes of wheezing and the final pathology/disease in each category. | SPM CVR | 1178 | Cough and Wheezing Scheme Presentation |
| 11270 | Explain hypogammaglobulinemia of infancy | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11271 | Explain the impact of immaturity of the immune system on childhood immunizations, including the use of conjugated vaccines | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11272 | Define oral tolerance and describe its relationship to inappropriate mucosal immune responses | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11273 | Describe food allergies in infants and children, including the specific tests used and recommended treatment | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11274 | Describe the role of TH2 cells, IgE, mast cells and eosinophils in food allergies in infants and children | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 11315 | Differentiate between normal and abnormal development and behavior. | SPM MHD | 1275 | Abnormal Development |
| 11338 | Discuss an approach to the evaluation of a child with tall stature | SPM MHD | 1274 | SCHEME - Abnormal Stature |
| 11356 | Describe the clinical presentations, biochemical abnormalities, laboratory findings and potential treatment options associated with the following congenital causes of lactic acidosis: pyruvate dehydrogenase deficiency, pyruvate carboxylase | SPM MHD | 1272 | Pediatric Metabolic Emergencies: Lactic Acidemias and Disorders of Carbohydrate Metabolism |

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| | deficiency, fructose-1,6-bisphosphatase deficiency, phosphoenolpyruvate carboxykinase deficiency and respiratory chain defects. | | | |
| 11357 | Describe the clinical presentations, biochemical abnormalities and laboratory findings associated with the following disorders of carbohydrate metabolism: sucrase/isomaltase deficiency, lactase deficiency, essential fructosuria, hereditary fructose intolerance and galactosemia types 1 & 2 (galactose-1-phosphate uridylyltransferase deficiency and galactokinase deficiency). | SPM MHD | 1272 | Pediatric Metabolic Emergencies: Lactic Acidemias and Disorders of Carbohydrate Metabolism |
| 11359 | Define, distinguish, and correctly apply the common medical terms used to describe, identify and treat sleep and circadian rhythm disorders according to DSM 5 classification (as presented in the sleep and circadian rhythm disorders clinical scheme presentation and process worksheet). | SPM MHD | 1324 | SCHEME - Sleep and Circadian Rhythm Disorders |
| 11360 | Formulate the diagnostic evaluation of a patient presenting with a sleep and/or circadian rhythm disorder. | SPM MHD | 1324 | SCHEME - Sleep and Circadian Rhythm Disorders |
| 11361 | Know the general medical disorders, psychiatric disorders, and substance abuse disorders that may present with sleep and/or circadian rhythm disorders. Discuss the laboratory tests/studies that are used to diagnose them. | SPM MHD | 1324 | SCHEME - Sleep and Circadian Rhythm Disorders |
| 11362 | Discuss the use of nocturnal polysomnography and the multiple sleep latency test in the diagnosis of sleep and circadian rhythm disorders. | SPM MHD | 1324 | SCHEME - Sleep and Circadian Rhythm Disorders |
| 11364 | Formulate the diagnostic evaluation of a patient presenting with dementia | SPM MHD | 1317 | SCHEME - Neurocognitive Disorders |
| 11365 | Know the general medical conditions that may present with dementia and discuss the laboratory tests/studies that are used to diagnose them | SPM MHD | 1317 | SCHEME - Neurocognitive Disorders |

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| 11366 | Describe and distinguish the clinical characteristics of the primary neurodegenerative dementias (those listed/included in the process worksheet) | SPM MHD | 1317 | SCHEME - Neurocognitive Disorders |
| 11398 | Define primary and secondary immune deficiency, and list the common causes of secondary (acquired) immune deficiency | SPM MHD | 1261 | Childhood Immune Deficiency |
| 11399 | Describe and categorize immune deficiencies in children, especially with regard to the following characteristics: primary or secondary; innate or adaptive; specific defect; pattern of inheritance; common infections; diagnosis | SPM MHD | 1261 | Childhood Immune Deficiency |
| 11400 | Describe changes in the immune system related to aging | SPM MHD | 1261 | Childhood Immune Deficiency |
| 11439 | Discuss the use and limitations of the Mini-Mental State Examination (MMSE) as a cognitive screening tool. Recognize the components of the MMSE and determine an MMSE score based on a patient's recorded responses. | SPM MHD | 1317 | SCHEME - Neurocognitive Disorders |
| 11494 | Recognize the characteristics of the Attention-Deficit and Disruptive Behavior Disorders (Conduct Disorder, Oppositional Defiant Disorder) | SPM MHD | 1280 | Behavior and Pharmacology of Behavioral Disorders |
| 11496 | Given a case, students should be able to identify the different Attention-Deficit and Disruptive Behavior Disorders (Conduct Disorder, Oppositional Defiant Disorder) | SPM MHD | 1280 | Behavior and Pharmacology of Behavioral Disorders |
| 11510 | Define the terms growth, hypertrophy and hyperplasia | SPM MHD | 1276 | Endocrinology of Growth |
| 11511 | In general define the basic stimuli responsible for cell and tissue growth | SPM MHD | 1276 | Endocrinology of Growth |
| 11512 | Contrast linear growth and its controls versus body mass growth and its controls | SPM MHD | 1276 | Endocrinology of Growth |
| 11513 | Discuss the hormonal stimulation of growth and relate stimulation to timing and maintenance of growth | SPM MHD | 1276 | Endocrinology of Growth |

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| 11514 | Delineate the contributions of genetics, nutrition and hormones related to growth | SPM MHD | 1276 | Endocrinology of Growth |
| 11515 | Describe the affects and mechanisms of growth hormone, thyroid hormone, IGF's, testosterone, estrogen, glucocorticoids and insulin on growth and relate the effects of excess or deficiency of each of these hormones to growth and stature. | SPM MHD | 1276 | Endocrinology of Growth |
| 11522 | Describe how different classifications of anemia (Aplastic, Hemolytic, Autoimmune hemolytic, Microcytic, Macrocytic) can occur due to different infections. | SPM HEM | 1081 | Infection and Anemia |
| 11557 | Provide a common psychopharmacological rationale for two drugs used in the treatment of attention-deficit hyperactivity disorder.explanation: for using methylphenidate, dextroamphetamine, bupropion, desipramine...Theory is that ADHD is a manifestation of deficient dopaminergic and adrenergic neurotransmission in areas of the frontal, pre-frontal and limbic areas involved in executive functions: contextualized modulation of behavior; ability to plan, organize, set goals, then carry out a plan to completion; pay attention to and remember details and instructions; screen out irrelevant information despite distractions | SPM MHD | 1278 | ADHD Drugs |
| 11583 | Know the etiology, clinical presentation, diagnosis, and treatment of HIV-related opportunistic infections (mycobacterium, toxoplasmosis, histoplasmosis, cryptococcosis, coccidiomycosis) | SPM HEM | 1105 | HIV |
| 11585 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of trypanosomiasis (parasitic). | SPM HEM | 1103 | Infectious Lymphadenitis |
| 11586 | Know the definition, epidemiology, etiology / pathogenesis, clinical presentations, morphology, diagnosis, and treatment of filariasis (parasitic). | SPM HEM | 1103 | Infectious Lymphadenitis |

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| 11640 | Explain the significance of Virchow’s triad in the development of clots in a patient. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11641 | Give examples of different treatments used to prevent deep venous thrombosis development in patients. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11642 | List and describe the significance of the major risk factors in the development of deep venous thrombosis. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11643 | Explain how the venous valves work as part of the muscle pump to propel blood back to the heart and the medical conditions that can occur when this system does not work properly. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11644 | Explain how the venous valves can serve as a site for deep venous thrombosis (DVT) formation. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11645 | Explain chronic venous insufficiency (CVI) and DVT and use the Starling equilibrium to explain how these conditions can lead to peripheral edema. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11646 | When given appropriate patient information, give plausible causes of edema. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11647 | Describe the formation of a pulmonary emboli (PE) and how it can alter normal physiological function. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11648 | Describe the usefulness of a D-Dimer test in the diagnosis of a DVT. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11649 | Explain how a pulmonary emboli alters blood flow in the lungs and the consequence of this obstruction to flow. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11650 | Describe the fate of a DVT and how the fate of the clot can significantly alter patient outcome. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11651 | Review Objectives: List and explain factors that alter interstitial fluid formation and lymph flow. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11652 | Review Objectives: Discuss the relationship between plasma, interstitial fluid and lymph fluid. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |

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| 11653 | Review Objectives: Recall the Starling Equilibrium equation and explain how it relates to interstitial fluid and lymph formation. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11654 | Explain the importance of capillary permeability and the reflection coefficient in the regulation of interstitial fluid pressure, interstitial fluid composition and lymph fluid composition. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11655 | Describe how we can determine reflection coefficient. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11656 | Evaluate the hypothesis of negative and positive interstitial hydrostatic fluid pressure. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11657 | Describe the formation of local edema, general edema, pitting edema and non-pitting edema. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11658 | Relate edema formation to interstitial hydrostatic fluid pressure and lymph flow. | SPM HEM | 1088 | Venous Blood Flow in DVT and PE |
| 11718 | Screening With regard to falls in the elderly, explain what is meant by intrinsic and extrinsic risk factors, with one modifiable and one non-modifiable example of each | SPM MHD | 1316 | Falls in the Elderly |
| 11719 | Assessment With regard to postural control, describe at least one test to assess each of these dimensions: vision, hearing, and balance, vascular autonomic stability, cognitive impairment | SPM MHD | 1316 | Falls in the Elderly |
| 11720 | Intervention Suggest one intervention to minimize each of the following: hazards in the home, and long list of concurrent medications | SPM MHD | 1316 | Falls in the Elderly |
| 11729 | Explain the immune mechanisms associated with rheumatic heart disease | SPM CVR | 1147 | Valvular Heart Disease |
| 11730 | Describe the importance of sleep in maintaining normal physiological functions of the human body. | SPM MHD | 1327 | Physiology and Sleep |
| 11731 | Explain the theories that have been presented regarding regulation of sleep. | SPM MHD | 1327 | Physiology and Sleep |

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| 11732 | Explain how altered sleep patterns interfere with normal circadian rhythm of hormones. | SPM MHD | 1327 | Physiology and Sleep |
| 11733 | Describe the effect of sleep abnormalities on the cardiovascular system. | SPM MHD | 1327 | Physiology and Sleep |
| 11746 | Define, distinguish, and correctly apply the common medical terms used to describe, identify and treat sleep and circadian rhythm disorders according to DSM 5 classification (as presented in the sleep and circadian rhythm disorders clinical scheme presentation and process worksheet). | SPM MHD | 1325 | Case-based discussion of Sleep Disorders |
| 11747 | Formulate the diagnostic evaluation of a patient presenting with a sleep and/or circadian rhythm disorder. | SPM MHD | 1325 | Case-based discussion of Sleep Disorders |
| 11748 | Know the general medical disorders, psychiatric disorders and substance abuse disorders that may present with sleep and/or circadian rhythm disorders. Discuss the laboratory tests/studies that are used to diagnose them | SPM MHD | 1325 | Case-based discussion of Sleep Disorders |
| 11749 | Demonstrate an inductive diagnostic approach to localize transient acute non-traumatic vision loss to the lens, optic disc, or non-ocular lesions | SPM CSS | 342 | SCHEME - Visual Disturbances |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11750 | Demonstrate an inductive diagnostic approach to localize painless and painful persistent acute non-traumatic causes of vision loss | SPM CSS | 342 | SCHEME - Visual Disturbances |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11751 | Demonstrate an inductive diagnostic approach to chronic non-traumatic vision loss in patients with a normal versus an abnormal eye examination. | SPM CSS | 342 | SCHEME - Visual Disturbances |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11752 | Demonstrate an inductive diagnostic approach to distinguish double vision originating in and affecting one eye (monocular) or both eyes (binocular) | SPM CSS | 341 | SCHEME - Diplopia/Strabismus |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11753 | | SPM CSS | 341 | SCHEME - Diplopia/Strabismus |

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| | Demonstrate an inductive diagnostic approach to distinguish binocular diplopia due to weakness of muscles associated with a single cranial nerve versus weakness of muscles not related to a specific cranial nerve | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11760 | Explain how immune privilege facilitates corneal transplantation | SPM CSS | 338 | Immunology of the Eye |
| 11761 | For hypersensitivity types I, II and IV, list the most common immune-mediated conjunctivitis and its cause | SPM CSS | 338 | Immunology of the Eye |
| 11762 | Identify 7 immune-mediated diseases that cause uveitis, and describe the characteristic features and major risk factors for the 4 most common diseases | SPM CSS | 338 | Immunology of the Eye |
| 11763 | Describe lens-induced uveitis and sympathetic ophthalmia | SPM CSS | 338 | Immunology of the Eye |
| 11764 | Describe the most likely cause of immune-mediated scleritis and list 9 associated systemic immune-mediated diseases | SPM CSS | 338 | Immunology of the Eye |
| 11765 | Define endophthalmitis and describe the six categories of endophthalmitis and the most common pathogens found to cause each of them. | SPM CSS | 345 | Endophthalmitis and Uveitis |
| 11766 | List and describe the major bacterial pathogens causing culture-positive cases of endophthalmitis. | SPM CSS | 345 | Endophthalmitis and Uveitis |
| 11767 | Describe the four categories of uveitis and list the major infectious etiologies for each category. | SPM CSS | 345 | Endophthalmitis and Uveitis |
| 11768 | Recognize the ocular findings most commonly associated with infectious by each member of TORCH (Toxoplasma, Rubella, CMV, Herpes, Syphilis). | SPM CSS | 345 | Endophthalmitis and Uveitis |
| 11769 | List three parasitic worm infections of the eye and describe/recognize the mode of transmission for each. | SPM CSS | 345 | Endophthalmitis and Uveitis |
| 11770 | Describe and recognize two protozoan etiologies of uveitis. | SPM CSS | 345 | Endophthalmitis and Uveitis |

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| 11771 | Compare the diagnosis of endophthalmitis with that of uveitis, stating which is nearly always presumptive and which can be definitive. | SPM CSS | 345 | Endophthalmitis and Uveitis |
| 11780 | Know the organization of the three tissue layers of the eye: fibrous, vascular and retinal. | SPM CSS | 337 | Histology of the Eye |
| 11781 | Know the organization, histology and function of the sclera, cornea and lens. | SPM CSS | 337 | Histology of the Eye |
| 11782 | Know the organization, histology and function of the iris, ciliary body and choroid. | SPM CSS | 337 | Histology of the Eye |
| 11783 | Know the organization, histology and function of the retina. | SPM CSS | 337 | Histology of the Eye |
| 11784 | Know the organization, histology, ultrastructure and function of the retinal photoreceptors. | SPM CSS | 337 | Histology of the Eye |
| 11785 | Know the organization, histology and function of the eyelids, conjunctival surfaces and lacrimal glands. | SPM CSS | 337 | Histology of the Eye |
| 11791 | Compare and contrast the structures of phospholipids (phosphatidic acid, phosphatidylserine, phosphatidylethanolamine, phosphatidylcholine, phosphatidylinositol) and sphingolipids (sphingosine, ceramide, sphingomyelin, cerebrosides, globosides, gangliosides). | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 11794 | Describe the following peroxisomal disorders in terms of general classification, biochemical defect, accumulated substrate, mode of inheritance and clinical presentation: (1) Peroxisome biogenesis disorders: Zellweger Syndrome, Neonatal adrenoleukodystrophy, Infantile Refsum Disease; (2) Peroxisomal enzyme deficiencies: Acyl-CoA oxidase deficiency, Adrenoleukodystrophy, Adult Refsum Disease. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 11837 | To describe the examination of the inflamed eye | SPM CSS | 332 | SCHEME - Eye Redness |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |

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| 11838 | To diagnose cases of inflamed eyes | SPM CSS | 332 | SCHEME - Eye Redness |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11839 | To discuss preliminary treatment plans | SPM CSS | 332 | SCHEME - Eye Redness |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11840 | To identify patients requiring urgent specialty referral | SPM CSS | 332 | SCHEME - Eye Redness |
| | | | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| 11842 | List two classes of drugs to reverse the effects of mydriatic drugs. | SPM CSS | 348 | Ocular Pharmacology |
| 11843 | List at least three classes of drugs to decrease intraocular pressure, with an example of each. | SPM CSS | 348 | Ocular Pharmacology |
| 11847 | Describe and discuss the formation of the eyelids, the eye, and the extra-ocular muscles. Include the contributions of ectoderm, mesoderm, and neural crest cells. | SPM CSS | 330 | Eye and Ear Development |
| 11848 | Describe and discuss the formation of the middle ear, inner ear, and external ear. Include the contributions of ectoderm, mesoderm, endoderm, and neural crest cells. | SPM CSS | 330 | Eye and Ear Development |
| 11849 | Describe and discuss the formation of the skin and its derivatives (hair, glands, teeth, and nails). Include the contributions of ectoderm, mesoderm, and neural crest cells. | SPM IMN | 181 | Development of the Musculoskeletal System |
| 11854 | Describe the production of fluids in the eye. | SPM CSS | 346 | Physiology of Ocular Fluids |
| 11855 | Explain the development of glaucoma. | SPM CSS | 346 | Physiology of Ocular Fluids |
| 11870 | Recall the definitions of bradycardia, tachycardia, flutter, and fibrillation. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11871 | Recall how to read heart rate by observing an EKG strip and counting heavy lines between R waves. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |

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| 11872 | Recall how the normal waves of depolarization spreads through the heart. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11873 | Recall the delay that normally occurs as the wave of depolarization reaches the AV node. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11874 | Draw, label and explain a 1st degree, 2nd degree, and 3rd degree heart block. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11875 | Explain the difference between a Mobitz and a Wenckebach 20 degree block. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11876 | Explain how a bundle branch block alters depolarization in the heart. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11877 | Explain how a PCV develops in the ventricle. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11879 | Describe and explain the Wolff-Parkinson-White syndrome. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 11893 | Identify systolic and diastolic pressure from an arterial pressure tracing | SPM CVR | 1168 | Clinical Application of Cardiovascular Physiology |
| 11909 | Recognize and explain the distinguishing features of diagnoses that typically present with dizziness other than vertigo (as listed in the process worksheet) | SPM CSS | 353 | SCHEME - Vertigo and Dizziness |
| | | | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| 11910 | Identify the medicines and other substances (as listed in the process worksheet) that commonly cause dizziness and discuss the mechanisms by which they produce dizziness | SPM CSS | 353 | SCHEME - Vertigo and Dizziness |
| | | | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| 11934 | Define opportunistic infection, recognize difficulties in their diagnosis/treatment and list the opportunistic pneumonia-causing pathogens for each type of immune defect in immunocompromised patients | SPM CVR | 1187 | Pneumonia in the Immunocompromised Host |
| 11935 | Describe Pneumocystis, Nocardia, Aspergillus, Histoplasma and Rhizopus, including their defining characteristics, route of infection, diagnosis and why they cause pulmonary disease in immunocompromised patients | SPM CVR | 1187 | Pneumonia in the Immunocompromised Host |

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| 11936 | Describe infection with Mycobacterium avium-intracellulare complex (MAC) in AIDS | SPM CVR | 1187 | Pneumonia in the Immunocompromised Host |
| 11942 | Use an inductive diagnostic approach to distinguish conductive from sensorineural types of hearing loss in adults and in children. | SPM CSS | 352 | SCHEME - Hearing Loss and Tinnitus |
| | | | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| 11943 | Use an inductive diagnostic approach to distinguish somatic, auditory and psychogenic types of tinnitus. | SPM CSS | 352 | SCHEME - Hearing Loss and Tinnitus |
| | | | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| 11948 | Know the general organization of the three parts of the ear. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11949 | Know the organization and histology of the outer ear. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11950 | Know the organization and histology of the middle ear. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11951 | Know the organization and histology of the membranous and bony labyrinth. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11952 | Know the organization and histology of the cristae ampullaris. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11953 | Know the organization and histology of the maculae. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11954 | Know the organization and histology of the cochlea. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11955 | Know the organization and histology of the organ of Corti. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 11985 | Describe three primary immunodeficiencies with cutaneous manifestations (Wiskott-Aldrich syndrome, | SPM IMN | 185 | Immune Responses of the Skin |

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| | hereditary angioneurotic edema, and ataxia-telangiectasia) | | | |
| 11986 | Describe autoimmune disorders with cutaneous manifestations, including: scleroderma, dermatomyositis, discoid lupus erythematosus, alopecia, pemphigus, bullous pemphigoid, and dermatitis herpetiformis | SPM IMN | 185 | Immune Responses of the Skin |
| 11987 | Explain the role of the immune system in the acute inflammatory dermatoses (urticaria, acute eczematous dermatitis, erythema multiforme) and chronic inflammatory dermatoses (psoriasis). | SPM IMN | 185 | Immune Responses of the Skin |
| 11988 | Compare the immune responses in the two types of leprosy: tubercular and lepromatous | SPM IMN | 185 | Immune Responses of the Skin |
| 12010 | Recognize and describe the petechial and purpuric rashes that are often a prominent characteristic of the tick-borne disease found in the U.S. such as Rickettsia, Ehrlichia, Borrelia and Coxiella. | SPM HEM | 1091 | Hemorrhagic Fever Viruses and the Rickettsia |
| 14629 | Describe the microbial etiologies (viral and bacterial) of acute bronchitis. | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 14630 | Describe the pathogenesis and clinical manifestations of acute bronchitis. | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 14632 | Describe the clinical and morphologic features of freckles | SPM IMN | 190 | Skin Pathology III |
| 14633 | Describe the clinical and morphologic features of solar lentigo | SPM IMN | 190 | Skin Pathology III |
| 14634 | Describe the pathogenesis and clinical features of albinism, vitiligo, and melasma | SPM IMN | 190 | Skin Pathology III |
| 14635 | Describe the clinical features, morphology, and pathogenesis of conventional melanocytic nevi and dysplastic nevi | SPM IMN | 190 | Skin Pathology III |

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| 14636 | Describe the clinical features, pathogenesis, morphology, histologic subtypes, and prognostic indicators of melanoma | SPM IMN | 190 | Skin Pathology III |
| 14637 | Describe the clinical features and morphology of seborrheic keratosis | SPM IMN | 190 | Skin Pathology III |
| 14639 | Describe the clinical features of fibroepithelial polyps | SPM IMN | 190 | Skin Pathology III |
| 14640 | Describe the clinical features and morphology of epithelial cysts | SPM IMN | 190 | Skin Pathology III |
| 14641 | Describe the clinical significance, clinical features, and morphology of actinic keratosis | SPM IMN | 190 | Skin Pathology III |
| 14642 | Describe the risk factors, clinical features, morphology, and prognosis of squamous cell carcinoma | SPM IMN | 190 | Skin Pathology III |
| 14643 | Describe the pathogenesis, clinical features, and morphology of mycosis fungoides and Sezary syndrome | SPM IMN | 186 | Skin Pathology Part II |
| 16277 | Know the general structural organization and function of the skin. | SPM IMN | 178 | Histology of the Skin |
| 16278 | Know the 5 strata of the epidermis. | SPM IMN | 178 | Histology of the Skin |
| 16279 | Know the location and function of: 1) keratinocytes; 2)melanocytes; 3) Langerhans cells; 4)Merkel cells. | SPM IMN | 178 | Histology of the Skin |
| 16280 | Describe the differentiation processes that occur from the stratum basale through the stratum corneum. | SPM IMN | 178 | Histology of the Skin |
| 16281 | Know the location and function of Meissner, Pacinian and Ruffini corpuscles. | SPM IMN | 178 | Histology of the Skin |
| 16283 | Know the general organization of the skin circulatory system. | SPM IMN | 178 | Histology of the Skin |
| 16284 | Know the structural organization and growth phases of the hair follicle. | SPM IMN | 178 | Histology of the Skin |
| 17035 | Pathology: Know the characteristics and clinical features of secondary tuberculosis | SPM CVR | 1202 | Tuberculosis |

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| 17039 | Pathology: Know the laboratory methods used in the diagnosis of tuberculosis including morphologic characteristics seen on microscopy (including staining method) and culture | SPM CVR | 1202 | Tuberculosis |
| 18517 | Describe two classes of mydriatics: risks and precautions, how they differ in clinical use, sites and mechanisms of action. | SPM CSS | 348 | Ocular Pharmacology |
| 18518 | List two classes of drugs for treatment of classic and occult 'wet' age-related macular degeneration, explain how they work, and explain why they are not effective in patients with 'dry' age-related macular degeneration. | SPM CSS | 348 | Ocular Pharmacology |
| 18556 | Describe Western blotting analysis | SPM IMN | 199 | Detection of Genetic Variation Part II |
| 18630 | Calculate the change in intracellular and extracellular volume and concentration produced by increasing or decreasing water and/or solutes. | SPM RNL | 1217 | Body Fluids (LAB) |
| 18631 | Estimate the volume of water that must be gained or lost to produce an increase or decrease in plasma sodium concentration. | SPM RNL | 1217 | Body Fluids (LAB) |
| 18632 | Explain how to calculate the effect on body fluid distribution produced by a gain or loss of total body sodium. | SPM RNL | 1217 | Body Fluids (LAB) |
| 18633 | Calculate the fluid shifts from intracellular and extracellular compartment that or produced by changing plasma sodium concentration. | SPM RNL | 1217 | Body Fluids (LAB) |
| 18634 | Recall what physiological parameter you can determine by knowing plasma sodium concentration. | SPM RNL | 1217 | Body Fluids (LAB) |
| 18657 | Describe the principle of genetic mapping in humans | SPM IMN | 233 | Linkage Analysis |
| 18658 | Identify recombinants and non-recombinants in a simple pedigree | SPM IMN | 233 | Linkage Analysis |
| 18659 | Show how linked markers can be used to track a disease gene through a pedigree | SPM IMN | 233 | Linkage Analysis |

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| 18660 | Use recombination frequency to estimate the genetic distance between two loci | SPM IMN | 233 | Linkage Analysis |
| 18661 | Define haplotype, centiMorgan and LOD score | SPM IMN | 233 | Linkage Analysis |
| 18662 | Know the threshold value of LOD score that show strong evidence of linkage between loci | SPM IMN | 233 | Linkage Analysis |
| 18676 | Describe the types of damage handled by the base-excision repair, mismatch repair, nucleotide excision repair and double strand break repair system. | SPM IMN | 189 | DNA Repair and Skin Disorders |
| 18748 | Identify the challenges faced by an individual who has and/or is currently experiencing an eating disorder. | SPM MHD | 1300 | Eating Disorder |
| 18749 | Provide practical approaches to patients who present with symptoms of an eating disorder. | SPM MHD | 1300 | Eating Disorder |
| 18750 | Discuss the psychological basis for this category of disorders. | SPM MHD | 1300 | Eating Disorder |
| 18751 | Identify the medical and oral consequences of eating disorders. | SPM MHD | 1300 | Eating Disorder |
| 18773 | Describe and define what is meant by "nuclear receptor superfamily" | SPM END | 398 | Nuclear Receptors |
| 18774 | Describe the general mechanism of action of the nuclear receptors (include the roles of: DNA-binding domain, ligand-binding domain, hetero-dimers, homo-dimers, monomers, coactivators, corepressors and ligands) | SPM END | 398 | Nuclear Receptors |
| 18797 | Describe the clinical characteristics of Yellow Fever and the molecular and structural characteristics for the virus that causes the disease. | SPM GIS | 142 | Liver Infections |
| 18809 | Define, distinguish and correctly apply the common medical terms used to describe and identify clinical states relevant to identifying dementia and related syndromes(as presented in the dementia clinical scheme presentation and process worksheet) | SPM MHD | 1317 | SCHEME - Neurocognitive Disorders |

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| 18810 | Explain the mechanism of action and important adverse effects of drugs used to treat benign prostatic hypertrophy (BPH):alpha-1 adrenergic antagonists -- example: prazosin5-alpha-reductase inhibitors -- example: dutasteridephosphodiesterase type-5 inhibitors -- example: tadalafil | SPM REP | 448 | Pharmacology of BPH and Prostate Cancer |
| 18811 | Explain the mechanism of action and important adverse effects of drugs used to treat prostate cancer:gonadotropin agonists -- example: leuprolidegonadotropin antagonists -- example: degarelixandrogen antagonists -- example: bicalutamide5-alpha-reductase inhibitors -- example: dutasterideautologous CD54+ cellular immunotherapy - - example: sipuleucel-Ttaxanes, M-phase-specific cytotoxic anticancer agents -- example: docetaxel | SPM REP | 448 | Pharmacology of BPH and Prostate Cancer |
| 18812 | List and interpret clinical and laboratory findings which are key in the processes of exclusion, differentiation and diagnosis of the uterine causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 18893 | Describe the relationship of lymph flow from the liver as it compares to whole body lymph flow. | SPM GIS | 135 | Ascites Development |
| 18894 | Recall how solutes and water cross membranes. | SPM GIS | 135 | Ascites Development |
| 18895 | Define the composition of ascites fluid. | SPM GIS | 135 | Ascites Development |
| 18938 | Recognize that viral infections by CMV, EMV, HIV, HSV and Hepatitis virus can cause hemolytic anemia. | SPM HEM | 1081 | Infection and Anemia |
| 18939 | Know the mechanism through which bacterial infection with Clostridium perfringens, Haemophilus influenza type B leads to anemia | SPM HEM | 1081 | Infection and Anemia |
| 18948 | Recognize the parasites Wuchereria bancrofti, Loa Loa, Onchocerca volvulus as potential causative agents of lymphadenopathy and know the epidemiology, morphology and mode of transmission of each. | SPM HEM | 1103 | Infectious Lymphadenitis |
| 18949 | Discuss the muscles of the floor of the female pelvis. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |

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| 18950 | Discuss the fasciae of the pelvis as supporting structures for the female pelvic viscera. Discuss the trampoline and suspension bridge analogies. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18951 | Discuss the utero-vaginal axis (anteverted vs. retroverted uterus). | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18952 | Discuss pelvic organ prolapse, including symptoms and risk factors. Discuss cystocele, urethral prolapse, prolapse of the uterus (including procidentia), enterocele, rectocele, prolapse of the vagina, and multiple organ prolapse. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18953 | Discuss the effects of damage during parturition in causing disorders of the female pelvic floor. Discuss the use of polypropylene tape as a means of reinforcing the supporting structures. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18954 | Discuss nerve damage as a mechanism of weakening of the supports for the pelvic organs. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 18958 | Apply your knowledge of normal and abnormal heme biosynthesis to recognize, explain, and suggest treatment options for the following disorders of heme metabolism: X-linked sideroblastic anemia, delta-aminolevulinic acid dehydratase porphyria, acute intermittent porphyria, porphyria cutanea tarda, erythropoietic protoporphyria, lead poisoning & vitamin B6 deficiency. | SPM HEM | 1089 | Inborn Errors of Heme Metabolism: The Porphyrins |
| 18976 | Know the general structural organization of the mammary gland; including the lobule, lactiferous duct and alveolar acini. | SPM REP | 490 | Anatomy and Histology of the Breast |
| 18977 | Identify and describe the function of the acini luminal epithelial cells and the myoepithelial cells. | SPM REP | 490 | Anatomy and Histology of the Breast |
| 18978 | Contrast the histology of the inactive versus the active mammary gland; including pregnancy and lactation. | SPM REP | 490 | Anatomy and Histology of the Breast |

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| 18979 | Identify the relevant histology associated with breast cancer; including Paget’s carcinoma, intraductal carcinoma and lobular carcinoma. | SPM REP | 490 | Anatomy and Histology of the Breast |
| 18981 | Understand the hormonal influences in the development of puberty. | SPM MHD | 1279 | SCHEME - Human Development: Teen |
| 18982 | Recognize the usual sequence of pubertal development in boys and girls. | SPM MHD | 1279 | SCHEME - Human Development: Teen |
| 18983 | Recognize the timing of the growth spurt in relationship to pubertal stage in boys and girls. | SPM MHD | 1279 | SCHEME - Human Development: Teen |
| 18984 | Identify conditions associated with variances in the timing of pubertal development. | SPM MHD | 1279 | SCHEME - Human Development: Teen |
| 18992 | Explain the mechanism of how NSAIDs prevent or reduce primary dysmenorrhea | SPM REP | 458 | Pharmacology of Abnormal Genital Bleeding |
| 18993 | Explain how combined hormonal contraceptives prevent or reduce primary dysmenorrhea | SPM REP | 458 | Pharmacology of Abnormal Genital Bleeding |
| 18994 | Explain the physiologic rationale for pharmacological use of estrogen and progesterone in diagnosis and treatment of anovulatory bleeding | SPM REP | 458 | Pharmacology of Abnormal Genital Bleeding |
| 19042 | Recognize normal physical growth parameters through infancy | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19043 | Recognize normal developmental behavioral milestones and state their expected age of occurrence through infancy | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19044 | Outline how child development is measured through motor, communicative, cognitive, and social emotional domains | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19045 | Identify common risk factors for abnormal development through infancy | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19046 | Outline the normal progression of dentition and identify the diverse causes of delayed dentition | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |

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| 19047 | Recognize child abuse as a potential cause of developmental delay | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19048 | Using standard criteria in a typical clinical setting, identify normal and abnormal toddler behavioral development | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19050 | Outline the normal developmental milestones for toddlers and recognize normal and abnormal patterns of physical, motor, cognitive, and speech and language development | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19051 | Recognize and apply appropriate techniques for presenting information to parents regarding their child’s development (normal or abnormal) | SPM MHD | 1260 | SCHEME - Human Development: Infant to Toddler (0-24) |
| 19052 | Recognize the normal progression of physical development through the preschool age range | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19053 | Calculate Body Mass Index and differentiate “obese” from “overweight” in the context of preschooler development | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19054 | Distinguish gross and fine motor skills in the context of child development | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19055 | Outline the progression of cognitive and behavioral developmental milestones through the preschool age range | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19056 | Recognize the two major categories of communication disorders and describe their clinical presentation in the preschool age range | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19057 | Identify abnormal speech and language development through the preschool age range | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19058 | Identify the essential developmental features of autism spectrum disorder | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19059 | Recognize the behavioral features of early, middle and late adolescence. | SPM MHD | 1279 | SCHEME - Human Development: Teen |

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| 19072 | Recognize the normal growth and development during preadolescent years | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19073 | Differentiate between constitutional growth delay and familial short stature | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19074 | Outline and describe cognitive and behavioral development in the preadolescent years and identify the determinants of school readiness | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19075 | Recognize learning problems in the preadolescent years | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19076 | Identify speech and language problems in the preadolescent years | SPM MHD | 1269 | SCHEME - Human Development: Early Childhood (2-12) |
| 19078 | Explain how and why nitrates such as nitroglycerine are used to treat angina pectoris, and provide rationale for pre-treatment with a beta-adrenergic antagonist or non-dihydropyridine calcium channel antagonist. | SPM CVR | 1133 | Drugs Used in Cardiac Ischemia |
| 19079 | Explain the role of calcium channel antagonists in angina pectoris, and how 1,4-dihydropyridines such as amlodipine differ from diltiazem and verapamil. | SPM CVR | 1133 | Drugs Used in Cardiac Ischemia |
| 19080 | Compare the use and relative safety of a cardioselective beta-adrenergic receptor antagonist with a nonselective beta-adrenergic receptor antagonist, a beta-adrenergic receptor antagonist with intrinsic sympathomimetic activity, and a beta-adrenergic receptor antagonist with some alpha-1 antagonist activity. | SPM CVR | 1133 | Drugs Used in Cardiac Ischemia |
| 19081 | Distinguish stable exertional angina pectoris, variant (Prinzmetal) angina pectoris, and unstable angina, as a basis for choosing drugs that address the mechanism of disease. | SPM CVR | 1133 | Drugs Used in Cardiac Ischemia |
| 19082 | Rationalize how plasminogen activator fibrinolytics such as alteplase or tenecteplase can be used to minimize ischemic damage to the heart but why such thrombolytic therapy has significant risk of causing a | SPM CVR | 1133 | Drugs Used in Cardiac Ischemia |

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| | serious bleed that persists to override the therapeutic benefit because the benefit will diminish as cardiac cell death ensues over a period of hours. | | | |
| 19105 | Describe normal formation of the pulmonary veins and how malformation leads to total anomalous pulmonary venous connection. | SPM CVR | 1143 | Vascular Development |
| 19109 | Outline the development of the immune system in the infant and child, and explain its relationship with infections | SPM MHD | 1273 | Developing Immune System - Childhood Allergies |
| 19141 | Describe the developmental basis that explains normal localization of gray and white matter in the spinal cord as compared to the cerebrum and cerebellum, and explain how conditions such as periventricular heterotopias can arise. | SPM CSS | 287 | CNS Development |
| 19142 | Describe the causes of brain growth in fetuses, infants and toddlers. | SPM CSS | 287 | CNS Development |
| 23905 | Recall the compounds most often associated with alcohol toxicity. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23906 | List primary and aggressive treatment options for alcohol toxicity associated with isopropyl alcohol, methanol and ethylene glycol. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23907 | Explain the causes of kernicterus. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23908 | Recall how ethanol is broken down in the body and the primary breakdown product. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23909 | Recall incidences of still births, fetal alcohol and Alcohol related SIDS in the United States. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23910 | List symptoms that can identify an individual with alcohol cardiomyopathy. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23911 | Describe the symptoms that can identify a person with alcohol induced liver failure. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23912 | List the alcohol induced alterations that are presumed to produce alcohol induced pancreatitis. | SPM MHD | 1303 | The Physiological Effects of Alcohol |

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| 23913 | Describe the relationship between alcohol and cerebrovascular disease and cancer. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23914 | List the relationship between alcohol induced injury and violence. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 23915 | Explain the development and diagnosis of jaundice, hepatic encephalopathy, and portal hypertension (ascites) in patient with alcohol induced cirrhosis of the liver. | SPM MHD | 1303 | The Physiological Effects of Alcohol |
| 25470 | Define the role that Phase I and Phase II enzymes play in "drug biotransformation" | SPM IHD | 29 | Pharmacokinetics II: What the Body Does to the Drug |
| 25471 | Apply concepts of "first-order" and "zero-order" drug elimination to predict how much the blood concentration of a drug will decline over time | SPM IHD | 29 | Pharmacokinetics II: What the Body Does to the Drug |
| 25472 | Distinguish types of drug interactions according to mechanism and implications for prediction and prevention of adverse drug effects | SPM IHD | 29 | Pharmacokinetics II: What the Body Does to the Drug |
| 25473 | Define "drug clearance" and apply that concept to calculate the maintenance dose of a drug required to maintain a desired therapeutic concentration | SPM IHD | 29 | Pharmacokinetics II: What the Body Does to the Drug |
| 25474 | Use dose-response curves to distinguish concepts of "agonist", "competitive vs non-competitive antagonist", "partial agonist", "potency", and "efficacy" | SPM IHD | 56 | Pharmacodynamics- What Drugs Do to the Body |
| 25475 | Define "therapeutic index" in terms of efficacy and toxicity | SPM IHD | 56 | Pharmacodynamics- What Drugs Do to the Body |
| 25476 | Define four major modes for signal transduction mechanisms that drugs activate through receptor binding, using examples of each: G-protein-coupled second messenger systems (example: adrenergic agonists), enzyme-linked receptors (example: insulin), ligand-gated ion channels (example: calcium antagonists, local anesthetics), and nuclear receptors | SPM IHD | 56 | Pharmacodynamics- What Drugs Do to the Body |

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| | (example: all steroid hormones including corticosteroids and sex steroids). | | | |
| 25477 | Explain how "receptor specificity" and off target binding relates to side-effects | SPM IHD | 56 | Pharmacodynamics- What Drugs Do to the Body |
| 25478 | Explain how "receptor sensitivity" can necessitate dose adjustments to maintain a constant therapeutic response | SPM IHD | 56 | Pharmacodynamics- What Drugs Do to the Body |
| 25485 | Define "bacteriostatic vs bactericidal" concepts and the importance in selective antibacterial drugs based on the immune status of your patient. | SPM IHD | 53 | Overview of Antimicrobial Therapy |
| 25486 | Distinguish drugs used to treat infection in terms of "spectrum" of antibacterial activity, and how spectrum relates to the risk that those drugs will cause "super-infections" | SPM IHD | 53 | Overview of Antimicrobial Therapy |
| 25487 | Distinguish at least four classes of antibacterial drugs according to their mechanisms of "selective toxicity", giving at least one example of each class (e.g., beta-lactams e.g., penicillin; macrolides e.g., erythromycin; tetracyclines e.g., doxycycline; quinolones e.g., ciprofloxacin) | SPM IHD | 53 | Overview of Antimicrobial Therapy |
| 25524 | Describe and discuss how the central nervous system develops beginning with neurulation in the 3-week-old embryo; describe the cytodifferentiation and migration of neuroepithelial cells beginning with the early neural tube and ending with cells of the ventricular, mantle and marginal layers of the neural tube; state where among these is the gray matter and the white matter; identify the areas of the adult brain that arise from the three primary brain vesicles (forebrain/prosencephalon, midbrain/mesencephalon and hindbrain/rhombencephalon) and five secondary brain vesicles (forebrain = telencephalon + diencephalon, midbrain = mesencephalon, and hindbrain = metencephalon + myelencephalon). | SPM CSS | 287 | CNS Development |

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| 25525 | Describe red flags that indicate a complicated sore throat. | SPM IHD | 50 | Sore Throat Scheme Presentation |
| | | | 61 | Sore Throat WCE |
| 25572 | Outline the components of the nervous system that are required for gait and posture and relate these to the common and classic clinical presentations of gait disturbances. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25574 | Describe the causes and clinical manifestations of "Frontal Gait Disorder"/"Gait Apraxia" and relate it to the clinical scheme for gait disturbances. Distinguish it from cerebellar ataxia and sensory ataxia. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25575 | Recognize the high prevalence of falls in the elderly and list the prominent associated risk factors. Outline basic diagnostic considerations and common interventions. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25576 | Identify and apply in basic clinical diagnostic reasoning the common manifestations of cerebellar dysfunction, distinguish cerebellar ataxia from conditions primarily related to vestibular impairment. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25577 | Identify the general diagnostic considerations that vary across acute, subacute and chronic presentations of cerebellar ataxia, both symmetric and focal. | SPM CSS | 288 | The Anatomy and Physiology of Gait Disturbances with Clinical Correlations |
| 25592 | Distinguish between pharmacology, medical pharmacology, pharmacotherapeutics, and therapeutics | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |
| 25593 | Provide a clinically useful concept of a "drug" that distinguishes drugs from other compounds such crude medicinals, natural/herbal/folk remedies, nutraceuticals, probiotics, ... | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |
| 25594 | Distinguish pharmacokinetics from pharmacodynamics as major subdivisions of pharmacology, and explain how pharmacokinetics relates to pharmacodynamics | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |
| 25595 | Define drug absorption in terms of its two dimensions, in one direction, comparing the oral route of | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |

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| | administration to intravenous injection of the same drug to illustrate the concept | | | |
| 25596 | Explain hepatic 'first-pass effect' in relation to how the liver affects the bioavailability of some orally administered drugs, using aspirin as an example | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |
| 25597 | Define drug distribution in terms of barriers that result in 'compartments' of the body concurrently acquiring different concentrations of a drug | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |
| 25598 | Apply the formula: Dose = Concentration x Volume of Distribution to calculate the remaining variable given any two of the following variables: dose, concentration, volume of distribution | SPM IHD | 16 | Pharmacokinetics I: The Body's Effect on Drugs |
| 25615 | Recognize and describe the disease(s)of the central nervous system caused by T. solium. | SPM CSS | 311 | Chronic Meningitis |
| 25616 | Recognize and describe Lyme borreliosis meningitis and the organism that causes this disease. | SPM CSS | 311 | Chronic Meningitis |
| 25618 | Differentiate the classic hyperkinetic movement disorders (tics, dystonia, chorea, athetosis, ballism, stereotypies) and the classic forms of tremor. | SPM CSS | 296 | SCHEME - Movement Disorders |
| | | | 306 | Movement Disorders and Gait Disturbances WCE |
| 25642 | Know the general morphological organization of exocrine glands. | SPM IHD | 14 | Epithelium and Glands |
| 25671 | Describe mechanisms by which use and overuse of aspirin, acetaminophen, non-steroidal anti-inflammatory drugs and opioid analgesics play a role in symptomatic drug therapy for headache | SPM CSS | 316 | Drugs for Headache |
| 25672 | Define the phenomenon known as medication overuse (transformed) migraine headaches in relation to drug therapy strategies for migraine | SPM CSS | 316 | Drugs for Headache |
| 25673 | Relate proposed pathophysiological mechanisms that produce migraine headaches, to the putative | SPM CSS | 316 | Drugs for Headache |

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| | mechanisms of action of drugs currently used to abort migraine headaches | | | |
| 25674 | Distinguish between drugs used to abort a migraine headache, and drugs used to prevent or reduce recurrence of migraine headaches | SPM CSS | 316 | Drugs for Headache |
| 25705 | Describe, compare and contrast imaging modalities of the brain including CT scan, MRI, nuclear medicine, cerebral angiography and ultrasound. | SPM CSS | 300 | Principles of Brain Imaging |
| 25706 | Demonstrate an ability to differentiate the most frequently used brain MRI sequences including T1, T2, DWI and GRE on different planes (axial, coronal and sagittal). | SPM CSS | 300 | Principles of Brain Imaging |
| 25707 | Demonstrate an understanding of basic of stroke imaging in order to differentiate ischemic versus hemorrhagic stroke. | SPM CSS | 300 | Principles of Brain Imaging |
| 25708 | Demonstrate understanding of imaging used to diagnose headaches and recognize examples of causes such as subarachnoid hemorrhage; aneurysm; hydrocephalus and intracranial neoplasms. | SPM CSS | 300 | Principles of Brain Imaging |
| 25709 | Recognize cardinal features of the anticholinergic toxidrome. | SPM CSS | 327 | Integrated Science Aspects of Delirium, Stupor and Coma |
| 25710 | Relate the mechanisms of opioid toxicity to antidote mechanisms of activity. | SPM CSS | 327 | Integrated Science Aspects of Delirium, Stupor and Coma |
| 25711 | Explain the clinical features and treatment of an acute hypoglycemic reaction. | SPM CSS | 327 | Integrated Science Aspects of Delirium, Stupor and Coma |
| 25712 | Describe post-ictal phenomena (altered mental state, Todd's paralysis, injuries) and management if seizures reoccur in a pre-hospital, outpatient, emergency room setting. | SPM CSS | 327 | Integrated Science Aspects of Delirium, Stupor and Coma |
| 25713 | Explain how ethanol or fomepizole can reduce the toxicity of methanol or ethylene glycol. | SPM CSS | 327 | Integrated Science Aspects of Delirium, Stupor and Coma |

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| 25714 | Recognize the signs and symptoms of encephalitis and describe the Alphavirus, Flaviruses and Bunyaviruses known to cause viral encephalitis in terms of genome structure, insect vector, host and geography. | SPM CSS | 329 | Encephalitis |
| 25752 | Describe the Rabies vaccine and post exposure prophylaxis for people at risk for Rabies. | SPM CSS | 329 | Encephalitis |
| 25760 | Outline the basic subcellular pathway of sphingolipid biosynthesis and turnover. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 25761 | Describe the basic principles of lysosome structure, function and biogenesis. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25765 | Understand the essential pathophysiological mechanisms and nomenclature of the four categories of itch (pruritoceptive, neuropathic, neurogenic, psychogenic), and apply this knowledge in a clinical/diagnostic context | SPM IMN | 179 | Neuroscience of Itch |
| 25767 | Outline the role of opioid peptides and potentially other excitatory factors in the generation of neurogenic itch/pruritus in systemic diseases such as renal failure and liver disease | SPM IMN | 179 | Neuroscience of Itch |
| 25768 | Recognize post-herpetic neuralgia and multiple sclerosis as potential causes of neuropathic itch/pruritus | SPM IMN | 179 | Neuroscience of Itch |
| 25769 | Describe in broad conceptual terms the effects of scratching and rubbing on the modulation of itch/pruritis | SPM IMN | 179 | Neuroscience of Itch |
| 25774 | Localize lesions within the nervous system based on the anatomical intersections and constraints of the major neural pathways and subsystems, and render or approach clinical diagnoses based on localizations and modes of presentation | SPM CSS | 374 | Clinical Vignette-Based Review of Neurological Localization and Diagnosis |
| 25775 | Outline the structural characteristics of the glycosaminoglycans (mucopolysaccharides). | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |

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| 25776 | Outline the biosynthesis of glycosaminoglycans (mucopolysaccharides), including how each of the monosaccharides involved are derived from glucose and activated for glycosaminoglycan synthesis. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25777 | Describe the following lysosomal storage diseases in terms of general classification, biochemical defect, accumulated substrate, mode of inheritance and clinical presentation: (1) Mucopolysaccharidoses: Hunter Syndrome, Hurler Syndrome; (2) Mucopolipidosis II (I-cell Disease). | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25778 | Describe the basic principles of peroxisome structure, function and biogenesis. | SPM CSS | 304 | Lysosomal Storage Diseases and Peroxisomal Disorders |
| 25779 | Explain the biochemical basis for the following inherited diseases of the extracellular matrix that can present with hearing and/or vision loss: Ehlers-Danlos syndrome, Osteogenesis imperfecta, Marfan syndrome, Alport syndrome. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 25806 | Recall the percentage of body weight that is total body water, intracellular body water, and extracellular body water. | SPM RNL | 1221 | Body Fluids |
| 25807 | Recall the concentration of the major anions and cations found in the intracellular and extracellular fluid compartments. | SPM RNL | 1221 | Body Fluids |
| 25808 | Describe the factors that affect the movement of water and solute across capillary membranes and cell membranes. | SPM RNL | 1221 | Body Fluids |
| 25809 | When given appropriate values, use the Starling Equilibrium equation to evaluate edema formation in a clinical scenario. | SPM RNL | 1221 | Body Fluids |
| 25810 | Describe the importance of the reflection coefficient in predicting the movement of compounds across a membrane. | SPM RNL | 1221 | Body Fluids |

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| 25811 | Draw and explain in detail how Darrow-Yannet diagrams can be used to describe the affect of dehydration, over-hydration, salt gain and loss, normal saline administration, insensible water loss on intracellular and extracellular fluid volume. | SPM RNL | 1221 | Body Fluids |
| 25812 | Calculate the changes in body fluid volume and concentration that occur with dehydration, over-hydration, salt gain and loss, normal saline administration, insensible water loss, sea water consumption.R2 | SPM RNL | 1221 | Body Fluids |
| 25813 | Describe the influence of protein on the movement of water across capillary membrane and cell membranes. | SPM RNL | 1221 | Body Fluids |
| 25814 | Describe the influence of the cell membrane Na ⁺ -K ⁺ ATPase on movement of water across cell membranes. | SPM RNL | 1221 | Body Fluids |
| 25815 | Describe the conversion of mOsm/kg to mmHg and explain why this is important in evaluating the movement of fluid across membranes. | SPM RNL | 1221 | Body Fluids |
| 25816 | Explain the Donnan effect and how it alters water movement across a membrane. | SPM RNL | 1221 | Body Fluids |
| 25817 | When given appropriate data, describe pathophysiological events that produce abnormalities in body fluid volume and concentration and give recommendations to correct these alterations based on sound physiological principles. | SPM RNL | 1221 | Body Fluids |
| 25818 | Explain and demonstrate how the dye dilution method can be used to measure the volume of various body fluid compartments. | SPM RNL | 1221 | Body Fluids |
| 25820 | Describe the formation of the limbs from somitic mesoderm, lateral plate mesoderm and ectoderm. | SPM IMN | 181 | Development of the Musculoskeletal System |
| 25822 | Discuss the anatomical aspects of the urinary bladder and urethra important for urethral (urinary) catheterization: length in males and females, parts of the male urethra, localization of the external urethral | SPM RNL | 1220 | Structure and Function of the Urinary Tract |

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| | orifice in females, clinically significant differences between male and female urethrae (Moore, Dalley and Agur, pp. 362-368, 373-374) | | | |
| 25838 | Differentiate between the rod-shaped gram-negative organisms <i>Pseudomonas aeruginosa</i> and <i>Salmonella</i> based on growth patterns and microbiological laboratory tests. | SPM IHD | 94 | Staph vs. Strep |
| 25844 | Describe or recognize the epidemiology, pathogenesis, morphology, virulence factors and biochemical tests for the most common microbial etiologies of urinary tract infections. [<i>E. coli</i> , Enterococci, <i>Pseudomonas aeruginosa</i> , <i>Klebsiella</i> , <i>Enterobacter</i> , <i>Serratia marcescens</i> , <i>Proteus mirabilis</i> , <i>Staphylococcus saprophyticus</i> , <i>Candida albicans</i>] | SPM RNL | 1238 | Urinary Tract Infections |
| 25845 | Differentiate between cystitis and acute pyelonephritis based on the clinical descriptions of each. | SPM RNL | 1238 | Urinary Tract Infections |
| 25846 | Compare the adhesive capacities of pathogens associated with pyelonephritis and cystitis | SPM RNL | 1238 | Urinary Tract Infections |
| 25847 | List and describe the host antibacterial defenses in the urinary tract. | SPM RNL | 1238 | Urinary Tract Infections |
| 25848 | Recognize and describe five different bacterial virulence factors in addition to adherence capacity that are important in the pathogenesis of upper urinary tract infections. [Motility, Production of urease, K-capsular antigen, Hemolysin, and Aerobactin] | SPM RNL | 1238 | Urinary Tract Infections |
| 25849 | Describe epidemiological aspects of UTI infections including predisposing factors, prevention and possible reasons for the higher frequency of UTI in specific groups, including older adults, women, pregnant women, and children. | SPM RNL | 1238 | Urinary Tract Infections |
| 25850 | Outline the proper procedure for obtaining and handling urine for microbiologic study. | SPM RNL | 1238 | Urinary Tract Infections |

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| 25851 | List possible causes for low urine colony count during active urinary tract infection, urethral syndrome etiologies: Chlamydia trachomatis, N. gonorrhoeae, Mycoplasma genitalium, and unknown fastidious microorganisms. | SPM RNL | 1238 | Urinary Tract Infections |
| 25852 | Describe the basis for the Acid Fast stain, how it is performed and list and recognize three organisms that can be identified using this differential stain. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 25858 | Recognize the common mechanisms and etiologies of pain | SPM IMN | 239 | Pain Scheme Presentation |
| | | | 250 | Numbness and Pain WCE |
| 25859 | Identify the distinguishing clinical characteristics of visceral, somatic, sympathetic, central neuropathic, peripheral neuropathic and psychogenic pain | SPM IMN | 239 | Pain Scheme Presentation |
| | | | 250 | Numbness and Pain WCE |
| 25884 | Describe the physical examination findings and gross characteristics that commonly distinguish malignant from benign masses. | SPM IMN | 224 | Musculoskeletal Lumps and Masses Scheme Presentation |
| | | | 237 | Musculoskeletal Lumps and Masses WCE |
| 25885 | Describe important aspects in the patient’s clinical history that commonly distinguish malignant from benign masses. | SPM IMN | 224 | Musculoskeletal Lumps and Masses Scheme Presentation |
| | | | 237 | Musculoskeletal Lumps and Masses WCE |
| 25886 | Recognize and describe symptoms that result from upper brachial plexus lesion (C5-C6, Erb-Duchenne palsy) and lower brachial plexus lesion (C8-T1, Déjerine-Klumpke palsy). | SPM IMN | 229 | Radiculopathies, Plexopathies and Peripheral Neuropathies |
| 25887 | Recognize and describe symptoms that result from lesion of the axillary, radial, median, musculocutaneous, and ulnar nerves close to their origins from the brachial plexus. | SPM IMN | 229 | Radiculopathies, Plexopathies and Peripheral Neuropathies |

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| 25888 | Recognize and describe symptoms that result from lesions of the median and ulnar nerves at the levels of the elbow and the wrist. | SPM IMN | 229 | Radiculopathies, Plexopathies and Peripheral Neuropathies |
| 25889 | Recognize and describe symptoms that will result from radiculopathies involving each of the following levels individually: C5, C6, C7, C8 and T1. | SPM IMN | 229 | Radiculopathies, Plexopathies and Peripheral Neuropathies |
| 25920 | Identify the following surface features of the brain: cerebrum, cerebellum, brainstem (midbrain, pons, and medulla oblongata); lateral sulcus (aka, Sylvian fissure, including the opercula/lips) and central sulcus; pre- and post-central gyri; frontal, parietal, temporal, occipital and insular lobes. | SPM IMN | 254 | Brain - Team A & B |
| | | | 738 | Brain - Team A |
| 25922 | Identify the following features on an axially sliced brain: gray and white matter; cerebral cortex; lateral ventricles; third ventricle | SPM IMN | 254 | Brain - Team A & B |
| | | | 738 | Brain - Team A |
| 25923 | Identify each of the 12 pairs of cranial nerves, both on the brain and in the anterior, middle and posterior cranial fossae. | SPM IMN | 254 | Brain - Team A & B |
| | | | 738 | Brain - Team A |
| 25927 | Use a skull to identify the three cranial fossa and openings for the spinal cord, cranial nerves, arteries (carotid, vertebral, and middle meningeal), and the internal jugular vein. | SPM IMN | 254 | Brain - Team A & B |
| | | | 738 | Brain - Team A |
| 25928 | Demonstrate an understanding of nuclear receptor involvement in physiology & pathology by describing similarities and differences in selected prototype receptors: estrogen receptor (ER), glucocorticoid receptor (GR), thyroid hormone receptor (TR) and peroxisome proliferator activated receptor gamma. | SPM END | 398 | Nuclear Receptors |
| 25929 | Describe 4 stages of the oropharyngeal phase of swallowing. | SPM GIS | 104 | Pharyngeal Anatomy As Seen by Physicians |
| 25930 | Identify anatomic structures involved in swallowing and describe their functions as seen by laryngoscopy and endoscopy. | SPM GIS | 104 | Pharyngeal Anatomy As Seen by Physicians |

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| 25931 | Identify anatomic structures involved in swallowing and describe their functions as seen by radiography and fluoroscopy. | SPM GIS | 104 | Pharyngeal Anatomy As Seen by Physicians |
| 25936 | List the common viral causes of gastroenteritis that belong to the Reoviridae, Caliciviridae, Adenoviridae, Astroviridae and Picornaviridae families AND be able to predict the most likely etiology of a case of viral gastroenteritis based on history, signs, symptoms, laboratory results and epidemiology. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 25937 | Define and describe the following congenital defects and explain how each can arise during embryogenesis: gut atresia, stenosis and malrotations (nonrotation, reversed rotation, mixed rotation, volvulus); wall closure defects (omphalocele and gastroschisis); Meckel’s diverticulum; urachal cysts and fistulae. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 1344 | Development and Organization of the Gut |
| 25939 | Explain how the intestinal immune system maintains its tolerance to normal intestinal flora. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 25940 | Describe the most important genetic risk factors associated with Crohn’s disease. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 25941 | Explain the role of CD4+ T cells in the pathogenesis of Crohn’s disease. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 25943 | Describe serologic tests used for the diagnosis of the inflammatory bowel disease. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 25944 | Describe the features of gluten proteins that can explain their ability to activate the intestinal immune system. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 25946 | Explain the role of gliadin-specific CD4+ T cells and CD8+ T cells in the pathogenesis of celiac disease. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |
| 25948 | Describe the role of intestinal CD4+ T cell depletion in the pathogenesis HIV-mediated enteropathy. | SPM GIS | 162 | Pathology and Immunology of Diarrhea |

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| 25951 | Explain how inhibitors of 11-beta-hydroxysteroid dehydrogenase can produce all of the features of hyperaldosteronism in patients with normal serum concentrations of aldosterone and cortisol | SPM END | 433 | Pharmacology of Corticoids |
| 25956 | Describe the morphology and growth conditions unique to Campylobacter species including bile tolerance, oxygen & temperature requirements and recognize the characteristic disease and sequelae caused by members of this genus. | SPM GIS | 167 | Helicobacter pylori and Campylobacter SPP |
| 25966 | Describe the indications and contraindications for the different ways to treat hypoglycemic reactions. | SPM END | 426 | Drugs for Diabetes |
| 25967 | Know the general organization of the male reproductive system. | SPM REP | 447 | Histology: Male Reproductive System |
| 25969 | Know the histological organization and function of the seminiferous tubules. | SPM REP | 447 | Histology: Male Reproductive System |
| 25970 | Know the major steps of male spermatogenesis. | SPM REP | 447 | Histology: Male Reproductive System |
| 25971 | Know the major steps of spermiogenesis. | SPM REP | 447 | Histology: Male Reproductive System |
| 25972 | Know the function and ultrastructure of the Sertoli cell. | SPM REP | 447 | Histology: Male Reproductive System |
| 25973 | Know the function and ultrastructure of the Leydig cell. | SPM REP | 447 | Histology: Male Reproductive System |
| 25974 | Know the basic endocrine circuitry for Leydig and Sertoli cell function. | SPM REP | 447 | Histology: Male Reproductive System |
| 25975 | Know the function and histology of the epididymis. | SPM REP | 447 | Histology: Male Reproductive System |
| 25976 | Know the function and histology of the ductus (or vas) deferens. | SPM REP | 447 | Histology: Male Reproductive System |
| 25977 | Know the function and histology of the seminal vesicle. | SPM REP | 447 | Histology: Male Reproductive System |
| 25978 | Know the function and histology of the prostate gland. | SPM REP | 447 | Histology: Male Reproductive System |
| 25979 | Know the function and histology of the penis. | SPM REP | 447 | Histology: Male Reproductive System |
| 25982 | Know the histological organization and function of the testes | SPM REP | 447 | Histology: Male Reproductive System |

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| 25990 | Explain how red blood cells can be destroyed by the immune system. | SPM HEM | 1080 | Immune-mediated Anemia |
| 25991 | Describe the risk factors and the pathogenesis of pernicious anemia (PA). | SPM HEM | 1080 | Immune-mediated Anemia |
| 25992 | Explain the presence of anti-parietal cell antibody and two anti-intrinsic factor antibodies in PA patients. | SPM HEM | 1080 | Immune-mediated Anemia |
| 25993 | Describe and distinguish between the warm and cold immunohemolytic anemias. | SPM HEM | 1080 | Immune-mediated Anemia |
| 25994 | Summarize two mechanisms for drug-induced immunohemolytic anemia. | SPM HEM | 1080 | Immune-mediated Anemia |
| 25996 | Describe the role of CR1 on erythrocytes. | SPM HEM | 1080 | Immune-mediated Anemia |
| 25997 | Describe immunologic tests used in the diagnosis of Paroxysmal Nocturnal Hemoglobinuria (PNH). | SPM HEM | 1080 | Immune-mediated Anemia |
| 26040 | Identify factors including divorce & child maltreatment which contribute to emotional disorders in children/adolescents, recognize behaviors often seen in these children and the clinical sequelae of childhood maltreatment. | SPM MHD | 1283 | Trauma: Childhood Determinants of Psychopathology and the Dissociative Disorders |
| 26047 | Explain the etiology, types of amnesias, how normal memories are formed, gender differences in emotional memories, the effects of trauma on memory, the prognosis and treatment of the Dissociative Disorders. | SPM MHD | 1283 | Trauma: Childhood Determinants of Psychopathology and the Dissociative Disorders |
| 26076 | As a basis for physician-dentist communication of referrals and coordinated treatment, develop terminology to describe dental surfaces and dental nomenclature of teeth in primary and adult quadrants. | SPM MHD | 1267 | General Concepts of Oral Health and Disease |
| 26077 | Pertaining to children, demonstrate awareness of age-appropriate eruption and loss of primary teeth. | SPM MHD | 1267 | General Concepts of Oral Health and Disease |
| 26079 | Pertaining to women, describe oral manifestations of puberty, pregnancy, and menopause. | SPM MHD | 1267 | General Concepts of Oral Health and Disease |

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| 26080 | Pertaining to adult men and women, anticipate and recognize oral manifestations of systemic disease, systemic implications of oral disease, and oral adverse effects of medical interventions. | SPM MHD | 1267 | General Concepts of Oral Health and Disease |
| 26088 | Discuss the normal adolescent developmental stages and their relevance to engagement in substance abuse | SPM MHD | 1304 | Adolescent Substance Abuse: Developmental Determinants |
| 26089 | Identify the major developmental determinants and stages of adolescent substance abuse and apply them in the diagnostic assessment of case examples | SPM MHD | 1304 | Adolescent Substance Abuse: Developmental Determinants |
| 26090 | Discuss and appropriately apply the CRAFFT Screening Test for assessment of substance abuse disorders in adolescents | SPM MHD | 1304 | Adolescent Substance Abuse: Developmental Determinants |
| 26091 | Outline the activation of the brain reward system by drugs, the potential disregard of negative consequences by the adolescent, and the clinical implications relevant to the stages of adolescent substance abuse | SPM MHD | 1304 | Adolescent Substance Abuse: Developmental Determinants |
| 26102 | Describe innervation of the chest wall, heart, aorta and pericardium | SPM CVR | 1138 | Innervation of the Heart & Pericardium |
| 26103 | Explain referred pain from the heart, aorta and pericardium. | SPM CVR | 1138 | Innervation of the Heart & Pericardium |
| 29126 | Explain how re-entry circuits and retrograde conduction develop | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 29127 | Explain why atropine could be bad, and beta adrenergic antagonist or non-dihydropyridine calcium antagonists, could be good in the treatment of atrial and other supraventricular tachyarrhythmias. | SPM CVR | 1156 | Physiology of Rhythms and Arrhythmias |
| 30089 | Describe Croup in terms of the most common etiology, pathology, and clinical manifestations. | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 30090 | Describe Epiglottitis in terms of the most common etiology, pathology, prevention, and clinical manifestations. | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |

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| 30091 | Describe Acute Bronchitis in terms of the most common etiology, pathology and clinical manifestations | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 30092 | Describe Whooping Cough in terms of the most common etiology , pathology, prevention and clinical manifestations. | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 30093 | Describe “Membranous Croup” in terms of the most common etiology, pathology, prevention and clinical manifestations | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 30094 | Be able to identify the following pathogens based on physical characteristics, virulence factors, pathogenesis and growth requirements: Parainfluenza, Haemophilus influenzae, Bordetella pertussis, Corynebacterium diphtheria. | SPM CVR | 1177 | Microbiology and Pathology of Bronchitis |
| 30108 | Summarize the risks, subtypes, comorbidities, screening, investigations, neurobiology, complications, intoxication and withdrawal of the Legal Substance Use Disorders. | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |
| 30110 | Explain prescription drug abuse, investigations, epidemiology, inquiries, warning signs, neurobiology, complications, intoxication and withdrawal of the various Prescription Substance Use Disorders. | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |
| 30111 | Relate the epidemiology, investigations, neurobiology, complications, and symptoms of intoxication and withdrawal of the Illicit Substance Use Disorders. | SPM MHD | 1302 | SCHEME - Substance Related and Addictive Disorders |
| 30123 | Define, identify, correctly apply the common terms and recognize from clinical presentations the stages of Erik Erikson’s psychosocial stages of development. | SPM MHD | 1320 | When We Age |
| 30128 | Explain the challenges in working with late life mental illness and recognize specific psychiatric disorders frequently seen in late life (depression, dementia, delirium, anxiety disorders, pseudodementia, and personality disorders). | SPM MHD | 1320 | When We Age |

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| 30129 | Summarize the importance of a person’s life history on the development of medical and psychiatric illness and recognize that there is considerable overlap of medical and psychiatric illnesses as a person ages. | SPM MHD | 1320 | When We Age |
| 30150 | Specify current drug treatment options for latent TB infection, purported mechanism of action, major adverse effects. | SPM CVR | 1202 | Tuberculosis |
| | | | 1203 | Drugs for TB |
| 30151 | Specify current drug treatment options for active TB infection, purported mechanism of action, major adverse effects. | SPM CVR | 1203 | Drugs for TB |
| 30152 | Describe the probable causes, implications, and available treatment options for categories of drug-resistant tuberculosis. | SPM CVR | 1203 | Drugs for TB |
| 30829 | Describe the inflammasome, including the role of NOD-like receptors in inflammation and fever | SPM IHD | 63 | Pyrogens & The Immune System |
| 32605 | Describe the major components of serum gamma-globulin, including their appearance on serum protein electrophoresis | SPM IHD | 687 | Introduction to Immune Deficiencies and Antibody Investigations |
| 33538 | Understand the diversity of Cyps and induction compared to inhibition of Cyp activity | SPM IHD | 29 | Pharmacokinetics II: What the Body Does to the Drug |
| 33539 | Drug-drug interactions of protease inhibitors | SPM IHD | 29 | Pharmacokinetics II: What the Body Does to the Drug |
| 33547 | Differentiate clockwise from counter clockwise hysteresis | SPM IHD | 56 | Pharmacodynamics- What Drugs Do to the Body |
| 33548 | Describe how penicillins, cephalosporins, and vancomycin differ in mechanisms of action. | SPM IHD | 53 | Overview of Antimicrobial Therapy |
| 33549 | Distinguish among antimicrobial drugs that inhibit bacterial protein synthesis in terms of which ribosomal subunits they target. | SPM IHD | 53 | Overview of Antimicrobial Therapy |
| 33550 | Outline three mechanisms antimicrobial resistance. | SPM IHD | 53 | Overview of Antimicrobial Therapy |

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| 33551 | Define minimum inhibitory concentration and minimum bactericidal concentration, and the basic principle of methods to determine those values. | SPM IHD | 53 | Overview of Antimicrobial Therapy |
| 33554 | Explain how glucocorticosteroids such as prednisone have an antipyretic effect, but why they are not often used to treat fever. | SPM IHD | 89 | Antipyretics and Other Effects of Drugs on Temperature |
| 33556 | Relate the mechanisms by which acetaminophen, aspirin, and nonsteroidal antiinflammatory drugs (NSAIDs) have an antipyretic effect. | SPM IHD | 89 | Antipyretics and Other Effects of Drugs on Temperature |
| 33557 | Define the poikilothermic effect that drugs acting on the central nervous system can have on thermal regulation, and the lifestyle and clinical implications. | SPM IHD | 89 | Antipyretics and Other Effects of Drugs on Temperature |
| 33558 | Explain the mechanisms by which antimuscarinics such as atropine can contribute to hyperthermia. | SPM IHD | 89 | Antipyretics and Other Effects of Drugs on Temperature |
| 33559 | Explain the thermoregulatory mechanism by which alpha-adrenergic agonists such as decongestants, amphetamines and cocaine can contribute to hyperthermia. | SPM IHD | 89 | Antipyretics and Other Effects of Drugs on Temperature |
| 33560 | Describe five major phases in the time course of stroke | SPM CSS | 321 | Neuroscience of Stroke |
| 33561 | Explain how do major risk factors and “stroke triggers” cause damage to cerebral blood vessels; the role of the ROS/inflammation and LDL oxidation; impaired cerebral blood flow autoregulation and resultant brain ischemia | SPM CSS | 321 | Neuroscience of Stroke |
| 33562 | Analyze and describe main features of the hyper-acute phase after stroke: cerebral blood flow decrease, stroke core and cell death mechanisms, describe features of the brain lesion in the first minutes after stroke visualized with imaging techniques | SPM CSS | 321 | Neuroscience of Stroke |
| 33563 | Explain molecular processes that take place in the penumbra during the acute phase after stroke, and the | SPM CSS | 321 | Neuroscience of Stroke |

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| | use of tPA in the treatment of ischemic stroke; describe MRI imaging approaches that can visualize the brain tissue in penumbra | | | |
| 33564 | Explain the chronic phase after stroke: including formation of fibrotic/glial scar and fluid-filled cavity; endogenous angiogenesis/gliogenesis and neural plasticity underlying functional recovery; describe main types of potential cell-based therapies for stroke patients | SPM CSS | 321 | Neuroscience of Stroke |
| 33581 | Explain Parkinson’s disease using Basal ganglia circuitry. | SPM CSS | 297 | Basal Nuclei |
| 33582 | Explain Huntington’s disease using Basal ganglia circuitry. | SPM CSS | 297 | Basal Nuclei |
| 33583 | Recall and apply in the assessment of relevant clinical cases the identifying clinical and electrophysiological features of Childhood Absence Epilepsy, Juvenile Myoclonic Epilepsy, Benign Rolandic Epilepsy, West Syndrome, Lennox-Gastaut Syndrome and Temporal Lobe Epilepsy with Mesial Temporal Sclerosis | SPM CSS | 308 | SCHEME - Seizure and Epilepsy |
| | | | 318 | Headache & Seizure WCE |
| 33601 | Define, distinguish, and correctly apply the common medical terms used to describe and identify clinical states of Somatic Symptom and Related Disorders | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33602 | Recognize the potential for medical conditions to present as psychiatric disorders and identify medical conditions on the interface between medical and psychiatric disorders. | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33603 | Compare and contrast Somatic Symptom and Related Disorders and Malingering. | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33604 | Recognize the effects that stress and certain personality types can have on various medical conditions and summarize the changes stress can make in the body. | SPM CSS | 315 | Somatic Symptom and Related Disorder |
| 33660 | Demonstrate an understanding of the basic techniques used to generate the most commonly used imaging | SPM IHD | 27 | Introduction to Anatomy Diagnostic Imaging |

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| | modalities: radiography (X-rays), computed tomography (CT), ultrasound (US), and magnetic resonance imaging (MRI). | | | |
| 33661 | Demonstrate an ability to recognize the commonly used imaging modalities: X-ray, CT, MR (T1 and T2), ultrasound, and imaging studies which use contrast agents | SPM IHD | 27 | Introduction to Anatomy Diagnostic Imaging |
| 33662 | Demonstrate an understanding of the advantages and disadvantages of the various imaging techniques in evaluating normal anatomy and pathological processes. | SPM IHD | 27 | Introduction to Anatomy Diagnostic Imaging |
| 33718 | Explain the processes involved in neurotransmitter release from presynaptic neurons, including the roles of voltage-gated calcium channels, SNARE proteins and vesicle fusion, and vesicle recycling. | SPM IMN | 241 | Neurotransmission |
| 33719 | List three major types of neurotransmitters; describe the site of their synthesis; list 5 major classes of classical neurotransmitters, and name their vesicular transporters. | SPM IMN | 241 | Neurotransmission |
| 33720 | Describe the synthesis of acetylcholine, monoamines, glutamate and GABA; explain the difference between vesicular and reuptake transporters, and describe the processes that terminate transmitter effects upon release. | SPM IMN | 241 | Neurotransmission |
| 33723 | Explain the mechanisms that underlie the effects of various toxins and diseases affecting the presynaptic processes, such as Lambert-Eaton Syndrome, botulinum toxin, sarin gas, Stiff man syndrome or cocaine/amphetamine | SPM IMN | 241 | Neurotransmission |
| 33724 | Explain the mechanisms that underlie the effects of various toxins and diseases affecting the postsynaptic receptors, such as Myasthenia gravis, Curare, PCP and Pertussis/Cholera toxin. | SPM IMN | 241 | Neurotransmission |

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| 33751 | Distinguish aspirin, NSAIDs and acetaminophen based on their analgesic mechanisms of action and toxicities. | SPM IMN | 244 | Pharmacology of Pain |
| 33752 | Describe the receptor-mediated mechanisms of opioid analgesic action, major adverse effects of opioid analgesics and antidotes used in case of overdose. | SPM IMN | 244 | Pharmacology of Pain |
| 33753 | Explain the analgesic mechanism of local anesthetic action, and major toxicities. | SPM IMN | 244 | Pharmacology of Pain |
| 33754 | Propose mechanisms by which drugs that were initially approved for treatment of depression or treatment of epilepsy have greater efficacy than conventional analgesics to treat neuropathic pain. | SPM IMN | 244 | Pharmacology of Pain |
| 33756 | Define and describe the Pelvic Pain Line. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 33757 | Describe somatic and autonomic innervation of the urinary bladder. Define sympathetic and parasympathetic efferents and transmitters/receptors involved. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 33758 | Explain autonomic afferents innervating bladder: conscious and unconscious sensory processing. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 33759 | Describe pathways underlying reflexes for urine retention and bladder voiding. Explain pathways controlling voluntary control of the bladder voiding. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 33760 | Analyze and explain neurogenic bladder and bladder pain. | SPM RNL | 1220 | Structure and Function of the Urinary Tract |
| 33765 | Describe how bacterial pathogens can be identified by Polymerase Chain Reaction and 16S rRNA gene sequence analysis. | SPM CVR | 1200 | Bacterial Identification (Acid Fast, Antimicrobial resistance, MIC, Fluorescence and Blast) |
| 33772 | Provide a biochemical rationale for the use of antineoplastic, antirheumatic and antibacterial drugs that interfere with purine biosynthesis. | SPM IMN | 218 | Inborn Errors of Purine Metabolism |
| 33773 | Describe the metabolic basis of and therapy for the following disorders of purine metabolism: gout due to | SPM IMN | 218 | Inborn Errors of Purine Metabolism |

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| | congenital overproduction of uric acid, Lesch-Nyhan syndrome, and SCID. | | | |
| 33816 | Identify the roles of creatine kinase and creatine phosphate in muscle contraction and explain the utility of creatine kinase and creatinine as laboratory markers of disease. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33821 | Explain why and how lactic acidosis can be caused by exercise, alcohol consumption, hypoxia, ischemia, mitochondrial poisons and mitochondrial diseases. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33822 | Recognize and explain the clinical features and biochemical mechanisms of the following 'glycogen storage' diseases that present with a metabolic myopathy: Pompe disease, McArdle disease, and Tarui disease. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33827 | Recognize and explain the clinical features and biochemical mechanisms of the following disorders of lipid metabolism that present with metabolic myopathy: carnitine deficiency syndromes and fatty-acid transport defects. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33828 | In general terms, recognize and explain the clinical features and biochemical abnormalities associated with the mitochondrial myopathies. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33830 | Recognize and explain the clinical features and biochemical mechanisms associated with myoadenylate deaminase deficiency. | SPM IMN | 246 | Muscle Metabolism and Metabolic Myopathies |
| 33835 | Identify the location and blood supply of the adrenal glands. | SPM END | 396 | Adrenal Histology |
| 33836 | List the 3 dominant cortical layers of the adrenal glands. | SPM END | 396 | Adrenal Histology |
| 33837 | Describe the characteristic histology of each cortical adrenal layer. | SPM END | 396 | Adrenal Histology |
| 33838 | Identify the endocrine products secreted by each cortical adrenal layer. | SPM END | 396 | Adrenal Histology |

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| 33839 | Recognize ultrastructural characteristics of steroid producing cells. | SPM END | 396 | Adrenal Histology |
| 33840 | Diagram the endocrine signaling (input and output) for each cortical adrenal layer. | SPM END | 396 | Adrenal Histology |
| 33841 | Identify the characteristic histology of the adrenal medulla. | SPM END | 396 | Adrenal Histology |
| 33842 | Identify the endocrine products secreted by the adrenal medulla. | SPM END | 396 | Adrenal Histology |
| 33854 | Describe the blood brain barrier (BBB) and its significance in protecting the CNS. List substances that can penetrate the BBB; and describe the molecular features of the BBB that prevent or allow various agents to enter the CNS. Analyze and describe the drugs that can penetrate the BBB. Describe various ways to bypass the BBB. Analyze and describe the diseases associated with the BBB breakdown. | SPM END | 431 | Hypothalamus |
| 33871 | Identify the most common bacterial cause of gastroenteritis in the U.S. | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 33874 | Identify the most common cause of antibiotic-associated gastrointestinal disease | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 33875 | Identify the major virulence factors associated with Vibrio cholerae infection | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 33876 | Discuss the mechanism of transmission of S. aureus-associated food intoxication | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 33877 | Distinguish between the emetic and diarrheal form of Bacillus cereus infections | SPM GIS | 114 | Viral and Bacterial Gastroenteritis |
| 33926 | Compare and contrast the physical characteristics , life cycle of and disease caused by the following members of the trematodes: Schistosoma mansoni, Fasciolopsis buski, Fasciola hepatica, Opisthorchis sinensis. | SPM GIS | 142 | Liver Infections |

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| 33933 | Identify the mechanisms of action of six nonspecific anti-diarrheal drugs | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 33934 | Understand the sources and distribution of intestinal fluid absorption and secretion | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 33935 | Describe how opioids directly activate the GI interstitial cell–muscle network | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 33936 | Understand the overview of the gastrointestinal opioid system and the physiological effects of opioids on the GI system | SPM GIS | 159 | Drugs that Influence Water Movement in the Gut (Laxatives and Antidiarrheals) |
| 33938 | List and give examples of the four major types of tumor antigens | SPM IMN | 235 | Introduction to the Immunology of Cancer |
| 33939 | Explain the use of carcinoembryonic antigen (CEA), alpha-fetoprotein (AFP), and prostate-specific antigen (PSA) as diagnostic markers for cancer | SPM IMN | 235 | Introduction to the Immunology of Cancer |
| 33940 | Describe four principal immune mechanisms of tumor rejection | SPM IMN | 235 | Introduction to the Immunology of Cancer |
| 33941 | Describe three major mechanisms by which tumors evade immune responses | SPM IMN | 235 | Introduction to the Immunology of Cancer |
| 33942 | Describe and give examples of the three main strategies for enhancing antitumor immune responses | SPM IMN | 235 | Introduction to the Immunology of Cancer |
| 33951 | Describe the anatomy of the inguinal canal: name the structures which make its walls and rings (deep and superficial), and list the contents of the inguinal canal in females and males. | SPM IHD | 86 | Inguinal Hernias |
| 33983 | Identify treatment options for premenstrual syndrome and premenstrual dysphoric disorder. | SPM REP | 458 | Pharmacology of Abnormal Genital Bleeding |
| 33984 | Outline the rational timing and sequence of pharmacological induction of puberty in girls with congenital gonadotropin deficiency. | SPM REP | 458 | Pharmacology of Abnormal Genital Bleeding |

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| 33986 | Know the AIDS defining conditions including those classified as protozoans, fungi, bacteria, viruses, and opportunistic neoplasias. | SPM HEM | 1105 | HIV |
| 33989 | Describe immune mechanisms of protection against sexually-transmitted infections. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33990 | Describe the role of antibodies as the primary mediators of protection induced by the HPV vaccines. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33991 | Compare the vaccines against rubella and varicella with the HPV vaccines. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33992 | Describe the preparation, species content and usefulness of a "humanized" monoclonal antibody using anti-HER2 antibody (Herceptin) as an example. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 33993 | Discuss tolerance to the fetus during pregnancy, including the role of trophoblasts, uterine natural killer cells (uNK), and regulatory T cells (Tregs) | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33994 | List the immune investigations that are performed during pregnancy and explain the rationale for each (antibody screen and serologic tests for latex allergies, syphilis, and rubella) | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33995 | Explain the rationale for vaccination of Rh-negative pregnant women with Rho (D) immune globulin | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33996 | Describe the role of anti-phospholipid antibodies in recurrent fetal loss | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33997 | Explain the maternal-fetal transfer of IgG including the mechanism and time course | SPM REP | 480 | Immunological aspects of pregnancy and its complications |
| 33998 | Describe seven immuno-protective factors in breast milk | SPM REP | 480 | Immunological aspects of pregnancy and its complications |

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| 33999 | Compare and contrast two anti-HPV vaccines, Cervarix and Gardasil. | SPM REP | 487 | Immunological aspects of screening, prevention, and treatment of diseases of the female reproductive system |
| 34000 | Objective: Outline the mechanism of action, use, and adverse effects of antimicrobial agents used to treat infections of the female genital tract. | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 34001 | Objective for bacterial STIs: select appropriate drugs for treatment of major sexually transmitted bacterial infections: gonorrhea, Chlamydia and syphilis | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 34002 | Objective for antifungal agents: match the major drugs used for fungal infections with their mechanisms of action and selective toxicity, and indicate the clinical use of an agent according to whether it is administered: systemically for systemic infections, systemically for superficial/localized infections, or topically for superficial/localized infections. | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 34003 | Objective for antiprotozoan agents: explain how metronidazole achieves selective toxicity for anaerobic and microaerophilic organisms and why consumption of alcohol during therapy is poorly tolerated. | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 34004 | Objective for antiviral agents for HSV: explain the mechanism of selective toxicity of cyclic nucleoside prodrugs for genital herpes. | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 34030 | Describe the unique features of the HBV genome and HBV viral replication. | SPM GIS | 128 | Viral Hepatitis |
| 34031 | Compare and contrast the roles of HBV and HCV in the development of hepatocellular carcinoma. | SPM GIS | 128 | Viral Hepatitis |
| 34044 | Identify four functions of the placenta and embryonic-fetal membranes. | SPM REP | 476 | Placental Histology |
| 34045 | Define the primary and secondary chorionic villi. | SPM REP | 476 | Placental Histology |
| 34046 | Describe the transition from trophoblastic lacunae to intervillous spaces. | SPM REP | 476 | Placental Histology |

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| 34047 | Sketch the organization of the placental tertiary villi. | SPM REP | 476 | Placental Histology |
| 34048 | Describe the structure of the placental lobe. | SPM REP | 476 | Placental Histology |
| 34049 | Describe the structural and functional differences between the umbilical vein and artery. | SPM REP | 476 | Placental Histology |
| 34050 | Identify the primary uterine and fetal membranes. | SPM REP | 476 | Placental Histology |
| 34051 | Identify the components of the placental barrier. | SPM REP | 476 | Placental Histology |
| 34085 | Apply your knowledge of normal pyrimidine metabolism to explain the metabolic basis, clinical presentation, and treatment of hereditary orotic aciduria | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34086 | Explain how chemotherapeutic pyrimidine analogs such as 5-fluorouracil can cause anemia | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34090 | Compare and contrast the clinical presentations and laboratory findings associated with folate and vitamin B12 deficiencies | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34096 | Recognize the clinical presentation of and explain the molecular basis for the following erythrocyte enzyme deficiencies that present as hemolytic anemia: glucose-6-phosphate dehydrogenase (G6PD) deficiency; pyruvate kinase deficiency | SPM HEM | 1078 | Metabolism in the Erythrocyte |
| 34098 | Demonstrate an understanding of how the hindgut is divided into anorectal and urogenital parts and how errors can lead to developmental defects such as fistulas involving the rectum, urinary system, reproductive system, and the urachus. | SPM REP | 446 | Reproductive System Development |
| 34099 | Demonstrate an understanding of the normal development of the gonads, the internal reproductive glands and ducts, and the external genitalia of males and females; including an understanding of the role of the SRY gene and the sources and actions of anti-Mullerian Hormone (AMH), testosterone (T) and dihydrotestosterone (DHT); and apply this knowledge | SPM REP | 446 | Reproductive System Development |

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| | to an ability to predict phenotypes caused by the lack of SRY, AMH, T or DHT. | | | |
| 34100 | Describe and discuss normal and abnormal descent of the testis, formation of the spermatic cord, and formation of the tunica vaginalis from the processus vaginalis. | SPM REP | 446 | Reproductive System Development |
| 34101 | Identify the lymphoid organs and their location within the body. | SPM HEM | 1095 | Histology of Lymphoid Tissue |
| 34142 | Define the difference between primary and secondary lymphoid tissue | SPM HEM | 1095 | Histology of Lymphoid Tissue |
| 34143 | Describe the functional and structural organization of the thymus | SPM HEM | 1095 | Histology of Lymphoid Tissue |
| 34144 | Describe the functional and structural organization of the lymph node | SPM HEM | 1095 | Histology of Lymphoid Tissue |
| 34145 | Describe the functional and structural organization of the MALT | SPM HEM | 1095 | Histology of Lymphoid Tissue |
| 34146 | Describe the functional and structural organization of the spleen | SPM HEM | 1095 | Histology of Lymphoid Tissue |
| 34173 | Define, distinguish, and correctly apply the common medical terms used to describe and identify from clinical presentations the various Trauma and Stressor Related Disorders. | SPM MHD | 1282 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part I: PTSD and Dissociative Disorders |
| 34175 | Formulate essential features of the diagnostic evaluation of a patient with Stress-Induced, Fear and Anxiety Disorders, including investigations, physiological and psychological changes. | SPM MHD | 1282 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part I: PTSD and Dissociative Disorders |
| 34177 | Describe the etiology, pathophysiology, comorbid conditions, frequently seen obsessions and compulsions seen in Obsessive-Compulsive and Related Disorders. | SPM MHD | 1293 | SCHEME - Stress-Induced Fear and Anxiety Disorders Part II: OCD and Anxiety Disorders |
| 34184 | Define, distinguish, and correctly apply the common terms used to describe and identify from clinical | SPM MHD | 1271 | Child Cognitive and Emotional Development and Defense Mechanisms |

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| | presentations the various types of attachment, temperament, stages of cognitive development, and the stages of individuation and separation. | | | |
| 34185 | Correctly identify and describe delays in a child’s cognitive and emotional development. | SPM MHD | 1271 | Child Cognitive and Emotional Development and Defense Mechanisms |
| 34189 | Describe common terms with aging, the effects of aging on human cells/brain, late life potential of the aging adult, the possible impact of extending life expectancy on society. | SPM MHD | 1320 | When We Age |
| 34190 | Determine the predictors of successful aging and how to successfully work with aging adults. | SPM MHD | 1320 | When We Age |
| 34203 | Define hæmostasis and thrombosis | SPM HEM | 1086 | Coagulation Cascade |
| 34204 | Outline steps in platelet activation | SPM HEM | 1086 | Coagulation Cascade |
| 34205 | Describe the in vivo coagulation cascade | SPM HEM | 1086 | Coagulation Cascade |
| 34206 | Describe the “CLASSIC” test tube cascade, including the Intrinsic pathway, the Extrinsic pathway, and the Common pathway | SPM HEM | 1086 | Coagulation Cascade |
| 34207 | Associate activated partial thromboplastin time with conventional laboratory monitoring of the intrinsic pathway (heparin therapy) | SPM HEM | 1086 | Coagulation Cascade |
| 34208 | Associate activated prothrombin time (international normalized ratio) with conventional laboratory monitoring of the intrinsic pathway (warfarin therapy) | SPM HEM | 1086 | Coagulation Cascade |
| 34209 | Compare and contrast warfarin with the newer direct Factor IIa inhibitor and direct Factor Xa inhibitor oral anticoagulants. | SPM HEM | 1087 | Drugs for Coagulation |
| 37188 | Describe the mechanism by which cholinesterase inhibitors purportedly provide some benefit in some probable-Alzheimer’s disease. | SPM MHD | 1319 | Drugs for Alzheimer's Disease |
| 37189 | Anticipate adverse effects of cholinesterase inhibitors. | SPM MHD | 1319 | Drugs for Alzheimer's Disease |

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| 37190 | Explain why using antimuscarinic drugs in dementia patients being treated with cholinesterase inhibitors is tempting but irrational. | SPM MHD | 1319 | Drugs for Alzheimer's Disease |
| 37191 | Describe the mechanism by which memantine purportedly provides some benefit in some probable-Alzheimer's disease. | SPM MHD | 1319 | Drugs for Alzheimer's Disease |
| 37192 | Explain why off-label use of atypical antipsychotic agents has not been endorsed to manage behavioral problems in patients with dementia. | SPM MHD | 1319 | Drugs for Alzheimer's Disease |
| 37204 | Describe the Tanner phases of breast development. | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 37205 | Recall the hormones related to breast development, lactation and galactorrhea. | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 37206 | List benefits of breast feeding for the mother and for the infant. | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 37207 | Discuss risks and benefits of breast reduction and augmentation. | SPM REP | 483 | Physiology and Pharmacology of Lactation |
| 37236 | Define the poly-somnographic characteristics of sleep. | SPM MHD | 1325 | Case-based discussion of Sleep Disorders |
| 37248 | Describe the arterial supply and venous drainage of the heart. | SPM CVR | 1125 | The Heart & Mediastinum |
| 37257 | Describe important historical discoveries in Tuberculosis (TB) treatment and control | SPM CVR | 1202 | Tuberculosis |
| 37258 | Explain three important obstacles to TB elimination | SPM CVR | 1202 | Tuberculosis |
| 37259 | Explain epidemiologic characteristics of TB among foreign born population and its influence in the U.S.-Mexico Border region. | SPM CVR | 1202 | Tuberculosis |
| 37260 | List two important co-morbidities associated with worse TB in Hispanic populations. | SPM CVR | 1202 | Tuberculosis |
| 37261 | Compare and contrast the general properties/growth characteristics of mycobacteria and common bacteria | SPM CVR | 1202 | Tuberculosis |

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| 37262 | Name two factors that explain TB transmission and infectiousness | SPM CVR | 1202 | Tuberculosis |
| 37263 | Explain the clinical and pathophysiological characteristics of active TB by target organ site. | SPM CVR | 1202 | Tuberculosis |
| 37264 | List the clinical stages of TB classifications | SPM CVR | 1202 | Tuberculosis |
| 37265 | Describe the immunologic basis for the two diagnostic studies used to diagnose latent TB infection. | SPM CVR | 1202 | Tuberculosis |
| 37266 | Understand the advantages and disadvantages of Tuberculin Skin and IGRA testing | SPM CVR | 1202 | Tuberculosis |
| 37267 | Name 5 components of a comprehensive TB diagnostic evaluation | SPM CVR | 1202 | Tuberculosis |
| 37268 | Describe the molecular basis for rapid identification of Mycobacteria | SPM CVR | 1202 | Tuberculosis |
| 37269 | Explain the clinical significance of TB drug susceptibility testing. | SPM CVR | 1202 | Tuberculosis |
| 37270 | Explain difference between primary and secondary drug resistance | SPM CVR | 1202 | Tuberculosis |
| 37271 | List 3 risk factors for developing TB drug resistance | SPM CVR | 1202 | Tuberculosis |
| 37272 | Identify three high risk categories of patients for treatment of latent TB infection. | SPM CVR | 1202 | Tuberculosis |
| 37273 | List 5 major goals of active TB treatment | SPM CVR | 1202 | Tuberculosis |
| 37274 | Explain the rationale for multiple drug therapy for active TB | SPM CVR | 1202 | Tuberculosis |
| 37275 | Explain the principle medical reason that contributes to development of TB drug resistance? | SPM CVR | 1202 | Tuberculosis |
| 40639 | Given information in a clinical vignette, be able to apply a basic knowledge of the origins and fates of neural crest cells so as to recognize a neurocristopathy, | SPM CSS | 287 | CNS Development |
| | | SPM IMN | 238 | PNS Development |

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| 40643 | Describe and compare prokaryotic DNA replication and eukaryotic DNA replication | SPM IHD | 26 | Microbial Genetics |
| 40663 | Analyze and describe the sub-chronic phase after stroke: infiltration of neutrophils and blood-borne macrophages; activation of microglia and astrocytes; potential therapies (in clinical trials) | SPM CSS | 321 | Neuroscience of Stroke |
| 40676 | Describe: (a) the medial medullar syndrome (occlusion/dissection of the anterior spinal artery (ASA)) and (b) lateral medullary syndrome (Wallenberg syndrome; occlusion of the vertebral artery (VA) or the posterior inferior cerebellar artery, PICA). | SPM CSS | 320 | Brain Stem Stroke |
| 40677 | Analyze the lateral pontine syndrome (occlusion of the anterior inferior cerebellar artery) and compare it with the lateral medullary syndrome (Wallenberg syndrome). | SPM CSS | 320 | Brain Stem Stroke |
| 40678 | Explain devastating consequences of the ventral pontine stroke or "locked-in" syndrome. | SPM CSS | 320 | Brain Stem Stroke |
| 40689 | Describe the ways in which normal flora impacts human health. | SPM IHD | 17 | Normal Flora |
| 40695 | Describe basic components of the nervous system: central and peripheral nervous systems; brain regions and spinal cord segments; describe structures that separate the CNS from the PNS. | SPM IHD | 57 | Introduction to Neuroscience |
| 40696 | Describe cells in the nervous system, and their basic roles in normal and injured or diseased CNS and PNS | SPM IHD | 57 | Introduction to Neuroscience |
| 40697 | Define basic neuroanatomical terms: white/gray matter in the CNS and PNS; nuclei, tracts and columns; ganglia and nerves. Identify the location of the white and gray matter in the crosssections of the CNS and PNS. | SPM IHD | 57 | Introduction to Neuroscience |
| 40698 | Describe nerves and nerve coverings; state the number and segmental distribution of spinal and cranial nerves; define "dermatome" | SPM IHD | 57 | Introduction to Neuroscience |

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| 40699 | Explain the roles of the CNS and PNS; describe two divisions of the PNS (sensory and motor); and two sub-divisions of the PNS (somatic and autonomic motor and sensory branches). | SPM IHD | 57 | Introduction to Neuroscience |
| 40705 | Identify the main anatomical divisions of the CNS. | SPM CSS | 284 | Histology of the CNS |
| 40706 | Name the four principal types of neuroglial cells and describe their functions. | SPM CSS | 284 | Histology of the CNS |
| 40707 | Describe predominant histologic differences between neurons and glial cells. | SPM CSS | 284 | Histology of the CNS |
| 40708 | Be able to identify neuropil , neuron cell bodies and glial cells in histologic sections of grey matter. | SPM CSS | 284 | Histology of the CNS |
| 40709 | Describe the cellular organization of the blood-brain barrier and the glia limitans. | SPM CSS | 284 | Histology of the CNS |
| 40710 | Identify axons, oligodendrocytes and other glia in white matter. | SPM CSS | 284 | Histology of the CNS |
| 40711 | Describe histological and functional characteristics of microglial cells. | SPM CSS | 284 | Histology of the CNS |
| 40712 | Describe the histological organization of the choroid plexus. | SPM CSS | 284 | Histology of the CNS |
| 40713 | Name several characteristics and location of ependymal cells. | SPM CSS | 284 | Histology of the CNS |
| 40714 | Describe the histological organization of the meninges. | SPM CSS | 284 | Histology of the CNS |
| 40715 | Identify predominant structures and cell types in cross sections of the spinal cord. | SPM CSS | 284 | Histology of the CNS |
| 40716 | Identify predominant structures and cell types in sections of the medulla oblongata. | SPM CSS | 284 | Histology of the CNS |
| 40717 | Identify predominant structures and cell types in sections of the pons. | SPM CSS | 284 | Histology of the CNS |
| 40718 | Identify predominant structures and cell types in sections of the cerebellum. | SPM CSS | 284 | Histology of the CNS |

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| 40719 | Identify predominant structures and cell types in sections of the substantia nigra. | SPM CSS | 284 | Histology of the CNS |
| 40720 | Identify predominant structures and cell types in sections of the thalamus. | SPM CSS | 284 | Histology of the CNS |
| 40721 | Identify predominant structures and cell types in sections of the cerebral cortex. | SPM CSS | 284 | Histology of the CNS |
| 40722 | Name the five characteristic cortical neurons and their histological organization. | SPM CSS | 284 | Histology of the CNS |
| 40726 | Define terminology used to describe visual deficits: anopsia, hemianopsia, homonymous hemianopsia, quadrantanopia and hemianopsia with macular sparing, and associated lesions in the visual pathways; explain scotoma. | SPM CSS | 343 | Neuroscience of Vision |
| 40727 | Explain pupillary constriction reflex and its significance in identifying the location of the lesion in the visual pathway. | SPM CSS | 343 | Neuroscience of Vision |
| 40728 | Explain pupillary dilation reflex, Horner syndrome, and explain the effect of drugs used in ophthalmology to increase the eye dilation. | SPM CSS | 343 | Neuroscience of Vision |
| 40730 | Describe mechanisms underlying various eye conditions: retinal detachment, glaucoma, color blindness, or macular degeneration. | SPM CSS | 343 | Neuroscience of Vision |
| 40742 | Explain the mechanisms of action and adverse effects of drugs used to treat spasticity and skeletal muscle spasm. | SPM CSS | 290 | Pharmacology of Paralysis and Spasticity |
| 40743 | Outline two main goals of pharmacotherapy for multiple sclerosis. | SPM CSS | 290 | Pharmacology of Paralysis and Spasticity |
| 40744 | When given appropriate data, describe pathophysiological events that produce abnormalities in body fluid volume and concentration and give recommendations to correct these alterations based on sound physiological principles. | SPM RNL | 1217 | Body Fluids (LAB) |

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| 40768 | Describe the role of plasma membrane in separating charges; define resting membrane potential, concentration and electrical gradients, and equilibrium potentials | SPM IMN | 193 | Membrane Excitability |
| 40769 | Explain the role of the sodium potassium pump in the maintenance of ion concentration gradients and resting membrane potential | SPM IMN | 193 | Membrane Excitability |
| 40770 | Describe transient membrane potential changes (depolarization or hyperpolarization) as a code for the information (e.g. sensory or synaptic inputs) in the nervous system, and the role of gated ion channels in transient changes in membrane potentials | SPM IMN | 193 | Membrane Excitability |
| 40771 | Analyze spreading of transient membrane potentials and define neuronal length constant; describe the relation between axonal radius and its length constant | SPM IMN | 193 | Membrane Excitability |
| 40788 | Define hearing loss (conduction and sensorineural) and explain Rinne test; name some of the causes of the dysfunction in the outer and middle ear. | SPM CSS | 360 | Auditory System |
| 40789 | Describe dysfunction of the inner ear due to mutations, loud noise, ototoxic drugs or vestibular schwannoma; discuss the use of both Rinne and Weber tests to identify conduction vs. sensorineural hearing loss. | SPM CSS | 360 | Auditory System |
| 40791 | Given a list of antiepileptic drugs, match each to types of seizure disorders for which the drug is most useful. | SPM CSS | 317 | Drugs for Epilepsy |
| 40792 | Anticipate the unusual pharmacokinetics and dose-related adverse effects of phenytoin. | SPM CSS | 317 | Drugs for Epilepsy |
| 40793 | Explain how the therapeutic mechanisms of antiepileptic drug action relate to the pathology of seizure disorders. | SPM CSS | 317 | Drugs for Epilepsy |

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| 40794 | Explain how the therapeutic mechanisms of antiepileptic drug action contribute to learning impairment and mental performance. | SPM CSS | 317 | Drugs for Epilepsy |
| 40795 | Outline major concerns about antiepileptic drugs in pregnancy. | SPM CSS | 317 | Drugs for Epilepsy |
| 40796 | Identify two antiepileptic drug-related serious idiosyncratic toxicities with classic skin reactions. | SPM CSS | 317 | Drugs for Epilepsy |
| 40814 | Know the anterior arterial circulation and the portion of the brain supplied by each of the following arteries: internal carotid artery, anterior cerebral artery and its pericallosal branch, middle cerebral artery and its anterolateral central (lenticulostriate) and superior and inferior terminal branches | SPM CSS | 787 | Neuroanatomy: Blood Supply of the Brain |
| 40815 | Know the posterior arterial circulation and the portion of the brain supplied by each of the following arteries: right and left vertebral artery, posterior inferior cerebellar artery (PICA), basilar artery, anterior inferior cerebellar artery (AICA), pontine arteries, superior cerebellar artery, posterior cerebral artery (and thalamogeniculate arteries) | SPM CSS | 787 | Neuroanatomy: Blood Supply of the Brain |
| 40816 | Know the cerebral arterial circle (of Willis) and the anterior and posterior communicating arteries | SPM CSS | 787 | Neuroanatomy: Blood Supply of the Brain |
| 40817 | Know the following veins and sinuses: superior sagittal sinus and superior cerebral (bridging) veins, great cerebral vein (of Galen), straight sinus, transverse sinus, superior ophthalmic vein, cavernous sinus, basilar venous plexus, superior and inferior petrosal sinus, sigmoid sinus, and jugular foramen | SPM CSS | 787 | Neuroanatomy: Blood Supply of the Brain |
| 40822 | Discuss the common pathological processes that may produce disorders of taste according to their basic categories (conductive, receptive, neural) | SPM CSS | 373 | Smell and Taste Disorders |

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| 40825 | Define the basic categories of impaired olfaction (smell), and discuss the effect of smell dysfunction in altered taste perception | SPM CSS | 373 | Smell and Taste Disorders |
| 40826 | Outline the diagnostic evaluation of a patient presenting with a smell or taste disorder | SPM CSS | 373 | Smell and Taste Disorders |
| 40839 | Describe the pathogenesis and clinical features of urticaria pigmentosa and mastocytosis | SPM IMN | 186 | Skin Pathology Part II |
| 40843 | Describe the clinical features, pathogenesis, and morphology of pemphigus vulgaris and pemphigus foliaceus | SPM IMN | 186 | Skin Pathology Part II |
| 40844 | Describe the clinical features, pathogenesis, and morphology of bullous pemphigoid | SPM IMN | 186 | Skin Pathology Part II |
| 40845 | Describe the clinical features, pathogenesis, and morphology of dermatitis herpetiformis | SPM IMN | 186 | Skin Pathology Part II |
| 40848 | Examine pathological alterations in the neuronal resting membrane potential in hyperkalemia or in neurological disorders associated with the impaired function of the sodium/potassium pump. | SPM IMN | 193 | Membrane Excitability |
| 40849 | Explain action potential; describe the threshold for action potential, and the role of voltage gated sodium and potassium channels in different phases of an action potential, explain the role of sodium-potassium pump in the restoration of the resting membrane potential after an action potential. | SPM IMN | 216 | Action Potential |
| 40850 | Analyze neuronal refractory period and explain its functional significance | SPM IMN | 216 | Action Potential |
| 40851 | Describe axon hillock as a trigger zone for action potential, and analyze spatial summation of passive, electrotonic (graded) potentials, using examples of the excitatory postsynaptic potentials (EPSPs) and inhibitory postsynaptic potentials (IPSPs). | SPM IMN | 216 | Action Potential |

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| 40852 | Define neuronal time constant, and describe how different time constant values (long vs. short time constants in different neurons) affect temporal summation of EPSPs or IPSPs | SPM IMN | 216 | Action Potential |
| 40853 | Explain effects of various ion channel inhibitors (toxins), and channelopathies (affecting voltage-gated sodium and potassium ion channels) on neuronal excitability | SPM IMN | 216 | Action Potential |
| 40857 | Define demyelinating diseases affecting CNS and PNS and explain the effect of demyelination of myelinated axons on their ability to propagate action potentials | SPM IMN | 219 | Conduction of Action Potential |
| 40887 | Demonstrate an ability to recognize common tissues, such as bone, fat, and muscle, and common substances, such as air, metal, and contrast agents, on medical images. | SPM IHD | 27 | Introduction to Anatomy Diagnostic Imaging |
| 40892 | Compare the microorganisms potentially responsible for acute localized otitis externa vs acute diffuse otitis externa vs chronic otitis externa vs malignant external otitis vs fungal otomycosis and mastoiditis and correlate the causative organisms with the clinical features and severity of the disease. | SPM CSS | 362 | Diseases of the Ear |
| 40893 | Recognize the clinical presentation of acute and chronic otitis media, and distinguish between the two regarding the most common causes, potential complications, and treatments. | SPM CSS | 362 | Diseases of the Ear |
| 40894 | Describe the clinical manifestations of otomycosis and the fungi that most commonly cause it and the association with underlying chronic otitis. | SPM CSS | 362 | Diseases of the Ear |
| 40895 | Explain the importance of the resistance mechanisms of <i>Pseudomonas</i> sp. and contrast them with the enterobacteriaceae. | SPM CSS | 362 | Diseases of the Ear |

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| 40900 | Describe the clinical features, morphology, and prognosis of basal cell carcinoma | SPM IMN | 190 | Skin Pathology III |
| 40901 | Describe the clinical features, morphology, and prognosis of dermatofibroma and dermatofibrosarcoma protuberans | SPM IMN | 190 | Skin Pathology III |
| 40933 | Explain the concept behind oncolytic virus therapy. | SPM IMN | 226 | Cell Cycle Drugs |
| 40936 | Define the urine pH that can be expected with the different types of RTA. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 40937 | Describe and explain the type of RTA associated with autoimmune disorders, Fanconi's syndrome, or hypoaldosteronism. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 40942 | Assess and explain somatosensory impairments in lesions affecting somatosensory cortex or thalamus, lower medulla, spinal cords (transection, central cord, hemisection), dorsal (anterior) roots or peripheral nerves | SPM IMN | 245 | Sensory Pathways |
| 40943 | Describe the three main types of pain and define the nociceptive system. List some of the receptors expressed in the peripheral axonal endings of nociceptors (TRP and ENaC channels), and explain their role in normal nociception in "nociceptive pain"). | SPM IMN | 242 | Neuroscience of Pain |
| 40944 | Describe inflammatory pain, neurogenic inflammation and primary hyperalgesia. Explain the effect of inflammatory mediators on the excitability of nociceptors. | SPM IMN | 242 | Neuroscience of Pain |
| 40945 | Define neuropathic pain, its clinical manifestations, and explain mechanisms underlying peripheral sensitization after nerve injury | SPM IMN | 242 | Neuroscience of Pain |
| 40946 | Describe peripheral sensitization after nerve injury, and the role of Nav1.7 channels. | SPM IMN | 242 | Neuroscience of Pain |
| 40947 | Analyze and explain genetic disorders affecting pain pathways (Paroxysmal Extreme Pain Disorder, Primary | SPM IMN | 242 | Neuroscience of Pain |

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| | Erythralgia and Channelopathy-associated insensitivity to pain. | | | |
| 40948 | Describe central sensitization in pain pathways after injury to the CNS and possible pharmacological treatments. | SPM IMN | 242 | Neuroscience of Pain |
| 40968 | Identify the muscles of the anterior and lateral compartments of the leg and give their functional significance in locomotion. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40969 | Identify the vascular supply of the anterior and lateral compartments of the leg. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40970 | Identify the nerves of the anterior and lateral compartments of the leg, the muscles and cutaneous regions supplied by them, so that given a functional and/or cutaneous loss one can predict the nerve and the probable level of injury. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40971 | Describe the arrangement, specializations and compartments of the fascia of the leg. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40972 | Identify the muscles of the posterior compartment of the leg and give their functional significance in locomotion. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40973 | Identify the vascular supply of the posterior compartment of the leg. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40974 | Identify the nerves of the posterior compartment of the leg, the muscles and cutaneous regions supplied by them, so that given a functional and/or cutaneous loss one can predict the nerve and the probable level of injury. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |

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| 40975 | Describe the bony structure of the foot, including its arches, subtalar and transverse tarsal joints, and the bones and ligaments contributing to its strength and flexibility. | SPM IMN | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40976 | Describe the arrangement, specializations, and compartments of the foot. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40977 | Identify the muscles of the foot and give their functional significance in locomotion. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40978 | Identify the vascular supply of the foot and give the regions supplied by each. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40979 | Identify the nerves of the foot, and the muscles and cutaneous regions supplied by them, so that given a functional and/or cutaneous loss one can predict the nerve and the probable level of injury. | SPM IMN | 205 | Leg and Foot - Team A |
| | | | 213 | Anterior Lateral Leg and Foot - Team A & B |
| 40980 | List and describe the various types of moveable joints and give examples of each type. | SPM IMN | 214 | Joints - Team A & B |
| 40981 | List the characteristics of and identify the parts of a typical synovial joint. | SPM IMN | 214 | Joints - Team A & B |
| 40982 | Recall the movement characteristics of the various types of synovial joints. | SPM IMN | 214 | Joints - Team A & B |
| 40983 | Identify the bony, cartilagenous, ligamentous and membranous components of the following joints: sternoclavicular acromioclavicular shoulder elbow (humeroulnar, humeroradial, proximal radioulnar) distal radioulnar radiocarpal intercarpal | SPM IMN | 214 | Joints - Team A & B |
| 40984 | List the movements permitted at each joint and the ligaments that restrict them. | SPM IMN | 214 | Joints - Team A & B |
| 40985 | Correlate joint movements with the muscles producing these actions at each joint. | SPM IMN | 214 | Joints - Team A & B |

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| 40986 | Describe the structure of the joints of the lower limb and the functional capabilities and limitations of each based on their bony structure and ligaments. | SPM IMN | 214 | Joints - Team A & B |
| 40987 | Describe the blood and nerve supply of the joints and in particular the effect of interruption of blood to the head and neck of the femur | SPM IMN | 214 | Joints - Team A & B |
| 40988 | Identify and describe the structure and function of the knee joint and in particular the effects of injury to the ligaments and menisci. | SPM IMN | 214 | Joints - Team A & B |
| 40989 | Identify the structure of the ankle and foot joints and describe how the joints and ligaments provide firm footing but flexibility of movement. | SPM IMN | 214 | Joints - Team A & B |
| 40990 | Describe the arches of the foot and how the bony structure and ligaments form and support them. | SPM IMN | 214 | Joints - Team A & B |
| 40997 | Compare clinical features, pathogenesis of myasthenia gravis and Lambert-Eaton myasthenic syndrome (LEMS). | SPM IMN | 259 | Pathology of Weakness |
| 40998 | Explain the mode of inheritance and compare the pathogenesis, morphologic findings (gross and microscopic), and clinical features of Duchenne, Becker and Myotonic muscular dystrophy. | SPM IMN | 259 | Pathology of Weakness |
| 40999 | Compare pathogenesis, clinical features, and microscopy finding of dermatomyositis and polymyositis. | SPM IMN | 259 | Pathology of Weakness |
| 41000 | Describe the pathogenesis of ion channel myopathies. | SPM IMN | 259 | Pathology of Weakness |
| 41002 | Enumerate the common etiological agents for toxic myopathy and describe their clinical features. | SPM IMN | 259 | Pathology of Weakness |
| 41031 | Identify and describe the general features of the exocrine digestive accessory glands. | SPM GIS | 107 | Histology of the Upper GI Tract |
| | | | 131 | Liver Histology |
| 41032 | Know the general anatomical organization and histology of the stomach. | SPM GIS | 107 | Histology of the Upper GI Tract |

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| 41050 | Describe the anatomical considerations important for successful inguinal hernia surgical repair. | SPM IHD | 86 | Inguinal Hernias |
| 41055 | Identify the parts of the stomach and describe its spatial relationships to surrounding organs and mesenteries. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41056 | Describe the blood supply of the abdominal foregut via branches of the celiac artery, and the basic pattern of lymphatic drainage in this region. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41057 | Describe the anatomy of the foregut peritoneal ligaments, omenta and omental bursa, and their development from the embryological ventral and dorsal mesogastria. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41058 | Describe the pattern of parasympathetic innervation of the GI tract. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41059 | Identify and describe the parts and peritoneal relationships of the duodenum and pancreas. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41060 | Describe the pattern of common vasculature of the duodenum and pancreas. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41061 | Trace the potential collateral blood flow between celiac and superior mesenteric arterial territories, and between superior and inferior mesenteric arterial territories. | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |
| | | | 689 | Pre-Lab - Foregut |
| 41062 | | SPM GIS | 113 | Abdominal Foregut Team A and B |
| | | | 149 | Abdominal Foregut LAB Team A |

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| | Trace the pathway of common entry of the bile ducts and pancreatic ducts into the 2nd part of the duodenum. | | 689 | Pre-Lab - Foregut |
| 41063 | Identify parts of the liver and describe the relationships of its portal venous, hepatic arterial, and hepatic venous circulation. | SPM GIS | 133 | Liver LAB Team A and B |
| | | | 150 | Liver Lab Team B |
| | | | 691 | Pre-Lab - Liver |
| 41089 | Identify the structures passing into and out of the porta hepatis and some of the most common variations on this pattern. | SPM GIS | 133 | Liver LAB Team A and B |
| | | | 150 | Liver Lab Team B |
| | | | 691 | Pre-Lab - Liver |
| 41090 | Describe the peritoneal relationships of the liver and gallbladder. | SPM GIS | 133 | Liver LAB Team A and B |
| | | | 150 | Liver Lab Team B |
| | | | 691 | Pre-Lab - Liver |
| 41093 | Trace the skeletal and ligamentous boundaries of the perineum, and define the anal and urogenital triangles. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41094 | Identify the superficial features of the external genitalia in the female. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41095 | Describe the structure, contents, and course of the pudendal canal. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41096 | Trace the branching pattern of the internal pudendal vessels and the pudendal nerve. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41097 | Differentiate between male and female urethrae. | SPM REP | 455 | Female Reproductive System Anatomy Lab |
| 41098 | | SPM REP | 443 | Male Reproductive Anatomy LAB |

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| | Identify the components of the external genital organs and give the homologues in each of both sexes. | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41099 | Describe structure and function of the erectile bodies. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41100 | Identify the muscles and fasciae of the perineum and their functions. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41101 | Trace the nerve and blood supply to the external genital organs and the muscles of the perineum. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41102 | Trace the lymphatic drainage of the perineum. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41103 | Describe immune mechanisms involved in the pathogenesis of febrile nonhemolytic transfusion reactions, allergic transfusion reactions, and transfusion-associated graft-versus-host disease. | SPM HEM | 1077 | Agglutination and Transfusion Reactions |
| 41104 | Trace the continuity of the abdominal peritoneum with that of the pelvic cavity, and identify the peritoneal pouches of the pelvic floor in both sexes. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| | | | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41105 | Describe the relationships of the bladder to other pelvic organs in both sexes. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41106 | | SPM REP | 452 | Pre-Lab: Female Reproductive System |

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| | Describe the normal position and relationships of the organs of the female reproductive tract and the role of each in reproductive processes. | | 455 | Female Reproductive System Anatomy Lab |
| 41107 | Describe the broad ligament and differentiate its parts. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41108 | Identify the ovary and discuss the functional significance of its ligaments. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41109 | Demonstrate the uterine tube and its subdivisions. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41110 | Identify the uterus and its subdivisions and demonstrate the continuity of its lumen with that of the uterine tubes and the vagina. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41111 | Differentiate between the internal and external os of the cervix. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41112 | Identify the vagina, and note the angle formed at its junction with the uterus. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41113 | Describe the support mechanisms for the uterus which act to prevent uterine prolapse. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41114 | Describe the formation of the two sciatic foramina. List the muscles, nerves, and vessels which pass through each. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| | | | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41115 | Identify the pelvic diaphragm and differentiate its components. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |

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| 41116 | Trace the branching pattern of the internal iliac vessels in each sex, identifying branches by their relationships to pelvic organs or wall structures. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41117 | Identify and describe the inferior hypogastric (pelvic) plexus and its connections to the superior hypogastric plexus via the hypogastric nerves. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41118 | Identify and describe the sacral sympathetic trunks and the sacral sympathetic nerves. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41119 | Trace the sympathetic and parasympathetic nerve supply to any pelvic organ, listing the location of the preganglionic cell body, the course of preganglionic fibers, the location of the postganglionic cell body, and the course of postganglionic fibers, as well as the sensory supply of the pelvic organs. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 41120 | Describe the general gross features of the breast and its blood supply, innervation, and lymphatic drainage. | SPM REP | 452 | Pre-Lab: Female Reproductive System |
| | | | 455 | Female Reproductive System Anatomy Lab |
| 41121 | Identify the testis, its coverings, and tubules, and account for the difference in location between gonads in the two sexes. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| 41122 | Trace the entire course of the ductus deferens from the epididymis to its ampulla; note its relationship to the ureter. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| 41123 | | SPM REP | 443 | Male Reproductive Anatomy LAB |

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| | Identify the seminal vesicle and demonstrate the formation and course of the ejaculatory duct. | | 445 | Pre-Lab: Male Reproductive |
| 41124 | Identify the prostate gland and describe the special features of the prostatic urethral wall. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| 41126 | Compare options for prevention and treatment of human papilloma virus infections. | SPM REP | 488 | Bugs and Drugs of Women’s Health |
| 41127 | Describe the indication and mechanism of RHo(D) immune globulin for prevention of erythroblastosis fetalis/hemolytic disease of the newborn. | SPM REP | 482 | Drugs for inducing/delaying labor |
| 44377 | Apply integrated understanding of the mechanisms of primary hemostasis, secondary hemostasis, and thrombomodulation to diagnostic reasoning and propose treatment choices for abnormalities of hemostasis or thrombotic conditions. | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |
| 44379 | Describe the potential physiological effects of each of the Hemorrhagic fever virus and Rickettsia infections on capillary permeability, interstitial pressure and circulating volume and provide a rationale for the most appropriate treatment. | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |
| 44395 | Integrate knowledge of inheritance, the biochemistry and physiology of hemostasis, bleeding hematopathologies, laboratory medicine, and therapeutics to differentiate a case of von Willebrand disease from a case of hemophilia A, hemophilia B, hemophilia C, or acquired hemophilia. | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |
| 44402 | Describe the framework of the thorax, including the sternum and its parts. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44403 | Diagram a typical intercostal space, including muscles, nerves, and vessels. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44404 | Describe the make up and surface projections of the pleural cavity. Identify its recesses. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |

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| 44405 | Distinguish between parietal and visceral pleura and between parietal and visceral pericardium. Identify the various divisions of the parietal pleura. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44406 | Identify and describe the mediastinum, including its boundaries and subdivisions. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44407 | Identify the contents of the anterior mediastinum. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44408 | Describe the pericardium and its parts. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44409 | Identify the sternocostal projections of the heart, in addition to its borders, surfaces, and sulci. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44410 | Identify the structures traversed in sequence of blood flow. Relate the anatomy of the heart to its basic physiological function. | SPM CVR | 1136 | Heart Dissection - Team B |
| | | | 1142 | Heart Teams - A&B |
| 44411 | Identify the structures found in each of the four chambers and consider their significance. | SPM CVR | 1136 | Heart Dissection - Team B |
| | | | 1142 | Heart Teams - A&B |
| 44412 | Compare and contrast the anatomical characteristics right and left sides of the heart. | SPM CVR | 1136 | Heart Dissection - Team B |
| | | | 1142 | Heart Teams - A&B |
| 44413 | Identify the arterial supply and venous drainage of the heart. Describe the electrical conduction system. | SPM CVR | 1136 | Heart Dissection - Team B |
| | | | 1142 | Heart Teams - A&B |
| 44414 | Describe the sternocostal projections of the valves of the heart and identify their auscultation points. | SPM CVR | 1136 | Heart Dissection - Team B |
| | | | 1142 | Heart Teams - A&B |
| 44415 | Identify the contents of the superior mediastinum. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44416 | Identify and trace the tributaries to each of the brachiocephalic veins and the formation of the superior vena cava. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |

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| 44417 | Identify and trace all the branches of the arch of the aorta in the region and the relationship of the vagus and phrenic nerves to them. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44418 | Identify the thoracic part of the trachea and describe its blood supply and innervation. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44419 | Identify and describe the location of the lungs in the thoracic cavity. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44420 | Identify the relations of the pulmonary artery, pulmonary veins, and the bronchi at the hilum of each lung. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44421 | Define a bronchopulmonary segment and discuss its general organization. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44422 | Name the bronchopulmonary segments and give their approximate location in reference to the lobes of the lungs. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44423 | Define the boundaries of the posterior mediastinum. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44424 | Describe the major contents of the posterior mediastinum and their relationships. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44425 | Describe the organization of the thoracic sympathetic trunk, in addition to its visceral and splanchnic branches. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44434 | Define, distinguish and correctly apply the common terms used to describe the mood disorders, identify from clinical presentations the various mood disorders (including secondary mood disorders) from the scheme presentation, and differentiate between normal situational mood reactions and a clinically significant mood disorder. | SPM MHD | 1289 | SCHEME - Mood Disorders |
| 44436 | Describe risk factors, development, gender issues, course, and mnemonics for symptoms and comorbidity for the various mood disorders. | SPM MHD | 1289 | SCHEME - Mood Disorders |
| 44450 | | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |

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| | Explain the anatomical basis for performing pericardiocentesis through parasternal and subxiphoid approaches. | | 1132 | Heart & Pericardium Teams A & B |
| 44451 | Be able to correctly insert a needle into the pericardial sac of a cadaver through parasternal and subxiphoid approaches. | SPM CVR | 1129 | Heart and Pericardium Dissection Team A |
| | | | 1132 | Heart & Pericardium Teams A & B |
| 44453 | Describe the developmental origin and anatomical consequences of coarctation of the aorta. | SPM CVR | 1143 | Vascular Development |
| 44455 | Distinguish classes of drugs to treat depression on the basis of their pharmacological mechanisms, therapeutic actions, and adverse effects. | SPM MHD | 1291 | Drugs for Mood Disorders |
| 44456 | Distinguish acute and chronic neurochemical effects of antidepressant drugs | SPM MHD | 1291 | Drugs for Mood Disorders |
| 44457 | Describe the neurochemical effect of lithium, and major toxicities associated with its use as a mood stabilizer. | SPM MHD | 1291 | Drugs for Mood Disorders |
| 44458 | Propose why some drugs developed for epilepsy are used as mood stabilizers. | SPM MHD | 1291 | Drugs for Mood Disorders |
| 44459 | Discuss the relationship between benzodiazepine agonists (e.g., diazepam) and GABA-A receptor. | SPM MHD | 1292 | Drugs for Anxiety Disorders |
| 44460 | Describe how benzodiazepine agonists (alprazolam, diazepam) and antagonist (flumazenil) action differs from compounds and drugs (GABA, barbiturates, alcohol) acting at other sites on the GABA receptor. | SPM MHD | 1292 | Drugs for Anxiety Disorders |
| 44461 | Describe the pharmacology of buspirone and barbiturates compared to the pharmacology of diazepam. | SPM MHD | 1292 | Drugs for Anxiety Disorders |
| 44462 | List the therapeutic uses of benzodiazepines, and how the pharmacokinetics of the various benzodiazepines is related to their particular therapeutic uses (short, intermediate, and long-acting active metabolites). | SPM MHD | 1292 | Drugs for Anxiety Disorders |

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| 44463 | Compare the dependence liability, toxicity, side effects, and therapeutic actions of benzodiazepines to the barbiturates and hypnotics and describe the interactions of the benzodiazepines with other CNS depressants. | SPM MHD | 1292 | Drugs for Anxiety Disorders |
| 44464 | Explain how typical and atypical antipsychotics differ in their class-related side-effect profiles and their therapeutic effects on positive and negative symptoms of psychosis. Specific examples (TYPICALS: chlorpromazine; haloperidol), (ATYPICALS: clozapine; ziprasidone). | SPM MHD | 1301 | Drugs for Psychotic Disorders |
| 44465 | Define the unique role, risk and risk management implications of using clozapine as an antipsychotic.. | SPM MHD | 1301 | Drugs for Psychotic Disorders |
| 44466 | Explain the neurobiological basis of the trade-off between extrapyramidal side-effects and psychosis in treating Parkinson’s disease with dopamine agonists, or treating schizophrenia with dopamine antagonists, and rational options to control those adverse drug effects. | SPM MHD | 1301 | Drugs for Psychotic Disorders |
| 44467 | Distinguish Sudden Infant Death Syndrome from Apparent Life-Threatening Events on the basis of clinical presentation. | SPM MHD | 1262 | SIDS-ALTE |
| 44468 | Outline differences in a physician’s approach to assessment of a cases of Sudden Infant Death Syndrome vs Apparent Life-Threatening Events. | SPM MHD | 1262 | SIDS-ALTE |
| 44469 | Contrast the support needs of family in cases of Sudden Infant Death Syndrome vs Apparent Life-Threatening Events. | SPM MHD | 1262 | SIDS-ALTE |
| 44470 | Be able to identify normal anatomical structures on ultrasound (US) images of the heart (left parasternal long-axis and apical four-chamber views) and corresponding cross sections of the cadaveric heart. | SPM CVR | 1136 | Heart Dissection - Team B |
| | | | 1142 | Heart Teams - A&B |

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| 44486 | Trace the lymphatic drainage of the lungs and respiratory tract. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44487 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the primary depressive and primary bipolar and related disorders. | SPM MHD | 1295 | Integration Session: Mood |
| 44488 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the stress-induced, fear and anxiety disorders. | SPM MHD | 1296 | Integration Session: SIFA |
| 44489 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the psychosis and disordered thought scheme presentation. | SPM MHD | 1306 | Integration Session |
| 44490 | Identify the major structures of the thorax on CTs, MRs, and radiographs. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44492 | Compare and contrast the events in the embryonic stage with the fetal stages of lung development. | SPM CVR | 1176 | Lungs and Mediastinum - Teams A&B |
| 44496 | Explain basic concepts of complex genetic disorders, including polygenic disorders, gene-gene/gene-environment interactions, non-genetic risk factors, and population incidence. | SPM MHD | 1284 | Genetics of Psychiatric Disorders |
| 44497 | Explain basic concepts of multifactorial inheritance of psychiatric disorders including familial aggregation, relative risk ratio, and concordant/discordant twin studies. | SPM MHD | 1284 | Genetics of Psychiatric Disorders |

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| 44498 | Describe the concept of endophenotype and list the five criteria that must be fulfilled to be considered an endophenotype. | SPM MHD | 1284 | Genetics of Psychiatric Disorders |
| 44499 | Describe major findings in molecular genetics of neuropsychiatric disorders, including schizophrenia and bipolar disorders. Explain the concept of linkage disequilibrium and describe strengths and weaknesses of linkage and association studies. | SPM MHD | 1284 | Genetics of Psychiatric Disorders |
| 44504 | Identify and list the attachments, innervation and action of the muscles of the neck: sternocleidomastoid, infrahyoid muscles, scalene muscles. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44505 | Identify the boundaries of the anterior and posterior cervical triangles and their subdivisions. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44506 | Describe the branches of the cervical plexus. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44507 | Identify the deep cervical fascia, its various component layers and the resulting compartmentalization of the neck. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44508 | Locate and describe the features of the thyroid gland. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44509 | Give the position of the parathyroid glands and consider the thyroid/parathyroid gland relationship in terms of vascular supply and surgical intervention. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44510 | Identify and list the parts and branches of the subclavian artery and vein, and describe their course in the neck. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44511 | In the root of the neck, locate the vagus and phrenic nerves and describe their relationships to the organs, fascia, vessels, and viscera of the neck. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44512 | | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |

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| | Describe the anatomy relevant to subclavian vein catheterization: surface landmarks and relationships of the subclavian vein to the clavicle, 1st rib, subclavian artery, brachial plexus, parietal pleura, phrenic and vagus nerves. | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44513 | Identify the deep cervical lymph nodes and explain their significance. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44514 | Review the arrangement, distribution and function of the cervical sympathetic trunk. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44515 | Review the carotid sheath and contents. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44516 | List the basic functions of the larynx. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44517 | Identify the main cartilages and membranes that form the internal framework (skeleton) of the larynx. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44518 | Describe the actions of the intrinsic muscles of the larynx in tensing, relaxing, abducting or adducting the vocal folds. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44519 | Describe the innervation and vascular supply of the larynx. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44520 | Describe the anatomy relevant to cricothyroidotomy: locate the cricothyroid membrane and describe its relationships to the thyroid and cricoid cartilages, vocal cords, cricothyroid artery, and cricothyroid muscles. | SPM CVR | 1188 | Larynx and root of neck - Team B Dissection |
| | | | 1191 | Larynx and Root of Neck - Teams A&B |
| 44526 | Explain the significance of targeted TB testing. | SPM CVR | 1202 | Tuberculosis |
| 44538 | Relate the finding of anti-histidyl transfer RNA synthetase (anti-Jo-1) and anti-Mi-2 (antibodies to the Mi-2 nuclear antigen) to myositis | SPM IMN | 253 | Immunology of Neurological and Muscular Systems |

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| 44539 | Differentiate between members of the Enterobacteriaceae in terms of lactose fermentation, indole production, reaction to Kovac’s reagent, Urea hydrolysis, Glucose fermentation, Citrate utilization, motility, hydrogen sulfide production, and oxidase production. | SPM GIS | 155 | Enterobacteriaceae and the Enteric viruses |
| 44540 | Correlate laboratory results with clinical presentations of enteric causes of vomiting and diarrhea. | SPM GIS | 155 | Enterobacteriaceae and the Enteric viruses |
| 44541 | Recognize viral causes of vomiting and diarrhea based on virion architecture, genomic structure and epidemiological characteristics. | SPM GIS | 155 | Enterobacteriaceae and the Enteric viruses |
| 44543 | Define the "anatomical position". Using the conventional anatomical terms, describe the body and the spatial relationships of its parts, for example dorsal/ventral, medial/lateral, proximal/distal, and superficial/deep. | SPM IHD | 5 | Anatomy Pre-Lab - Superficial Back |
| | | | 10 | Dissection of the Superficial Back |
| 44544 | Recognize and define the standard planes and sections used to describe parts of the body and the relationships of the various planes and sections to one another. | SPM IHD | 5 | Anatomy Pre-Lab - Superficial Back |
| | | | 10 | Dissection of the Superficial Back |
| 44545 | Describe the general structural plan of the body and the relationships of the layers, partitions and compartments one encounters when dissecting from superficial to deep in any particular region. | SPM IHD | 5 | Anatomy Pre-Lab - Superficial Back |
| | | | 10 | Dissection of the Superficial Back |
| 44546 | Demonstrate a cutaneous neurovascular bundle and describe patterns of cutaneous nerves on the back. | SPM IHD | 5 | Anatomy Pre-Lab - Superficial Back |
| | | | 10 | Dissection of the Superficial Back |
| 44547 | Identify, and give the general attachments of, nerve and blood supply to, and the general functions of the superficial back muscles. | SPM IHD | 5 | Anatomy Pre-Lab - Superficial Back |
| | | | 10 | Dissection of the Superficial Back |
| 44548 | Identify the bony prominences of the back and spine that may be palpated and used for reference to underlying structures. | SPM IHD | 5 | Anatomy Pre-Lab - Superficial Back |
| | | | 10 | Dissection of the Superficial Back |

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| 47218 | Recognize species of the Rickettsia, Ehrlichia, and Coxiella families of bacteria which cause febrile illnesses (Rocky Mountain spotted fever, Ehrlichiosis, Q fever), based on structure, physiology, clinical presentation and mode of transmission. | SPM IHD | 83 | Chronic Relapsing Fever |
| 47219 | Recognize Pasteurella multocida as an important zoonotic infection and describe its characteristic features. | SPM IHD | 93 | Bacterial Wound Infections |
| 47220 | Compare the characteristic features of Staphylococcus epidermidis and Staphylococcus aureus. | SPM IHD | 93 | Bacterial Wound Infections |
| 47221 | Describe the important characteristic features of Clostridium perfringens, Clostridium tetani and Clostridium botulinum. | SPM IHD | 93 | Bacterial Wound Infections |
| 47265 | Correlate the etiology of acute bacterial meningitis with the patient's age, immune status and exposure history; be able to identify the most likely organisms based on Gram stain and/or biochemical test results. | SPM CSS | 310 | Acute Meningitis |
| 47266 | Compare the epidemiology of acute bacterial meningitis caused by group B strep, E. coli, and Listeria monocytogenes in neonates in terms of routes of transmission, major risk groups, and frequency of occurrence. | SPM CSS | 310 | Acute Meningitis |
| 47267 | Differentiate between Listeria monocytogenes, group B strep, and E. coli based on cell shape, virulence factors, biochemical/enzymatic tests. | SPM CSS | 310 | Acute Meningitis |
| 47268 | Correlate the etiology of viral/aseptic meningitis with the patient's age, immune status, and exposure history; recognize significant clinical findings which help distinguish viral from bacterial causes of meningitis. | SPM CSS | 310 | Acute Meningitis |
| 48305 | Identify CSF results which may be seen in chronic meningitis and correlate with patients at risk, causative organism, and tests needed for identification. | SPM CSS | 311 | Chronic Meningitis |

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| 48306 | Recognize findings associated with chronic meningitis due to bacterial causes (TB, syphilis, borreliosis) and be able to identify significant gross, microscopic, and laboratory findings associated with each. | SPM CSS | 311 | Chronic Meningitis |
| 48307 | Recognize findings associated with chronic meningitis due to fungal causes (Cryptococcus neoformans, Histoplasma capsulatum, Coccidioides immitis, Candida albicans, Mucormyces sp., Aspergillus sp.) and be able to identify significant gross, microscopic, and laboratory findings associated with each. | SPM CSS | 311 | Chronic Meningitis |
| 48308 | Recognize findings associated with chronic meningitis due to parasites (Toxoplasma gondii, Taenia solium) and amoebae (Naegleria sp., Acanthameba sp.) and be able to identify significant gross, microscopic, and laboratory findings associated with each. | SPM CSS | 311 | Chronic Meningitis |
| 48309 | Describe the features of Staphylococcus aureus that function as virulence factors, including their role in the pathogenesis of the diseases caused by this organism. | SPM IHD | 93 | Bacterial Wound Infections |
| 48310 | Recognize coagulase-negative Staphylococci as etiological agents in catheter and shunt infections as well as infections of implants and prosthetic devices. | SPM IHD | 93 | Bacterial Wound Infections |
| 48311 | Describe the common characteristics of the bacterial species that belong to the genus Clostridium including morphology, physiology and epidemiology. | SPM IHD | 93 | Bacterial Wound Infections |
| 48312 | Compare the virulence factors of Clostridium perfringens, Clostridium tetani and Clostridium botulinum | SPM IHD | 93 | Bacterial Wound Infections |
| 48324 | Recognize and describe the characteristic skin manifestations of Staphylococcus aureus infection including folliculitis, furuncles, carbuncles, bullous impetigo and scalded-skin syndrome | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48325 | Relate the virulence factors of Staphylococcus aureus to diseases of the skin | SPM IMN | 177 | Skin manifestations of bacterial infections |

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| 48326 | Recognize and describe the characteristic skin manifestations of <i>Streptococcus pyogenes</i> infection including impetigo, cellulitis, necrotizing fasciitis and erysipelas | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48327 | Relate the virulence factors of <i>Streptococcus pyogenes</i> to diseases of the skin | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48328 | Recognize and describe the characteristic skin manifestations of scarlet fever, including strawberry tongue, caused by <i>Streptococcus pyogenes</i> | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48329 | Recognize and describe <i>Propionibacterium acnes</i> as the causative agent of acne | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48330 | Recognize and describe the skin manifestations of <i>Pseudomonas aeruginosa</i> infection | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48331 | Recognize and describe <i>Bacillus anthracis</i> as the causative agent of cutaneous anthrax, including its virulence factors | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48332 | Recognize and describe leprosy, including the skin lesions, causative organism and distinguishing characteristics | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48333 | Recognize and describe the cutaneous manifestations of systemic <i>Neisseria meningitidis</i> , <i>Salmonella Typhi</i> and <i>Haemophilus influenzae</i> infections | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48334 | Recognize and describe the rashes that are prominent characteristics of tick-borne diseases in the U.S. (Lyme disease; Rocky Mountain spotted fever), including the causative agents | SPM IMN | 177 | Skin manifestations of bacterial infections |
| 48335 | Describe the nasal cavity, its general morphology including walls, openings, nasal septum, conchae, meatuses, and its general neurovascular supply. | SPM IHD | 49 | Anatomy Prelab Throat and Mouth |
| | | | 54 | Throat and Mouth Anatomy Team A & B |
| 48336 | List the paranasal sinuses and where each opens into the nasal cavity. | SPM IHD | 49 | Anatomy Prelab Throat and Mouth |
| | | | 54 | Throat and Mouth Anatomy Team A & B |

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| 48337 | Describe the hard and soft palate. | SPM IHD | 49 | Anatomy Prelab Throat and Mouth |
| | | | 54 | Throat and Mouth Anatomy Team A & B |
| 48338 | Describe the pharynx and its subdivisions, its muscular and fascial components, its general neurovascular supply, and its anatomical relationships. | SPM IHD | 49 | Anatomy Prelab Throat and Mouth |
| | | | 54 | Throat and Mouth Anatomy Team A & B |
| 48339 | Describe the location and neurovascular supply of the pharyngeal, palatine, and lingual tonsils. | SPM IHD | 49 | Anatomy Prelab Throat and Mouth |
| | | | 54 | Throat and Mouth Anatomy Team A & B |
| 48340 | Describe the location of the deep cervical lymph nodes and the general pattern of their afferent and efferent channels. | SPM IHD | 49 | Anatomy Prelab Throat and Mouth |
| | | | 54 | Throat and Mouth Anatomy Team A & B |
| 48341 | Recall the basic terminology used to define the surface representations of the regions of the abdomen. | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48342 | Identify the major skeletal landmarks of the abdominopelvic cavity. | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48343 | Define the innervation, blood supply, and lymphatic drainage of the anterior abdominal wall. | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48344 | Describe the formation of the rectus sheath. | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48345 | Define the layers of the anterior abdominal wall, their contributions to the coverings of the spermatic cord and round ligament, and the origin of these coverings as related to the descent of the gonads. | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48346 | Describe the anatomy of the inguinal canal. | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48347 | Describe the anatomy of the various kinds of abdominal wall hernias (indirect and direct inguinal, umbilical, lumbar). | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |
| | | | 81 | Anterior Abdominal Wall |
| 48348 | | SPM IHD | 62 | Anatomy Prelab - Anterior Abdominal Wall |

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| | Identify the anatomical landmarks on the deep surface of the anterior abdominal wall and their relationships to the types of inguinal hernias. | | 81 | Anterior Abdominal Wall |
| 48372 | Given a case of a child with poor growth, use the information obtained from the history and physical examination to navigate the scheme diagram, using inductive reasoning to sequentially select the correct category and subcategory of disease pathology until arriving at a terminal category with a narrow list of possible diagnoses. Then, use focused questions and physical exam findings to deductively select the most likely diagnosis from this list. Finally, order the diagnostic study (or studies) with the best predictive power to confirm or dis-confirm your proposed diagnosis as the cause of poor growth. | SPM IHD | 20 | Child with Poor Growth |
| | | | 686 | Child with Poor Growth WCE |
| 48373 | For a given case of a child with poor growth, identify whether dietary intake is decreased or increased relative to the child's usual nutritional needs. For a child who has poor growth in spite of increased intake of calories, determine whether the child has a condition that increases their needs for calories, or whether the child has a condition that is causing loss of calories. | SPM IHD | 20 | Child with Poor Growth |
| | | | 686 | Child with Poor Growth WCE |
| 48374 | For a child with poor growth who has decreased intake of calories, discriminate whether the child is having difficulty swallowing, is limiting the intake of calories for some reason, or whether there is decreased access to nutrition because of a psychosocial situation. | SPM IHD | 20 | Child with Poor Growth |
| | | | 686 | Child with Poor Growth WCE |
| 48375 | For a child with poor growth who has increased needs for calories, determine whether the child has an increased rate of metabolism or a condition that is increasing serum cytokine levels. | SPM IHD | 20 | Child with Poor Growth |
| | | | 686 | Child with Poor Growth WCE |
| 48376 | For a child with poor growth who has increased losses of calories, discriminate whether the calories are being lost from the gastrointestinal tract, being lost in urine | SPM IHD | 20 | Child with Poor Growth |
| | | | 686 | Child with Poor Growth WCE |

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| | output, or whether a defect in carbohydrate or lipid metabolism is preventing calories from being utilized. | | | |
| 48377 | Describe the hard and soft palate. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48378 | Describe the location of the parotid salivary gland. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48379 | Identify three main neurovascular structures that traverse the parotid gland. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48380 | Identify the branches of the facial nerve in the face. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48381 | Identify some exemplary muscles of facial expression acting on the oral opening. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48382 | Identify the masticatory muscles and give their functions. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48383 | Define the boundaries and contents of the infratemporal fossa. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48384 | Identify the branches of the trigeminal nerve and their functions related to mastication and sensation from the face. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48385 | Identify the chorda tympani nerve and give its function. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48386 | Describe the structure and function of the temporomandibular joint. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48387 | Identify the muscles bordering the submandibular and paralingual spaces. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48389 | | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |

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| | Describe the submandibular and sublingual salivary glands and give their innervations. | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48390 | Describe the muscles of the tongue. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48391 | Describe the oral cavity, its oral vestibule and dental arches (including temporary and permanent dentitions). | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48392 | Review the carotid sheath and contents. | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48393 | Identify, trace and describe the general functions of cranial nerves IX (glossopharyngeal), X (vagus), XI (spinal accessory), XII (hypoglossal). | SPM GIS | 101 | Pre-Lab for Anatomy of Swallowing |
| | | | 105 | Anatomy and Embryology of Swallowing Lab |
| 48394 | Describe the pharynx, its anatomical architecture and action of its musculature during swallowing. | SPM GIS | 105 | Anatomy and Embryology of Swallowing Lab |
| 48413 | Know how to estimate delivery date based on fertilization and the date of the last normal menstrual period. | SPM IHD | 23 | Introduction to Development |
| 48414 | Know the events that occur in the first four weeks of development. | SPM IHD | 23 | Introduction to Development |
| 48415 | Know the stages in development of the early placenta. | SPM IHD | 23 | Introduction to Development |
| 48416 | Know the stages in development of the embryo. | SPM IHD | 23 | Introduction to Development |
| 48417 | Know the steps in development of the three germ layers. | SPM IHD | 23 | Introduction to Development |
| 48418 | Identify the prominent bony features of the orbit with included foramina and fissures. | SPM CSS | 331 | Pre-Lab: Eye and Orbit |
| | | | 335 | Eye and Orbit Anatomy Lab |
| 48419 | Describe the components of the eyelids with associated muscles, tarsal glands, connective tissue fascia and conjunctiva. | SPM CSS | 331 | Pre-Lab: Eye and Orbit |
| | | | 335 | Eye and Orbit Anatomy Lab |
| 48420 | | SPM CSS | 331 | Pre-Lab: Eye and Orbit |

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| | Identify the extraocular muscles, their function and innervation. | | 335 | Eye and Orbit Anatomy Lab |
| 48421 | Identify all sensory, motor and autonomic nerves of the orbit and trace their routes to and within the orbit. | SPM CSS | 331 | Pre-Lab: Eye and Orbit |
| | | | 335 | Eye and Orbit Anatomy Lab |
| 48422 | Identify branches of ophthalmic arteries and veins. | SPM CSS | 331 | Pre-Lab: Eye and Orbit |
| | | | 335 | Eye and Orbit Anatomy Lab |
| 48423 | Define the three parts of the ear and the function of each part. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 48424 | Describe each of the four walls of the middle ear cavity and identify deeper structures responsible for certain of their features. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 48425 | Describe the structure and actions of the tympanic membrane, the auditory ossicles, and the muscles of the middle ear. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 48426 | Trace the course of the facial nerve through the temporal bone and give the origin, course, and functional components of each of its intracranial branches. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 48427 | Identify the auditory tube and explain its function. | SPM CSS | 351 | Pre-Lab: Ear |
| | | | 358 | Ear Lab |
| 48432 | In the context of the language system, define and describe the functional organization of the cerebral cortex into primary unimodal, unimodal association, heteromodal association and supramodal regions/areas. | SPM CSS | 323 | Functional Anatomy of Aphasia |
| 48433 | Define Homeostasis and Homeodynamics. | SPM IHD | 8 | What is Normal and How is it Maintained? |
| 48434 | Differentiate between "equilibrium" and "steady state". | SPM IHD | 8 | What is Normal and How is it Maintained? |
| 48435 | Define and differentiate between negative and positive feedback and feed forward. | SPM IHD | 8 | What is Normal and How is it Maintained? |
| 48436 | Define feedback gain. | SPM IHD | 8 | What is Normal and How is it Maintained? |

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| 48439 | Define the terms internal and external related to the human body. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48440 | Describe the plasma, interstitial, and intracellular compartments and how electrolyte movement and fluid movement occurs between each. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48441 | Describe the overall water balance for the human body. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48442 | Define the effect of adding various fluids to the body and calculate the effect of these additions to various the body compartments. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48447 | Compare and contrast the mechanisms (filtration, diffusion, osmosis, facilitated diffusion, primary active transport, secondary active transport and vesicular transport) used to breach the barrier between compartments. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48448 | Explain why membranes and their proper function are important to life. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48459 | Describe the effect plasma protein content has on the movement of fluid into "third spaces." | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48460 | Explain the Starling Equation and describe how this affects our understanding of fluid movement in the human body. | SPM IHD | 9 | Body Compartments and Fluid Distribution |
| 48461 | Know the grading and other policies concerning biostatistics, epidemiology and reading the medical literature | SCI I | 64 | Introduction with Basic Probability |
| 48462 | Know the internal and external threats to validity in clinical research | SCI I | 64 | Introduction with Basic Probability |
| 48463 | Distinguish between trueness and precision | SCI I | 64 | Introduction with Basic Probability |
| 48464 | Know and be able to use basic probability notation | SCI I | 64 | Introduction with Basic Probability |
| 48465 | Know and use the addition rule of probability | SCI I | 64 | Introduction with Basic Probability |
| 48466 | Know and use the multiplication rule of probability | SCI I | 64 | Introduction with Basic Probability |

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| 48467 | Know the difference between independent and dependent probability | SCI I | 64 | Introduction with Basic Probability |
| 48468 | Know and calculate conditional probabilities | SCI I | 64 | Introduction with Basic Probability |
| 48469 | Know and use the multiplication rule for dependent variables | SCI I | 64 | Introduction with Basic Probability |
| 48471 | Compare and contrast gram-negative and gram-positive bacterial cell walls in terms of organization and components including: cytoplasmic and outer membrane, LPS, Lipid A, core polysaccharide, "O" polysaccharide, pore proteins, peptidoglycan, pentapeptide cross linkages, N-Acetyl glucosamine (NAG), N-Acetyl-muramic acid (NAM), peptidoglycan, teichoic acid and lipoteichoic acid. | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48473 | Describe the assembly of the cell wall and which stages in cell wall synthesis are targets of antibacterial agents including Beta-Lactam antibiotics, Bacitracin, Cycloserine, vancomycin. | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48474 | Define the different processes microorganisms use to obtain organic molecules and the mechanisms used to convert organic energy storage forms to forms that can be used to do work in the cell (ATP, NADH, FADH). | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48475 | Describe the phases of bacterial growth and be able to identify them on a bacterial growth curve. | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48476 | Describe sporulation and its medical significance. | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48477 | Define the four types of bacteria that are grouped based on their response to environmental oxygen and list at least two bacterial genera for each. [Obligate aerobe, Microaerophile, Obligate anaerobe, Facultative]. | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48478 | Describe what is meant by enriched, selective and differential media and the purpose of: brain or heart infusion media, sheep blood agar, chocolate agar, MacConkey agar, Mannitol Salts Agar, Eosin Methylene | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |

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| | Blue agar, Thayer-Martin agar, and Hektoen enteric agar. | | | |
| 48479 | Describe the basis for the following tests used to identify bacterial species: Catalase test, oxidase test, Urease test, coagulase test. | SPM IHD | 19 | Bacterial Cell Wall and Metabolism |
| 48503 | Explain main symptoms of the upper motor neuron dysfunction and compare it with the lower motor neuron syndrome; assess impairments in combined lesions (e.g. in ALS or in spinal hemisection) | SPM CSS | 32 | Motor and Sensory System |
| 48504 | Describe lower and upper motor neuron lesions in the brain stem caused by the damage to the facial nerve or the corticobulbar tract | SPM CSS | 32 | Motor and Sensory System |
| 48509 | Define common characteristics of all cerebellar lesions | SPM CSS | 286 | Motor System and Cerebellum |
| 48511 | Describe vermal and hemispheric lesions by using the knowledge of the cerebellar somatotopy and basic cerebellar circuitry | SPM CSS | 286 | Motor System and Cerebellum |
| 48512 | Identify the following surface features of the brain: cerebrum, cerebellum, brainstem; the lobes of the cerebrum (frontal, parietal, temporal, occipital and insular lobes); the longitudinal fissure; lateral sulcus (including opercula) and central sulcus; and the pre- and post-central gyri. | SPM CSS | 31 | Neuroanatomy: Part I Team A and B |
| | | | 285 | Neuroanatomy Pre-lab |
| | | | 291 | Neuroanatomy: Part I Team A |
| 48513 | Identify the three meninges (dura, arachnoid, and pia) and the middle meningeal artery | SPM CSS | 31 | Neuroanatomy: Part I Team A and B |
| | | | 285 | Neuroanatomy Pre-lab |
| | | | 291 | Neuroanatomy: Part I Team A |
| 48514 | Identify the three parts of the brainstem (midbrain, pons, and medulla oblongata), the 12 pairs of cranial nerves as they arise from the brain and brainstem, and the relative position of cranial nuclei. | SPM CSS | 31 | Neuroanatomy: Part I Team A and B |
| | | | 285 | Neuroanatomy Pre-lab |
| | | | 291 | Neuroanatomy: Part I Team A |
| 48515 | Identify each of the 12 pairs of cranial nerves in the three cranial fossae (anterior, middle and posterior), | SPM CSS | 31 | Neuroanatomy: Part I Team A and B |
| | | | 285 | Neuroanatomy Pre-lab |

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| | and the relative positions of their sensory ganglia (if appropriate). | | 291 | Neuroanatomy: Part I Team A |
| 48516 | Identify the surface features of the cerebellum, including the lateral hemispheres connected by the vermis, the lobes (anterior, posterior, and flocculonodular) and lobules (10, but not their names), cerebellar cortex and folia, peduncles (superior, middle, inferior), and the tonsils | SPM CSS | 31 | Neuroanatomy: Part I Team A and B |
| | | | 285 | Neuroanatomy Pre-lab |
| | | | 291 | Neuroanatomy: Part I Team A |
| 48517 | Identify the inner features of the cerebellum, including the 3 deep cerebellar nuclei (dentate, interposed, and fastigial). | SPM CSS | 31 | Neuroanatomy: Part I Team A and B |
| | | | 285 | Neuroanatomy Pre-lab |
| | | | 291 | Neuroanatomy: Part I Team A |
| 48536 | Describe the 3 common methods of gene transfer in bacteria. | SPM IHD | 26 | Microbial Genetics |
| 48537 | Describe the basic steps occurring during bacterial conjugation. | SPM IHD | 26 | Microbial Genetics |
| 48538 | Describe the basic steps occurring during bacterial generalized transduction and during specialized transduction. | SPM IHD | 26 | Microbial Genetics |
| 48539 | Define mutation and describe several types of common mutations. | SPM IHD | 26 | Microbial Genetics |
| 48540 | Describe the general characteristics of a transposon. | SPM IHD | 26 | Microbial Genetics |
| 48541 | List 5 mechanisms for antibiotic resistance in bacteria. | SPM IHD | 26 | Microbial Genetics |
| 48542 | Identify the ventricles and choroid plexuses and know the route of production and drainage of cerebrospinal fluid | SPM CSS | 295 | Neuroanatomy Pre-Lab 2 |
| | | | 298 | Neuroanatomy: Part II Team B |
| | | | 305 | Neuroanatomy: Part II Team A and B |
| 48543 | Identify the arterial supply of the brain | SPM CSS | 295 | Neuroanatomy Pre-Lab 2 |
| | | | 298 | Neuroanatomy: Part II Team B |
| | | | 305 | Neuroanatomy: Part II Team A and B |
| 48544 | | SPM CSS | 295 | Neuroanatomy Pre-Lab 2 |

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| | Identify the venous drainage of the brain including the cerebral veins and dural venous sinuses | | 298 | Neuroanatomy: Part II Team B |
| | | | 305 | Neuroanatomy: Part II Team A and B |
| 48545 | Identify the following features on axial and coronal slices of the brain: gray and white matter; cerebral cortex; internal capsule (anterior and posterior limbs and genu); thalamus; basal nuclei, including the striatum (caudate nucleus and lentiform nucleus (putamen and globus pallidus), ventral tegmental area, substantia nigra, nucleus accumbens, and the subthalamic nucleus; septum pellucidum; corpus callosum, hypothalamus, hippocampus, amygdala | SPM CSS | 295 | Neuroanatomy Pre-Lab 2 |
| | | | 298 | Neuroanatomy: Part II Team B |
| | | | 305 | Neuroanatomy: Part II Team A and B |
| 48549 | Describe where and how microorganisms enter the body and exit the body, including modes of transmission from one host to another. | SPM IHD | 52 | Strep Throat |
| 48550 | Define the term bacterial virulence factor and provide examples of virulence factors that contribute to the entry of bacterial pathogens into the host, adherence to host cells, invasiveness, and tissue destruction. | SPM IHD | 52 | Strep Throat |
| 48551 | Describe Koch’s postulates and how they are used. | SPM IHD | 52 | Strep Throat |
| 48552 | List four of the most common bacterial agents that cause sore throat/rhinorrhea. | SPM IHD | 52 | Strep Throat |
| 48553 | Describe the structural and biochemical characteristics shared by the Streptococcus genus and describe the hemolytic properties and the serologic (Lancefield) groups used to classify the Streptococci. | SPM IHD | 52 | Strep Throat |
| 48554 | List the virulence factors of Group A Strep including: protein F, lipoteichoic acid, M protein, Streptolysin O & S, Streptokinase, C5a peptidase, DNAses, and hyaluronidase and explain how each contributes to the pathogenicity of this organism. | SPM IHD | 52 | Strep Throat |
| 48555 | Categorize toxins produced by Streptococcus pyogenes, Diphtheria, Shigella, E. coli, cholera and B. anthracis as either: a) membrane-disrupting toxins, b) protein | SPM IHD | 52 | Strep Throat |

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| | synthesis inhibiting toxins or c) toxins that increase cAMP. | | | |
| 48556 | Briefly describe each of the following syndromes associated with Streptococcus pyogenes: Acute pharyngitis, impetigo, erysipelas, puerperal sepsis, invasive group A Streptococcal disease (Necrotizing fasciitis), Scarlet fever, acute rheumatic fever, acute glomerulonephritis, Streptococcal toxic shock syndrome. | SPM IHD | 52 | Strep Throat |
| 48557 | Distinguish between different types of data (nominal, ordinal, etc) | SCI I | 65 | Data and Descriptive Statistics |
| 48558 | Calculate the various types of central tendency in data (mean, median, etc) | SCI I | 65 | Data and Descriptive Statistics |
| 48559 | Calculate sample variance, standard deviations, and interquartile range | SCI I | 65 | Data and Descriptive Statistics |
| 48560 | Know the importance of inspecting data before beginning a statistical evaluation | SCI I | 65 | Data and Descriptive Statistics |
| 48561 | Recognize skewdness and kurtosis in a data distribution | SCI I | 65 | Data and Descriptive Statistics |
| 48562 | Know the key features of data in selecting a statistical analysis | SCI I | 65 | Data and Descriptive Statistics |
| 48563 | Know when to use parametric and non-parametric statistical tests | SCI I | 65 | Data and Descriptive Statistics |
| 48564 | Know the difference in power between parametric and non-parametric statistical tests | SCI I | 65 | Data and Descriptive Statistics |
| 48565 | Calculate risk and odds ratios and explain how they differ and when they are likely to differ from one another | SCI I | 66 | Introduction to Epidemiology: Measures of Association |
| 48566 | Calculate absolute difference and explain its relationship to risk and odds ratios | SCI I | 66 | Introduction to Epidemiology: Measures of Association |
| 48567 | Calculate attributable fraction | SCI I | 66 | Introduction to Epidemiology: Measures of Association |

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| 48568 | Calculate number needed to treat (harm) | SCI I | 66 | Introduction to Epidemiology: Measures of Association |
| 48569 | Explain how prevalence, cumulative incidence, and incident rate differ and be able to calculate them | SCI I | 66 | Introduction to Epidemiology: Measures of Association |
| 48570 | Be able to convey risk to a patient in a clear, patient-centered manner | SCI I | 66 | Introduction to Epidemiology: Measures of Association |
| 48595 | Describe the formation of the diaphragm, and describe developmental defects in its formation. | SPM GIS | 106 | Pre-Lab - Development of Body Cavities and Gut |
| 48596 | List the three primary germ layers and describe generally what tissues develop from each germ layer. | SPM GIS | 106 | Pre-Lab - Development of Body Cavities and Gut |
| 48597 | Describe the process of neurulation and describe defects that may arise when this process fails to proceed normally. | SPM GIS | 106 | Pre-Lab - Development of Body Cavities and Gut |
| 48598 | Describe the process of formation of the four body cavities: peritoneal, pericardial, and two pleural cavities. | SPM GIS | 106 | Pre-Lab - Development of Body Cavities and Gut |
| 48599 | Describe the process of lateral and craniocaudal body folding and the defects that may arise from failure of this process to proceed normally. | SPM GIS | 106 | Pre-Lab - Development of Body Cavities and Gut |
| 48602 | Be able to transfer data into a z-score | SCI I | 67 | P-Values and Confidence Intervals |
| 48603 | Explain the central limit theorem and its implication in selecting an appropriate statistical analysis | SCI I | 67 | P-Values and Confidence Intervals |
| 48604 | State how many observations fall within 1, 2, and 3 standard deviations | SCI I | 67 | P-Values and Confidence Intervals |
| 48605 | Define the meaning of a p-value | SCI I | 67 | P-Values and Confidence Intervals |
| 48606 | Explain when it is appropriate to perform a one or two tailed test | SCI I | 67 | P-Values and Confidence Intervals |
| 48607 | Calculate a standard error | SCI I | 67 | P-Values and Confidence Intervals |
| 48608 | Explain the difference between standard deviation and standard error and when each is used | SCI I | 67 | P-Values and Confidence Intervals |

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| 48609 | Understand confidence intervals and how to calculate a 95% confidence interval | SCI I | 67 | P-Values and Confidence Intervals |
| 48610 | Discuss the trade-offs between using confidence intervals and p-values and the preference for using confidence intervals in the medical literature | SCI I | 67 | P-Values and Confidence Intervals |
| 48611 | Explain the difference between statistical and clinical significance (effect size) | SCI I | 67 | P-Values and Confidence Intervals |
| 48612 | Be able to describe and identify cross-sectional studies | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48613 | Delineate the hierarchy of clinical studies but the importance of each type of study in this hierarchy | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48614 | Calculate expected frequencies for a cell as well as a chi square | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48615 | Calculate degrees of freedom | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48616 | Describe how a Fisher exact test is calculated | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48617 | Explain when to use a chi-square and when to use a Fisher exact test | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48618 | Discuss the importance of deciding on the statistical test before analyzing data | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48619 | Explain when to use a McNemar test and its primary advantage | SCI I | 69 | Cross-Sectional Studies, Chi Square, and Fisher |
| 48620 | Explain how a T test is calculated | SCI I | 70 | T Tests and Wilcoxon Rank Sum |
| 48621 | Delineate the assumptions to use a T test for a statistical analysis | SCI I | 70 | T Tests and Wilcoxon Rank Sum |
| 48622 | Explain the importance of assessing differences of variance before performing a T test | SCI I | 70 | T Tests and Wilcoxon Rank Sum |

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| 48623 | Explain the process in performing non-parametric tests, such as a Wilcoxon-Rank Sum test, in analyzing continuous data | SCI I | 70 | T Tests and Wilcoxon Rank Sum |
| 48624 | Explain when to select a T test or a non-parametric test to analyze continuous data | SCI I | 70 | T Tests and Wilcoxon Rank Sum |
| 48625 | Explain the advantage of using a paired T test | SCI I | 70 | T Tests and Wilcoxon Rank Sum |
| 48626 | Be able to define and identify a cohort study | SCI I | 71 | Cohort Studies |
| 48627 | Distinguish between a prospective and retrospective cohort study | SCI I | 71 | Cohort Studies |
| 48628 | Explain the advantages and disadvantages of cohort studies | SCI I | 71 | Cohort Studies |
| 48629 | Explain some of the elements to correctly perform a cohort study | SCI I | 71 | Cohort Studies |
| 48630 | Calculate rate ratios | SCI I | 71 | Cohort Studies |
| 48631 | Be able to define and identify a case-controlled study | SCI I | 73 | Case-Controlled Studies |
| 48632 | Describe the differences between a cohort study and a case-controlled study and what statistical approaches are available to each type of study | SCI I | 73 | Case-Controlled Studies |
| 48633 | Discuss the advantages and disadvantages of case-controlled studies | SCI I | 73 | Case-Controlled Studies |
| 48634 | Explain the importance of selecting an appropriate control group for these studies and options to consider | SCI I | 73 | Case-Controlled Studies |
| 48635 | Discuss the advantages and disadvantages of using matching in a case-controlled study | SCI I | 73 | Case-Controlled Studies |
| 48636 | Discuss the elements of a nested case-controlled study | SCI I | 73 | Case-Controlled Studies |
| 48637 | Delineate the three elements of a confounding variable | SCI I | 74 | Confounding and Effect Modification |
| 48638 | Explain the difference between positive and negative confounding | SCI I | 74 | Confounding and Effect Modification |

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| 48639 | Delineate design and classical analytic strategies to minimize confounding | SCI I | 74 | Confounding and Effect Modification |
| 48640 | Explain how to effectively control for unmeasured variables | SCI I | 74 | Confounding and Effect Modification |
| 48641 | Delineate the advantages and disadvantages of restriction and matching to control for confounding | SCI I | 74 | Confounding and Effect Modification |
| 48642 | Explain the difference between a crude/unadjusted and an adjusted odds ratio | SCI I | 74 | Confounding and Effect Modification |
| 48643 | Be able to perform a stratified analysis and determine if there is confounding | SCI I | 74 | Confounding and Effect Modification |
| 48644 | Explain the difference between confounding and effect modification | SCI I | 74 | Confounding and Effect Modification |
| 48645 | Explain how to assess for effect modification and how to report the results if effect modification is found | SCI I | 74 | Confounding and Effect Modification |
| 48646 | Explain the difference between bias and chance | SCI I | 75 | Bias |
| 48647 | Explain the difference between bias and confounding | SCI I | 75 | Bias |
| 48648 | Explain and be able to detect various forms of bias to include: recall bias, interviewer bias, social desirability bias, selection bias, misclassification bias, publication bias, lead-time bias, response bias | SCI I | 75 | Bias |
| 48649 | Be able to critically analyze clinical research articles | SCI I | 76 | Literature Review |
| | | SCI II | 1014 | Literature Review 2 |
| | | SCI III | 630 | Literature Review 11/21/2016 |
| 48650 | Demonstrate ability to integrate what has been learned in the course | SCI I | 76 | Literature Review |
| | | SCI II | 1014 | Literature Review 2 |
| | | SCI III | 630 | Literature Review 11/21/2016 |
| 48651 | Calculate sensitivities, specificities, positive predictive values, and negative predictive values | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |

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| 48652 | Explain the differences between sensitivities, specificities, positive predictive values, and negative predictive values | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48653 | Explain the effect disease prevalence has on sensitivities, specificities, positive predictive values, and negative predictive values | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48654 | Be able to express sensitivities, specificities, positive predictive values, and negative predictive values in terms of probabilities | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48655 | Calculate positive and negative predictive values if sensitivities, specificities, and disease prevalence are known | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48656 | Explain the relationship between probability and odds | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48657 | Explain the relationship between pretest odds, posttest odds, and the likelihood ratio | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48658 | Explain the elements of ROC curves, how to interpret them, and their importance | SCI I | 77 | Sensitivities, Specificities, and Predictive Values |
| 48659 | Explain hypothesis testing and delineate the elements of good hypotheses | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48660 | Explain and be able to identify type I and type II errors | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48661 | Delineate the four phases of clinical trials | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48662 | Delineate the advantages and disadvantages of randomized controlled trials | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48663 | Explain the importance of equipoise | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48664 | | SCI I | 78 | Randomized Controlled Trials I |

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| | Explain the importance of beneficence, justice, respect, and privacy in clinical trials | | 79 | Randomized Clinical Trials II |
| 48665 | Explain the primary role of an institutional review board (IRB) | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48666 | Explain the elements of informed consent | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48667 | Be able to use the Bonferroni method to correct for multiple hypothesis testing | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48668 | Explain the difference between primary and secondary end points | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48669 | Explain the importance of a protocol document and the need to register clinical trials | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48670 | Explain the importance of a CONSORT diagram | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48671 | Delineate what data you need to calculate the sample size for a clinical trial and what changes would enable you to use a smaller sample size | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48672 | Delineate potential biases in randomized controlled trials and strategies to address them | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48673 | Explain the importance of intent-to-treat analyses | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48674 | Explain the role of surrogate end points and their potential limitations in randomized controlled trials | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |
| 48675 | Describe the role of data safety and monitoring boards in randomized controlled trials | SCI I | 78 | Randomized Controlled Trials I |
| | | | 79 | Randomized Clinical Trials II |

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| 48676 | Explain the use and importance of the F Statistic in ANOVA | SCI I | 115 | ANOVA and Kruskal-Wallis |
| 48686 | Describe the formation and development of the pharyngeal arches, pouches, and clefts, and the types of congenital malformations that may occur if their normal development is disrupted. | SPM GIS | 102 | Development of Head and Neck |
| 48687 | Describe the development of the neurovascular supply of the pharyngeal arches. | SPM GIS | 102 | Development of Head and Neck |
| 48688 | Describe the fate of neural crest in the head and neck and the congenital malformations associated with neurocristopathy in the head and neck. | SPM GIS | 102 | Development of Head and Neck |
| 48689 | Explain the discrepancy between the external lobulation of the liver and the internal segmentation of the liver based on the branching of the intrahepatic arteries, veins, and ducts. | SPM GIS | 133 | Liver LAB Team A and B |
| | | | 150 | Liver Lab Team B |
| | | | 691 | Pre-Lab - Liver |
| 48690 | Trace the pathway of bile from the liver and gallbladder to the entry of the bile duct and pancreatic ducts into the 2nd part of the duodenum. | SPM GIS | 133 | Liver LAB Team A and B |
| | | | 150 | Liver Lab Team B |
| | | | 691 | Pre-Lab - Liver |
| 48693 | Outline the pathways that impinge on the vomiting center including neurotransmitter-receptor interactions and be able to define the main neurotransmitters of the vomiting reflex. | SPM GIS | 112 | Gastric Motility and Emptying |
| 48694 | Describe the neurologic control of the swallowing reflex. | SPM GIS | 108 | Physiology of the Mouth and the Swallowing Reflex |
| 48697 | Explain the metabolic consequences of prolonged and excessive vomiting, particularly as it pertains to fluid, electrolytes, and acid-base disturbances. | SPM GIS | 112 | Gastric Motility and Emptying |
| 48755 | Building on your understanding of signal transduction processes within rod cells that underlie vision, explain the biochemical basis of (i) visual disturbances in patients undergoing pharmacotherapy for erectile dysfunction; (ii) night blindness and xerophthalmia in | SPM CSS | 347 | Medical Biochemistry of Vision Loss |

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| | vitamin A deficiency; and (iii) retinitis pigmentosa associated with rhodopsin mutants. | | | |
| 48756 | Describe the following lysosomal storage diseases in terms of general classification, biochemical defect, accumulated substrate, mode of inheritance and clinical presentation: Fabry disease, Gaucher Disease, Krabbe Disease, Metachromatic Leukodystrophy, Niemann-Pick Disease, Sandhoff Disease, Tay-Sachs Disease. | SPM CSS | 347 | Medical Biochemistry of Vision Loss |
| 48766 | Define SAAG and explain how it is used to evaluate ascites formation. | SPM GIS | 135 | Ascites Development |
| 48767 | If given appropriate information, be able to predict the etiology of ascites. | SPM GIS | 135 | Ascites Development |
| 48777 | Describe methods of specimen collection for parasite exam and the timing of collection in relation to other diagnostic studies and patient symptoms. | SPM GIS | 160 | Parasitic Causes of Diarrhea |
| 48778 | Describe methods of examination for parasites to include microscopic methods, appropriate stains, and serologic studies when appropriate. | SPM GIS | 160 | Parasitic Causes of Diarrhea |
| 48779 | Recognize the contribution of the parasite life cycle, intermediate hosts, and definitive hosts to the development of a parasitic infection in humans. | SPM GIS | 129 | Abdominal Discomfort - Flukes and Worms |
| 48780 | Given a picture of a parasite or its egg, correlate with the most likely source of the infection and where in the world that infection might be most common for the following parasites: <i>Ascaris lumbricoides</i> , <i>Toxocara</i> sp., <i>trichuris trichuriae</i> , <i>Enterobius vermicularis</i> , <i>Taenia solium</i> , <i>Hymenolepis nana</i> . | SPM GIS | 129 | Abdominal Discomfort - Flukes and Worms |
| 48782 | Interpret the appearance of growth on the following differential media: MacConkey (Mac), eosin methylene blue (EMB), Kligler Iron Agar (KIA), Urea broth, Simmons Citrate Media, SIM media. | SPM GIS | 155 | Enterobacteriaceae and the Enteric viruses |
| 48790 | Recognize the features of the rectum that differentiate it from the colon. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |

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| 48791 | Describe the point at which the anal canal begins. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48792 | Describe the internal features of the anal canal, and determine the point at which its lining changes from cutaneous to mucosal. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48793 | Recall the lymph node groups that drain the rectum and anal canal. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48794 | Organize blood and nerve supply to the rectum and anal canal. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48795 | Describe the formation of the two sciatic foramina. List the muscles, nerves, and vessels which pass through each. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48796 | Demonstrate the origins of the piriformis and obturator internus muscles and describe two specializations of the obturator fascia. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48797 | Identify the pelvic diaphragm and differentiate its components. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| 48798 | Demonstrate the formation of the sacral plexus, its relationship to the piriformis muscle and gluteal vessels, and its pelvic splanchnic nerves. | SPM GIS | 168 | Rectum, Anal Canal Team A & B |
| | | | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |

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| | | | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 48799 | Identify and describe the inferior hypogastric (pelvic) plexus and its connections to the superior hypogastric plexus via the hypogastric nerves. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |
| 48800 | Identify and describe the sacral sympathetic trunks and the sacral sympathetic nerves. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |
| 48801 | Trace the sympathetic and parasympathetic nerve supply to any pelvic organ, listing the location of the preganglionic cell body, the course of preganglionic fibers, the location of the postganglionic cell body, and the course of postganglionic fibers. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |
| 48802 | Trace the skeletal and ligamentous boundaries of the perineum, and define the anal and urogenital triangles. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |
| 48803 | Describe the position and boundaries of the ischioanal fossa. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |
| 48804 | Describe the structure, contents, and course of the pudendal canal. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |
| 48805 | Differentiate between the internal and external anal sphincters in structure and function. | SPM GIS | 163 | Pre-Lab - Rectum |
| | | | 164 | Rectum & Anal Canal - Team B |
| | | | 168 | Rectum, Anal Canal Team A & B |

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| 48823 | Correctly use dermatologic terms to describe the morphology skin lesions. | SPM IMN | 176 | Skin Abnormalities Part 1: Rash - Non-vesiculobullous (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| 48824 | For patients presenting with a rash, use exam findings to categorize the rash as either eczematous, papulosquamous, vesiculobullous, pustular, reactive, or vascular. | SPM IMN | 176 | Skin Abnormalities Part 1: Rash - Non-vesiculobullous (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| 48825 | Based on the patient risk factors, clinical history, and physical findings, determine which sub-category of rash is most likely, and using detailed findings determine which diagnosis is most likely. | SPM IMN | 176 | Skin Abnormalities Part 1: Rash - Non-vesiculobullous (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| 48826 | Be able to outline the basic clinical characteristics of the conditions included in the scheme diagram. | SPM IMN | 176 | Skin Abnormalities Part 1: Rash - Non-vesiculobullous (Scheme Presentation) |
| | | | 182 | Skin Abnormalities Part 2: Vesiculobullous Rash; Dis. of Hair & Nails (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| | | | 188 | Skin Abnormalities Part 3: Skin Tumors; Disorders of Pigmentation Scheme Presentation |
| | | | 194 | Hair and Nail Disorders WCE |
| 48827 | In patients with a vesiculobullous rash, use findings to categorize the rash as having either fragile, easily ruptured (intra-epithelial) blisters or tense, intact (sub-epithelial) blisters. | SPM IMN | 182 | Skin Abnormalities Part 2: Vesiculobullous Rash; Dis. of Hair & Nails (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| 48828 | In patients with disorders of pigmentation, use findings to categorize whether the pigment changes are localized or diffuse, and then whether they are congenital or acquired. | SPM IMN | 188 | Skin Abnormalities Part 3: Skin Tumors; Disorders of Pigmentation Scheme Presentation |
| | | | 194 | Hair and Nail Disorders WCE |

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| 48829 | For patients presenting with a localized swelling, growth, or nodule in the skin, use findings to determine whether the skin surface has been disrupted or remains intact. Use clinical characteristics and change in the lesion over time to distinguish benign lesions from pre-malignant or malignant tumors of the skin. | SPM IMN | 188 | Skin Abnormalities Part 3: Skin Tumors; Disorders of Pigmentation Scheme Presentation |
| | | | 194 | Hair and Nail Disorders WCE |
| 48830 | In patients with hair loss, use findings to distinguish between diffuse and localized alopecia, and use findings to further determine whether the skin in the involved areas is scarred or not scarred. | SPM IMN | 182 | Skin Abnormalities Part 2: Vesiculobullous Rash; Dis. of Hair & Nails (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| 48831 | In patients with abnormalities of the fingernails, use physical exam findings to discriminate between abnormalities of the nail plate, nail bed, or nail fold. | SPM IMN | 182 | Skin Abnormalities Part 2: Vesiculobullous Rash; Dis. of Hair & Nails (Scheme Presentation) |
| | | | 187 | Rash and Skin Lesions - WCE |
| 48849 | Describe the characteristic features of gonococcal arthritis including the etiology | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48850 | Describe the bacteria and fungi most commonly associated with chronic monoarticular joint pain | SPM IMN | 220 | Pathology, Immunology, and Microbiology of Joint Pain |
| 48851 | Identify and give the function of the significant parts of a typical vertebra and associated ligaments. | SPM IMN | 180 | Deep Back Lab |
| 48852 | Identify the specialized vertebrae. | SPM IMN | 180 | Deep Back Lab |
| 48853 | Describe the spine, its curvatures, and vertebral column movements. | SPM IMN | 180 | Deep Back Lab |
| 48854 | Identify the coverings and the supporting structures of the spinal cord. Give the point of the termination of the spinal cord and the dural sac. | SPM IMN | 180 | Deep Back Lab |
| 48855 | Identify the terminal specialties of the cord, their relation to lumbar puncture, the nerve rootlets, and blood supply. | SPM IMN | 180 | Deep Back Lab |

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| 48856 | Describe the anatomy of the cord and vertebrae as related to fractures, dislocations, and possible cord injury. | SPM IMN | 180 | Deep Back Lab |
| 48857 | Describe or illustrate the location and function of the basic somatic motor and sensory neurons on a cross section of the spinal cord. | SPM IMN | 180 | Deep Back Lab |
| 48858 | Describe a typical spinal nerve, the somatic motor and sensory components found in any portion, and their distribution. | SPM IMN | 180 | Deep Back Lab |
| 48859 | Describe conceptually how any region of the thoracic wall gets its blood supply and innervation. | SPM IMN | 180 | Deep Back Lab |
| 48860 | Define and explain the significance of dermatomes. | SPM IMN | 180 | Deep Back Lab |
| 48861 | Explain the difference between superficial and deep (true) back muscles | SPM IMN | 180 | Deep Back Lab |
| 48862 | Describe the pathogenesis, clinical features, and morphology of urticaria | SPM IMN | 183 | Skin Pathology I |
| 48863 | Describe the pathogenesis, clinical features, and morphology of acute eczematous dermatitis | SPM IMN | 183 | Skin Pathology I |
| 48864 | Describe the pathogenesis, clinical features, and morphology of erythema multiforme and Stevens-Johnson syndrome | SPM IMN | 183 | Skin Pathology I |
| 48865 | Describe the pathogenesis, clinical features, and morphology of psoriasis | SPM IMN | 183 | Skin Pathology I |
| 48866 | Describe the pathogenesis and clinical features of seborrheic dermatitis | SPM IMN | 183 | Skin Pathology I |
| 48867 | Describe the pathogenesis, clinical features, and morphology of lichen planus | SPM IMN | 183 | Skin Pathology I |
| 48868 | Describe the pathogenesis, clinical features, and morphology of acne vulgaris | SPM IMN | 183 | Skin Pathology I |
| 48869 | Describe the pathogenesis, clinical features, and morphology of rosacea | SPM IMN | 183 | Skin Pathology I |

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| 48870 | Describe the pathogenesis, clinical features, and morphology of erythema nodosum and erythema induratum | SPM IMN | 183 | Skin Pathology I |
| 48872 | Describe the genome composition and virion structure of the Herpesvirus family, and describe the clinical features, pathogenesis, and morphology of the associated skin infections | SPM IMN | 186 | Skin Pathology Part II |
| 48873 | Describe the genome composition and virion structure of the Human Papilloma Virus family, and describe the clinical features, pathogenesis, and morphology of the associated skin infections | SPM IMN | 186 | Skin Pathology Part II |
| 48874 | Describe the genome composition and virion structure of the Poxvirus family, and describe the clinical features, pathogenesis, and morphology of the associated skin infections | SPM IMN | 186 | Skin Pathology Part II |
| 48875 | Describe the superficial venous drainage of the lower limb, its relation to the deep veins and the significance of perforating veins. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48876 | Describe the lymphatic drainage of the lower limb and areas draining into the superficial and deep inguinal lymph nodes. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48877 | Identify the major cutaneous nerves of the lower limb, their source and the areas they innervate. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48878 | Define the regional deep fascias of the lower limb and their regional specialization such as iliotibial tract, etc. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48879 | Define the femoral triangle and adductor canal, their contents and the spatial relationships of the structures passing through them. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48880 | Identify the femoral and obturator arteries and veins and their branches. Give their areas of distribution. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48881 | | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |

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| | Identify the muscles of the anterior and medial thigh, including their nerve and vascular supply. | | 729 | Anterior & Medial Thigh - Team A |
| 48882 | Describe their role in locomotion. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48883 | Predict what nerve or nerves are involved and the probable level of the injury, given a loss of function and/or cutaneous sensation involving the anterior and medial thigh regions. | SPM IMN | 191 | Anterior Medial Thigh - Team A & B |
| | | | 729 | Anterior & Medial Thigh - Team A |
| 48884 | Describe the anatomy of the lateral femoral (hip) region, including the gluteal muscles, their nerve supply, and their actions in locomotion. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 732 | Hip and Posterior Thigh - Team B |
| 48885 | Identify the sacral plexus, its general plan, and its major branches in the hip and posterior thigh regions. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 732 | Hip and Posterior Thigh - Team B |
| 48886 | Describe the muscular anatomy of the posterior thigh, its muscles, their nerve supply, and their actions in locomotion. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 732 | Hip and Posterior Thigh - Team B |
| 48887 | Predict the functional loss and cutaneous areas affected by a given nerve injury to the hip and posterior thigh region; or conversely, given a functional and/or cutaneous loss, be able to predict which nerve or nerves are involved and the probable level of the injury. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 732 | Hip and Posterior Thigh - Team B |
| 48888 | Define the popliteal fossa and give the spatial relationships of its contents. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 732 | Hip and Posterior Thigh - Team B |
| 48889 | Recall the general plan of the collateral circulation at the hip and knee. | SPM IMN | 198 | Hip Posterior Thigh - Team A & B |
| | | | 732 | Hip and Posterior Thigh - Team B |
| 48890 | Identify and describe the areas of distribution of the major cutaneous nerves of the upper limb. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48891 | Identify the major superficial veins of the upper limb. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |

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| | | | 733 | Shoulder and Axilla - Team B |
| 48892 | Describe the general gross features of the breast, including its neurovascular supply and lymphatic drainage. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48893 | Identify the muscles and fascia of the pectoral region and their neurovascular supply. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48894 | Describe the lymphatic drainage of the upper limb and the major lymphatic node groups of the axilla. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48895 | Describe the axilla as a space, its boundaries and its contents. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48896 | Describe the brachial plexus, including its parts and branches, and their functions. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48897 | Correlate functional and cutaneous losses with injury to any site in the brachial plexus or its branches. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48898 | Identify the axillary artery and vein, their major branches, and their relationship to structures within the axilla. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48899 | Identify the muscles of the posterior shoulder and describe the rotator cuff muscles, together with their neurovascular supply. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48900 | Identify the bony features of the scapula, clavicle, humerus, radius and ulna as given in the lab manual. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48901 | Identify the contents of each of the three compartments of the arm and their functional significance. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48902 | Correlate any fractures of the humerus with functional disruptions of associated muscular and neurovascular structures. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |

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| 48903 | Describe the movements of the shoulder and elbow joints. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48904 | Identify the spatial relationships of all muscular and neurovascular structures within the cubital fossa. | SPM IMN | 227 | Shoulder and Axilla - Team A & B |
| | | | 733 | Shoulder and Axilla - Team B |
| 48905 | Identify the prominent features of the humerus, ulna, radius, carpals, metacarpals and phalanges of the associated extensor and flexor compartments as given in the lab manual. | SPM IMN | 228 | Forearm - Team A |
| | | | 232 | Upper Limb 2 - Forearm - Team A & B |
| 48906 | Identify the extensor and flexor compartments of the forearm and hand, and their muscles, nerves, and vessels. | SPM IMN | 228 | Forearm - Team A |
| | | | 232 | Upper Limb 2 - Forearm - Team A & B |
| 48907 | Correlate any fractures or deep cuts of the forearm or hand with functional disruptions of associated muscular or neurovascular structures. | SPM IMN | 228 | Forearm - Team A |
| | | | 232 | Upper Limb 2 - Forearm - Team A & B |
| 48908 | Describe the movements of elbow, wrist, and finger joints. | SPM IMN | 228 | Forearm - Team A |
| | | | 232 | Upper Limb 2 - Forearm - Team A & B |
| 48909 | Identify position of tendons and associated bursae beneath the extensor retinaculum and palmar carpal ligament. | SPM IMN | 228 | Forearm - Team A |
| | | | 232 | Upper Limb 2 - Forearm - Team A & B |
| 48910 | Describe the cutaneous innervation of the hand. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |
| 48911 | Describe the position of tendons, associated bursae, nerves, and vessels beneath the palmar carpal ligament. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |
| 48912 | Identify the prominent features of carpals, metacarpals and phalanges associated with the hand as listed in the lab manual. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |
| 48913 | Define the thenar, hypothenar, central, and adductor-interosseous compartments of the hand and the functional significance of each. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |

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| 48914 | Correlate any fractures or deep cuts of the hand with functional disruptions of associated muscular and neurovascular structures. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |
| 48915 | Describe the movements of the fingers and thumb. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |
| 48916 | Describe the collateral circulation of the hand. | SPM IMN | 243 | Hand - Teams A & B |
| | | | 735 | Hand - Team B |
| 48929 | Describe different fracture types (including common pediatric fractures) and discuss their healing stages along with some associated common complications. Describe the features suspicious of abusive trauma. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48930 | Define osteoporosis and describe its etiology, pathogenesis, pathologic findings (gross and microscopic), clinical features/diagnostic findings and treatment/management. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48931 | Define osteogenesis imperfecta and describe its etiology, pathogenesis, clinical features/diagnostic findings and treatment/management. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48932 | Differentiate between osteitis fibrosa cystica and renal osteodystrophy and describe etiology, pathogenesis, pathologic findings (gross and microscopic), clinical features/diagnostic findings, and treatment/management. of osteitis fibrosa cystica. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48933 | Differentiate between rickets and osteomalacia and describe their pathogenesis, clinical features/diagnostic findings and treatment/management. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48934 | Describe the epidemiology, pathogenesis, clinical features/diagnostic findings and treatment/management of scurvy. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48935 | Describe osteopetrosis and explain its pathogenesis, clinical features/diagnostic findings, pathologic findings (gross and microscopic), and treatment/management. | SPM IMN | 202 | Pathology of Bone Fractures |

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| 48936 | Define Paget’s disease and describe its etiology, pathogenesis, pathologic findings (gross and microscopic), clinical features/diagnostic findings and treatment/management. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48937 | Describe the etiology, common causative organisms (along with their specific clinical association if any), pathogenesis, pathologic findings (gross and microscopic), clinical features/diagnostic findings and treatment/management of osteomyelitis. Describe the epidemiology, pathogenesis and clinical features associated with mycobacterial osteomyelitis. | SPM IMN | 202 | Pathology of Bone Fractures |
| 48951 | Explain the difference between the correlation coefficient and the slope of the correlation | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48952 | Explain the null hypothesis in a correlation analysis | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48953 | Delineate the assumptions for a correlation analysis | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48954 | Explain when to use a Spearman versus a Pearson correlation coefficient | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48955 | Interpret Beta 0 and Beta 1 in a simple regression analysis | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48956 | Identify other terms used for independent and dependent variables | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48957 | Delineate the assumptions for a linear regression analysis | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48958 | Explain the danger in extrapolating a regression model beyond the data | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48959 | Explain how indicator (dummy) variables are used and interpreted | SCI II | 116 | Correlation and Univariable Linear Regression |
| 48960 | Outline a simple multivariable linear regression formula | SCI II | 117 | Multivariable Linear Regression |

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| 48961 | Delineate the assumptions for a multivariable regression analysis | SCI II | 117 | Multivariable Linear Regression |
| 48962 | Show how a multivariable regression analysis can adjust for confounding | SCI II | 117 | Multivariable Linear Regression |
| 48963 | Correctly interpret the beta coefficient in a multivariable regression analysis | SCI II | 117 | Multivariable Linear Regression |
| 48964 | List some of the diagnostics that should be done to assess a linear regression analysis | SCI II | 117 | Multivariable Linear Regression |
| 48965 | Correctly interpret the r ² in a multivariable regression analysis | SCI II | 117 | Multivariable Linear Regression |
| 48966 | Explain when to perform a logistic rather than a linear regression analysis | SCI II | 118 | Logistic Regression |
| 48967 | Explain how to convert a beta coefficient into an odds ratio | SCI II | 118 | Logistic Regression |
| 48968 | Explain how to calculate a 95% CI from a beta coefficient and standard error | SCI II | 118 | Logistic Regression |
| 48969 | Show how logistic regression can adjust for confounding | SCI II | 118 | Logistic Regression |
| 48970 | Show how logistic regression can adjust for effect modification | SCI II | 118 | Logistic Regression |
| 48971 | Delineate the differences between linear and longitudinal regression analysis | SCI II | 118 | Logistic Regression |
| 48972 | Define censored data | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48973 | Explain the difference between left and right censored data | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48974 | Explain how to construct and read a Kaplan-Meier curve | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48975 | Explain the null hypothesis of a log-rank test | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48976 | Define a hazard function | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |

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| 48977 | Explain the relationship between the hazard function and the survivor function | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48978 | Explain why Kaplan-Meier curves are often included when Cox Regressions are performed | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48979 | Explain the importance of including number at risk in a Kaplan-Meier curve | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48980 | Explain the relationship between the hazard ratio (HR) and the beta coefficient | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48981 | Show how Cox regression can adjust for confounding | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48982 | Show how Cox regression can adjust for effect modification | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48983 | Delineate the assumptions needed to perform Cox regression analysis | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48984 | Explain a time-dependent variable | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48985 | State the variable that is most important to consider in assessing for over-fitting a Cox regression model | SCI II | 119 | Time: Kaplan-Meier and Cox Regression |
| 48986 | Explain how predictive models may be built differently based upon the use of the model | SCI II | 130 | Clinical Prediction Rules |
| 48987 | Explain the pros and cons of using algorithms to build predictive models. | SCI II | 130 | Clinical Prediction Rules |
| 48988 | Delineate some of the pros and cons of these clinical models: multivariable regression models, integer-based scoring models, stratification, recursive partitioning, and neural networks | SCI II | 130 | Clinical Prediction Rules |
| 48989 | Explain how to evaluate a clinical prediction rule based on study population, discrimination, calibration, parsimony, validity, and utility | SCI II | 130 | Clinical Prediction Rules |

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| 48990 | Outline the differences between the expert review, meta-analyses, comparative effectiveness, and guidelines | SCI II | 132 | Combining Studies |
| 48992 | Outline the steps to perform a meta-analysis and explain how each are accomplished | SCI II | 132 | Combining Studies |
| 48993 | List potential sources of bias in a meta-analysis | SCI II | 132 | Combining Studies |
| 48994 | Explain the importance of assessing for homogeneity/heterogeneity in meta-analyses and the difference in how the results are presented for each approach | SCI II | 132 | Combining Studies |
| 48995 | Explain the principle underlying a funnel plot and how to interpret a funnel plot | SCI II | 132 | Combining Studies |
| 48996 | Explain the importance of sensitivity analyses and some examples | SCI II | 132 | Combining Studies |
| 48997 | Explain the difference in presenting individual/traditional v cumulative results and an important implication for future studies | SCI II | 132 | Combining Studies |
| 48998 | Explain why guidelines can be valuable and their limitations. | SCI II | 132 | Combining Studies |
| 48999 | Describe the Delphi approach. | SCI II | 132 | Combining Studies |
| 49000 | Outline the levels of evidence and the grades of recommendations | SCI II | 132 | Combining Studies |
| 49001 | Outline characteristics of good survey questions | SCI II | 136 | Survey Methodologies |
| 49002 | List the stages to answering a question. | SCI II | 136 | Survey Methodologies |
| 49003 | List some ways of evaluating questions. | SCI II | 136 | Survey Methodologies |
| 49004 | Identify the unit of analysis in a survey. | SCI II | 136 | Survey Methodologies |
| 49005 | Explain how homogeneity of items are assessed. | SCI II | 136 | Survey Methodologies |
| 49006 | Indicate the desired range for a Cronbach's alpha and what can artificially increase its value. | SCI II | 136 | Survey Methodologies |

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| 49007 | Identify the difference between a factor analysis and a principal component analysis | SCI II | 136 | Survey Methodologies |
| 49008 | Outline the steps in performing a principal component analysis | SCI II | 136 | Survey Methodologies |
| 49009 | Define validity | SCI II | 136 | Survey Methodologies |
| 49010 | Define these types of validity: face, construct, criterion, construct, discriminant, discrimination, convergent, and predictive | SCI II | 136 | Survey Methodologies |
| 49011 | In assessing change, outline the differences among power, responsiveness, and sensitivity to change | SCI II | 136 | Survey Methodologies |
| 49012 | Define implicit theory of change and response shift | SCI II | 136 | Survey Methodologies |
| 49013 | List some potential sources of bias in surveys | SCI II | 136 | Survey Methodologies |
| 49014 | Outline and describe the steps in scale development | SCI II | 136 | Survey Methodologies |
| 49015 | Explain the importance of the non-response rate | SCI II | 136 | Survey Methodologies |
| 49080 | Recognize the 3 families of virus that may be associated with weakness or paralysis and list at least one virus from each family that may be associated with this clinical presentation. | SPM IMN | 255 | Microbiology of Weakness |
| 49081 | Outline the morphologic structure, genomic structure, replication, and pathogenesis of the polio virus, West Nile virus, and HTLV-1 virus | SPM IMN | 255 | Microbiology of Weakness |
| 49083 | Compare the neurologic symptoms caused by west nile virus to that of polio virus and HTLV-1 virus and correlate the symptoms to the site of the lesion the virus causes (upper vs. lower motor neuron). | SPM IMN | 255 | Microbiology of Weakness |
| 49084 | Identify common characteristics of bacterial organisms (Clostridium botulinum, Clostridium tetani, and Corynebacterium diphtheriae) associated with weakness or paralysis due to toxin production to include Gram stain appearance, spore formation, usual | SPM IMN | 255 | Microbiology of Weakness |

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| | sites of infection, and effects of the toxins they produce. Be able to identify the mechanism of action of the toxin, as identified in biochemistry and neuroscience sessions. | | | |
| 49120 | Describe the aspects of HIV transmission, development of immune deficiency, diagnosis, and diseases/opportunistic infections characteristic of AIDS in children | SPM MHD | 1261 | Childhood Immune Deficiency |
| 49121 | Define and describe components of the sexual history which includes an accepting and affirming environment by not assuming sexual orientation or gender identity (LGBTQ) and normal human sexual response. | SPM REP | 450 | Sexual History and Sexual Dysfunction |
| 49122 | Define, distinguish and correctly apply the common medical terms used to describe and identify the various sexual dysfunctions, paraphilias and gender dysphoria. | SPM REP | 450 | Sexual History and Sexual Dysfunction |
| 49123 | Identify the parts of the male urethra. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| 49124 | Describe the relationships of the bladder to other pelvic organs. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| 49125 | Identify the superficial features of the external genitalia in the male. | SPM REP | 443 | Male Reproductive Anatomy LAB |
| | | | 445 | Pre-Lab: Male Reproductive |
| 49126 | Demonstrate the origins of the piriformis and obturator internus muscles and describe two specializations of the obturator fascia. | SPM REP | 464 | Pre-Lab: Pelvic Neurovasculature and Pelvic Floor |
| | | | 467 | Pelvic Neurovasculature and Pelvic Floor Lab |
| 49127 | Identify in a clinical setting the disorders which are related to primary hemostasis, the mechanism involved in the disorders, the appropriate diagnostic tests, and the appropriate therapeutic options. | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |
| 49128 | Identify in a clinical setting the disorders which are related to secondary hemostasis, the mechanism | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |

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| | involved in the disorders, the appropriate diagnostic tests, and the appropriate therapeutic options. | | | |
| 49129 | Identify in a clinical setting the disorders which involve anticoagulants and the fibrinolytic systems, the mechanisms involved, the appropriate diagnostic tests, and the appropriate therapeutic options. | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |
| 49130 | Identify conditions predisposing to DVT and PE; differentiate these conditions from genetic causes of hypercoagulability (protein C deficiency, protein S deficiency, ATIII deficiency) using appropriate laboratory tests and identify appropriate therapies of these conditions. | SPM HEM | 1092 | Coagulation Abnormalities Integrated session |
| 49131 | Given clinical scenarios, choose the most appropriate therapeutic options as they relate to the pathogenesis of male sexual dysfunctions: erectile dysfunction and premature ejaculation | SPM REP | 450 | Sexual History and Sexual Dysfunction |
| 49132 | Given clinical scenarios, choose the most appropriate therapeutic options for female sexual dysfunctions: lack of desire, lack of arousal, anorgasmia, and dyspareunia | SPM REP | 450 | Sexual History and Sexual Dysfunction |
| 49133 | Describe neonatal conjunctivitis and the pathogens that are commonly associated with this disease including Chlamydia trachomatis and Neisseria gonorrhoea | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49134 | Describe neonatal bacterial sepsis and the commonly associated microorganisms | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49135 | Describe neonatal pneumonia and the commonly associated microorganisms | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49136 | Describe the pathogenesis, epidemiology, laboratory detection and prevention of Respiratory Syncytial Virus (RSV) infection in neonates, including the general viral structure | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |
| 49137 | Describe the role of enteroviruses in severe neonatal infections including their transmission and general viral structure | SPM MHD | 1263 | Infections in the Premature and Newborn Infant |

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| 49138 | Describe the symptoms and physical findings in patients with ovarian lesions. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 49139 | Describe the symptoms and physical findings in patients with Tubal lesions. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 49140 | Describe the symptoms and physical findings in patients with uterine lesions. | SPM REP | 465 | SCHEME - Pelvic Masses |
| | | | 471 | Pelvic Masses and Pelvic Pain WCE |
| 49141 | List and interpret clinical and laboratory findings which are key to the exclusion, differentiation and diagnosis of the anovulatory causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 49142 | List and interpret clinical and laboratory findings which are key to the exclusion, differentiation and diagnosis of the cervical causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 49143 | List and interpret clinical and laboratory findings which are key in the processes of exclusion, differentiation and diagnosis of the ovarian or tubal causes of infertility. | SPM REP | 494 | SCHEME - Infertility |
| | | | 497 | Screening and Prevention and Infertility WCE |
| 49144 | Explain the development of the umbilical cord and know the blood vessels that normally supply blood to or drain blood from the placenta | SPM REP | 475 | Development of the Placenta |
| 49145 | Explain the decidual reaction. | SPM REP | 475 | Development of the Placenta |
| 49146 | Explain the development of the fetal membranes. | SPM REP | 475 | Development of the Placenta |
| 49147 | Explain the initial development of the placenta and its maturation. | SPM REP | 475 | Development of the Placenta |
| 49148 | Know what substances are transmitted between mother and fetus through the uteroplacental circulation. | SPM REP | 475 | Development of the Placenta |
| 49149 | Describe important features of immunity of the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49150 | Differentiate immunity of the upper and lower female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |

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| 49151 | Discuss innate immune responses within the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49152 | Discuss adaptive immune responses within the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49153 | Describe effects of cyclic hormonal changes on immunity of the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49154 | Describe effects of pregnancy on immunity of the female reproductive tract. | SPM REP | 477 | Immunology of the Female Reproductive Tract |
| 49155 | Describe the clinical symptoms, pathogenesis and diagnosis of EBV infection. | SPM HEM | 1103 | Infectious Lymphadenitis |
| 49156 | Be able to discuss neonatal respiratory distress syndrome (RDS) caused when surfactant secretion is deficient. | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 49158 | What is the difference between conjugated and unconjugated bilirubin? | SPM MHD | 1259 | Physiologic Alterations at Birth |
| 49159 | Relate the concepts of learning theory and describe how this might be used in psychiatric patients. | SPM MHD | 1271 | Child Cognitive and Emotional Development and Defense Mechanisms |
| 49160 | Associate the appropriate genetic mechanism (sporadic due to single gene mutations, small chromosomal losses, chromosomal addition or deletion) to selected disorders (diGeorge's syndrome, Marfan's syndrome, Turner's syndrome) with congenital heart defects that occur commonly in these syndromes | SPM CVR | 1146 | Congenital Anomalies of the Heart |
| 49161 | List the common left to right shunts (ASD, VSD, and PDA) and explain why these defects are not associated with cyanosis, how these conditions present clinically, how they are treated, and complications that occur if they are not treated. | SPM CVR | 1146 | Congenital Anomalies of the Heart |
| 49162 | List the common right to left shunts (Tetralogy of Fallot [TOF], transposition of great vessels, persistent truncus arteriosus, tricuspid atresia, and total anomalous pulmonary venous return [TAPVR]) and explain why | SPM CVR | 1146 | Congenital Anomalies of the Heart |

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| | these patients are cyanotic, how these conditions are treated, and complications that occur if they are not treated. | | | |
| 49163 | List the common obstructive congenital heart diseases (coarctation of aorta, pulmonic stenosis and atresia, aortic stenosis and atresia) and explain how blood flow is altered in these patients, how the conditions are diagnosed, and how they are treated. | SPM CVR | 1146 | Congenital Anomalies of the Heart |
| 49166 | Given clinical cases correctly identify the symptoms that are important in making a correct DSM 5 diagnosis and apply basic science rationale to the symptoms, diagnosis, causes and treatments (both pharmacologic and non-pharmacologic) of the substance use disorders. | SPM MHD | 1306 | Integration Session |
| 49170 | Identify patterns of development seen in common disorders such as cerebral palsy, autism, intellectual disabilities and communication disorders. | SPM MHD | 1275 | Abnormal Development |
| 49171 | Describe the developmental screening tools. | SPM MHD | 1275 | Abnormal Development |
| 49172 | Describe when to take the first steps toward intervention. | SPM MHD | 1275 | Abnormal Development |
| 49173 | Distinguish between respiration and ventilation | SPM CVR | 1173 | Ventilatory Mechanics |
| 49174 | Describe the functional anatomy of the respiratory system | SPM CVR | 1173 | Ventilatory Mechanics |
| 49175 | Define anatomic, alveolar and physiologic dead space | SPM CVR | 1173 | Ventilatory Mechanics |
| 49176 | Understand alveolar ventilation and minute volume | SPM CVR | 1173 | Ventilatory Mechanics |
| 49177 | Describe the anatomical and functional relationships between the lungs and the chest wall | SPM CVR | 1173 | Ventilatory Mechanics |
| 49178 | Identify the muscle groups involved in ventilation | SPM CVR | 1173 | Ventilatory Mechanics |
| 49179 | Describe the breathing cycle and lung volumes | SPM CVR | 1173 | Ventilatory Mechanics |
| 49180 | Define compliance | SPM CVR | 1173 | Ventilatory Mechanics |
| 49181 | Understand conditions of abnormal compliance | SPM CVR | 1173 | Ventilatory Mechanics |

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| 49182 | Describe the function and significance of surfactant | SPM CVR | 1173 | Ventilatory Mechanics |
| 49183 | Understand the development of the nasal cavity, palate, pharynx, and larynx | SPM CVR | 1171 | Development of the Respiratory System |
| 49184 | Explain the development of the bronchial tree and lungs | SPM CVR | 1171 | Development of the Respiratory System |
| 49185 | Explain the steps of maturation of the fetal lung | SPM CVR | 1171 | Development of the Respiratory System |
| 49186 | Understand the development of the pleural cavities and the respiratory diaphragm | SPM CVR | 1171 | Development of the Respiratory System |
| 49187 | Explain the mechanism of common congenital abnormalities of the respiratory system | SPM CVR | 1171 | Development of the Respiratory System |
| 49197 | Correlate the clinical presentation of community acquired pneumonia with its appearance on chest xray, gross and microscopic examination of the lungs, and the common causative agents. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49198 | Recognize normal oral flora organisms and explain how their presence influences appropriate sputum collection and laboratory identification of causative agents of pneumonia. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49199 | Recognize the most common causes of community acquired pneumonia based on patient age, occupation, environmental exposures, and clinical conditions (cystic fibrosis, alcoholism, IV drug use, nursing home residence). | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49200 | Differentiate the most common bacterial causes of community acquired pneumonia based on gram stain, culture, hemolysis on blood agar, and significant biochemical characteristics. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49201 | Recognize clinical conditions predisposing patients to aspiration pneumonia, lung abscess formation, and empyema and characterize the xray and pathology findings seen in these conditions. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49202 | Differentiate atypical pneumonia from typical pneumonia to include the potential causative | SPM CVR | 1186 | Community Acquired Pneumonia |

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| | organisms, clinical presentation, chest xray findings, histologic findings, and laboratory methods for their identification. | | | |
| 49203 | Differentiate the most common viral causes of community acquired pneumonia based on viral family, DNA or RNA virus, significant structural proteins (ex. Neuraminidase), populations usually affected, and laboratory methods of identification. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49204 | Identify risk factors for nosocomial/hospital acquired pneumonia, the most common causative organisms, and appropriate infection control practices to prevent these infections. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49205 | Recognize uncommon bacterial and viral agents of pneumonia that may be associated with zoonotic exposures, travel, or bioterrorism and be able to identify people at risk for these infections and appropriate diagnostic methods for their identification. | SPM CVR | 1186 | Community Acquired Pneumonia |
| 49207 | Demonstrate how to properly interpret and construct a basic decision tree. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49208 | Demonstrate how utilities are used in a decision tree. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49209 | Describe how utilities can be calculated using a rating scale, time trade off, or a reference gamble. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49210 | Define and calculate Quality-Adjusted Life Years (QALY). | SCI II | 141 | Clinical Decision Making: The Basics |
| 49211 | Calculate a quality-adjusted number needed to treat and a number needed to treat based on QALY. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49212 | Define and calculate Incremental Cost Effectiveness Ratios (ICER) and outline currently accepted standards for cost effectiveness in the United States. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49213 | Interpret a QALY-Cost graph. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49214 | Demonstrate how to perform a one-way sensitivity analysis. | SCI II | 141 | Clinical Decision Making: The Basics |

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| 49215 | Outline the questions to address in a clinical decision analysis as outlined in the mnemonic PROACTIVE. | SCI II | 141 | Clinical Decision Making: The Basics |
| 49228 | Describe the relationship between H ⁺ concentration and pH. Be able to calculate pH. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49229 | Describe the two types of acids that are produced in the body. What are their sources? | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49230 | Define the terms acid and base. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49231 | Define the term buffer. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49232 | Describe how a buffer works when H ⁺ ions are added to a solution or when they are removed from a solution. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49233 | Explain how buffers regulate body fluid pH, and list the major buffers that exist in the body fluids. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49234 | Explain why the bicarbonate buffer system provide the largest proportion of buffer capacity in the body. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49235 | Define the four major acid-base disorders. Explain the renal and/or respiratory compensations for each and explain several major medical causes of each acid-base disorder. | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49236 | What is an anion gap? How is it used to help distinguish metabolic acidosis disturbances? | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49237 | Describe the process by which HCO ₃ ⁻ is reabsorbed from the kidney tubule lumen (e.g., PT, DT, and CD). | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49238 | Be able to describe the process of renal production of bicarbonate during plasma bicarbonate deficits (e.g., titratable acid, excretion of H ⁺ as NH ₄ ⁺). | SPM RNL | 1229 | Acid Base Physiology I - Regulation of Acid-Base Balance |
| 49239 | Be able to differentiate between type 1, type 2, and type 4 renal tubular acidosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49240 | Be able to determine respiratory compensation of a metabolic acid-base disturbance. | SPM RNL | 1230 | Acid Base Physiology Lab- Classification of Acid Base Status |

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| 49241 | Be able to determine renal correction of a metabolic and compensation of a respiratory acid-base disturbance. | SPM RNL | 1230 | Acid Base Physiology Lab- Classification of Acid Base Status |
| 49245 | Discuss possible causes of metabolic alkalosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49246 | Describe the mechanism of how ECF volume contraction maintains metabolic alkalosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49247 | Describe how excess aldosterone generates a metabolic alkalosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49248 | Be able to differentiate between saline-responsive metabolic alkalosis and saline-resistant metabolic alkalosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49249 | Discuss possible causes of metabolic acidosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49250 | Discuss possible causes of respiratory alkalosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49251 | Discuss possible causes of respiratory acidosis. | SPM RNL | 1232 | Acid Base Physiology II- Renal Compensation |
| 49397 | Identify each endocrine organ in dissection photographs, atlas depictions, and as seen via common imaging modalities. | SPM END | 1353 | Review of Endocrine Anatomy Clinical Imaging |
| 49398 | Describe the location and key anatomical relationships of each endocrine organ. | SPM END | 1353 | Review of Endocrine Anatomy Clinical Imaging |
| 49399 | Trace the arterial supply and venous drainage of each endocrine organ. | SPM END | 1353 | Review of Endocrine Anatomy Clinical Imaging |
| 49400 | Describe the development of each endocrine organ. | SPM END | 1353 | Review of Endocrine Anatomy Clinical Imaging |
| 49403 | Explain the role of the immune system in "allergic" contact dermatitis | SPM IMN | 185 | Immune Responses of the Skin |
| 49405 | Summarize the steps in the immune response in contact dermatitis | SPM IMN | 185 | Immune Responses of the Skin |

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| 49406 | Relate the immune mechanism with the pathogenesis, morphologic and histologic findings in contact dermatitis | SPM IMN | 185 | Immune Responses of the Skin |
| 49702 | Describe the size of everyday objects in millimeters, micrometers and nanometers | SPM IHD | 13 | Normal Cells in Different Tissues |
| 49704 | Recognize clinical features and laboratory findings associated with different types of dementia. | Clinical Neurosciences | 935 | Dementia - Neuro |
| 49738 | Demonstrate effective use of the clinical presentation scheme and process worksheet as an organizational framework for applying knowledge of basic science and clinical medicine to a series of clinical cases. | SPM IHD | 18 | Child with Dehydration WCE |
| | | SPM IHD | 61 | Sore Throat WCE |
| | | SPM IHD | 100 | Wound WCE |
| | | SPM IHD | 686 | Child with Poor Growth WCE |
| | | SPM IHD | 688 | Fever WCE |
| | | SPM CSS | 306 | Movement Disorders and Gait Disturbances WCE |
| | | SPM CSS | 318 | Headache & Seizure WCE |
| | | SPM CSS | 324 | Stroke and Aphasia WCE |
| | | SPM CSS | 340 | Delirium, Stupor and Coma WCE |
| | | SPM CSS | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| | | SPM CSS | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| | | SPM END | 435 | Hypothalamus/Pituitary/Adrenal Disorders WCE |
| | | SPM END | 1385 | Hypertension WCE |
| | | SPM END | 1386 | Diabetes and Obesity WCE |
| SPM END | 1387 | Disorders of Thyroid Function WCE | | |
| SPM GIS | 145 | Liver Function Tests and Abdominal Distention WCE | | |

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| | | SPM GIS | 147 | Vomiting and Nausea WCE |
| | | SPM GIS | 174 | Abdominal Pain & GI Bleed WCE |
| | | SPM GIS | 690 | Dysphagia - WCE |
| | | SPM GIS | 692 | WCE Diarrhea & Constipation |
| | | SPM IMN | 187 | Rash and Skin Lesions - WCE |
| | | SPM IMN | 194 | Hair and Nail Disorders WCE |
| | | SPM IMN | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| | | SPM IMN | 222 | Joint Pain WCE |
| | | SPM IMN | 237 | Musculoskeletal Lumps and Masses WCE |
| | | SPM IMN | 250 | Numbness and Pain WCE |
| | | SPM IMN | 261 | Weakness WCE |
| | | SPM REP | 451 | Men's Health WCE |
| | | SPM REP | 462 | Abnormal Uterine Bleeding WCE |
| | | SPM REP | 471 | Pelvic Masses and Pelvic Pain WCE |
| | | SPM REP | 484 | Pregnancy WCE |
| | SPM REP | 497 | Screening and Prevention and Infertility WCE | |
| 49739 | For a given clinical presentation, appropriately demonstrate scheme-inductive and/or hypothetico-deductive reasoning along with the efficient use of history, physical examination, imaging and/or laboratory data to categorize the disease process and generate and prioritize a focused list of diagnostic considerations | SPM IHD | 18 | Child with Dehydration WCE |
| | | SPM IHD | 61 | Sore Throat WCE |
| | | SPM IHD | 100 | Wound WCE |
| | | SPM IHD | 686 | Child with Poor Growth WCE |
| | | SPM IHD | 688 | Fever WCE |
| | | SPM CSS | 306 | Movement Disorders and Gait Disturbances WCE |
| | | SPM CSS | 318 | Headache & Seizure WCE |

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| | SPM CSS | 324 | Stroke and Aphasia WCE |
| | SPM CSS | 340 | Delirium, Stupor and Coma WCE |
| | SPM CSS | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| | SPM CSS | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| | SPM END | 435 | Hypothalamus/Pituitary/Adrenal Disorders WCE |
| | SPM END | 1385 | Hypertension WCE |
| | SPM END | 1386 | Diabetes and Obesity WCE |
| | SPM END | 1387 | Disorders of Thyroid Function WCE |
| | SPM GIS | 145 | Liver Function Tests and Abdominal Distention WCE |
| | SPM GIS | 147 | Vomiting and Nausea WCE |
| | SPM GIS | 174 | Abdominal Pain & GI Bleed WCE |
| | SPM GIS | 690 | Dysphagia - WCE |
| | SPM GIS | 692 | WCE Diarrhea & Constipation |
| | SPM IMN | 187 | Rash and Skin Lesions - WCE |
| | SPM IMN | 194 | Hair and Nail Disorders WCE |
| | SPM IMN | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| | SPM IMN | 222 | Joint Pain WCE |
| | SPM IMN | 237 | Musculoskeletal Lumps and Masses WCE |
| | SPM IMN | 250 | Numbness and Pain WCE |
| | SPM IMN | 261 | Weakness WCE |
| | SPM REP | 451 | Men's Health WCE |

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| 49740 | Demonstrate meaningful participation in each case discussion through reflective listening, respectful discourse, sharing insights, encouraging others, and being accountable to support an interdependent, generative learning environment | SPM REP | 462 | Abnormal Uterine Bleeding WCE |
| | | SPM REP | 471 | Pelvic Masses and Pelvic Pain WCE |
| | | SPM REP | 484 | Pregnancy WCE |
| | | SPM REP | 497 | Screening and Prevention and Infertility WCE |
| | | SPM IHD | 18 | Child with Dehydration WCE |
| | | SPM IHD | 61 | Sore Throat WCE |
| | | SPM IHD | 100 | Wound WCE |
| | | SPM IHD | 686 | Child with Poor Growth WCE |
| | | SPM IHD | 688 | Fever WCE |
| | | SPM CSS | 306 | Movement Disorders and Gait Disturbances WCE |
| | | SPM CSS | 318 | Headache & Seizure WCE |
| | | SPM CSS | 324 | Stroke and Aphasia WCE |
| | | SPM CSS | 340 | Delirium, Stupor and Coma WCE |
| | | SPM CSS | 349 | Visual Disturbances and Diplopia/Strabismus/Eye Redness WCE |
| | | SPM CSS | 377 | Hearing Loss & Tinnitus and Dizziness & Vertigo WCE |
| | | SPM END | 435 | Hypothalamus/Pituitary/Adrenal Disorders WCE |
| | | SPM END | 1385 | Hypertension WCE |
| | | SPM END | 1386 | Diabetes and Obesity WCE |
| | | SPM END | 1387 | Disorders of Thyroid Function WCE |
| | | SPM GIS | 145 | Liver Function Tests and Abdominal Distention WCE |
| SPM GIS | 147 | Vomiting and Nausea WCE | | |

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| | | SPM GIS | 174 | Abdominal Pain & GI Bleed WCE |
| | | SPM GIS | 690 | Dysphagia - WCE |
| | | SPM GIS | 692 | WCE Diarrhea & Constipation |
| | | SPM IMN | 187 | Rash and Skin Lesions - WCE |
| | | SPM IMN | 194 | Hair and Nail Disorders WCE |
| | | SPM IMN | 204 | Bone Fractures, Dislocations and Joint Injuries WCE |
| | | SPM IMN | 222 | Joint Pain WCE |
| | | SPM IMN | 237 | Musculoskeletal Lumps and Masses WCE |
| | | SPM IMN | 250 | Numbness and Pain WCE |
| | | SPM IMN | 261 | Weakness WCE |
| | | SPM REP | 451 | Men's Health WCE |
| | | SPM REP | 462 | Abnormal Uterine Bleeding WCE |
| | | SPM REP | 471 | Pelvic Masses and Pelvic Pain WCE |
| | | SPM REP | 484 | Pregnancy WCE |
| | | SPM REP | 497 | Screening and Prevention and Infertility WCE |
| 49741 | Review the clinically important aspects of the anatomy of the anterior abdominal wall | SPM IHD | 86 | Inguinal Hernias |
| 49743 | Describe the parts of the stomach. List the layers of the stomach wall. | SPM GIS | 111 | Gastric Secretions |
| 49744 | Describe the gastric mucosal barrier. How does it function to protect the gastric mucosa from acid damage? And be able to define those disorders of gastric H+ secretion: gastric ulcer, peptic ulcer, duodenal ulcer, and Zollinger-Ellison Syndrome and their relationship to gastrin secretion. | SPM GIS | 111 | Gastric Secretions |

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| 49745 | What are gastric pits and gastric glands? Name the different cell types in the stomach and the secretions they produce. | SPM GIS | 111 | Gastric Secretions |
| 49746 | Define the three phases of digestion: cephalic, gastric, and intestinal. In addition, describe the stomach secretions and their functions during the cephalic and gastric, and intestinal phases of gastric acid secretion. | SPM GIS | 111 | Gastric Secretions |
| 49748 | Describe the gastric mucosal barrier. How does it function to protect the gastric mucosa from acid damage? And be able to define those disorders of gastric H ⁺ secretion: gastric ulcer, peptic ulcer, duodenal ulcer, and Zollinger-Ellison Syndrome and their relationship to gastrin secretion. | SPM GIS | 111 | Gastric Secretions |
| 49750 | Be able to define nausea, vomiting, and retching. | SPM GIS | 112 | Gastric Motility and Emptying |
| 49751 | Outline the pathways that impinge on the vomiting center including neurotransmitter-receptor interactions. | SPM GIS | 112 | Gastric Motility and Emptying |
| 49752 | Describe the structure of the small intestine and the major cell types present in the mucosa. | SPM GIS | 154 | Physiology of the Small Intestine |
| 49753 | Describe the motility of the small intestine, and its control. What agents increase intestinal motility? What agents decrease intestinal motility? | SPM GIS | 154 | Physiology of the Small Intestine |
| 49754 | Describe the intestinal reflexes. | SPM GIS | 154 | Physiology of the Small Intestine |
| 49755 | Describe the hormonal regulation of pancreatic secretions during cephalic, gastric, and intestinal phases of pancreatic secretion. | SPM GIS | 154 | Physiology of the Small Intestine |
| 49756 | Understand the mechanisms of diarrhea, its consequences, and treatment. | SPM GIS | 154 | Physiology of the Small Intestine |
| 49757 | What is the definition of digestion? What is the definition of absorption? | SPM GIS | 153 | Digestion and Absorption of the Diet |
| 49758 | Describe the process of digestion and absorption of carbohydrates, lipids, and proteins, and list the breakdown product(s) of each. | SPM GIS | 153 | Digestion and Absorption of the Diet |

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| 49763 | Describe the mechanism(s) for calcium ions, vitamins, and iron absorption in the small intestine. | SPM GIS | 153 | Digestion and Absorption of the Diet |
| 49765 | Describe the anatomy of the colon. What are taeniae coli, haustra, and crypts? | SPM GIS | 158 | Physiology of the Large Intestine |
| 49766 | Understand the functioning of the large intestine. | SPM GIS | 158 | Physiology of the Large Intestine |
| 49767 | Explain the difference in structure between the internal anal sphincter and the external anal sphincter. | SPM GIS | 158 | Physiology of the Large Intestine |
| 49768 | Describe ileocecal regulation. | SPM GIS | 158 | Physiology of the Large Intestine |
| 49769 | What is the role of microorganisms in the colon? | SPM GIS | 158 | Physiology of the Large Intestine |
| 49770 | What kind of movements occur in the colon? | SPM GIS | 158 | Physiology of the Large Intestine |
| 49771 | Describe the defecation reflex. | SPM GIS | 158 | Physiology of the Large Intestine |
| 49772 | Understand the consequences of disease of the large intestine. | SPM GIS | 158 | Physiology of the Large Intestine |
| 49778 | Understand the processes of water and electrolyte absorption and secretion in the small intestine. | SPM GIS | 153 | Digestion and Absorption of the Diet |
| | | | 154 | Physiology of the Small Intestine |
| 49781 | Describe the immune aspects of the pathogenesis and diagnosis of autoimmune hepatitis (AIH). | SPM GIS | 139 | Immune Mediated Liver Diseases |
| 49782 | Describe the immune aspects of the pathogenesis and diagnosis of primary biliary cirrhosis (PBC). | SPM GIS | 139 | Immune Mediated Liver Diseases |
| 49783 | Describe the immune aspects of the pathogenesis and diagnosis of primary sclerosing cholangitis (PSC). | SPM GIS | 139 | Immune Mediated Liver Diseases |
| 49786 | Be able to list the sites of absorption of important nutrients in the gastrointestinal tract. | SPM GIS | 153 | Digestion and Absorption of the Diet |
| 49787 | Explain how the protective mechanisms that prevent bacterial infection of the conjunctivae and cornea work and identify the mechanisms developed by bacterial organisms to overcome them. | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49788 | Identify protective mechanisms in the cornea and the risk factors for development of keratitis. | SPM CSS | 339 | Conjunctivitis Keratitis |

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| 49789 | Identify the conjunctival and clinical findings most supportive of a bacterial etiology and list the most likely organisms based on patient characteristics (age, demographics). | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49790 | Identify the conjunctival and clinical findings most supportive of a viral etiology and list the most likely viral pathogen based on patient characteristics (age, demographics). | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49791 | Identify the most likely cause of keratitis (bacterial, fungal, viral, or parasitic) based on the clinical presentation and patient demographics. | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49792 | Recognize Chlamydial keratoconjunctivitis in a clinical setting and distinguish the Chlamydia serotypes to include which are STD's and which are the most common causes of inclusion conjunctivitis or trachoma. | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49793 | Identify parasitic/amebic/fungal organisms that may cause keratitis and the mechanism of corneal injury caused by them. | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49794 | Identify bacterial, viral, fungal, parasitic, and amebic agents of keratoconjunctivitis to include gram stain appearance, culture characteristics, viral pathogenesis, and laboratory tests for diagnosis. | SPM CSS | 339 | Conjunctivitis Keratitis |
| 49795 | Define abdominal hernia and name its components. | SPM GIS | 1048 | Abdominal Hernias |
| 49796 | Define major types of abdominal hernias: ventral, flank, groin, intraabdominal, and diaphragmatic. | SPM GIS | 1048 | Abdominal Hernias |
| 49797 | Describe embryologic, anatomic, and pathophysiologic factors that contribute to the development of abdominal hernias. | SPM GIS | 1048 | Abdominal Hernias |
| 49798 | Describe common complications of abdominal hernias: incarceration, obstruction, and strangulation. | SPM GIS | 1048 | Abdominal Hernias |

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| 49799 | Using photographic and radiology images be able to identify diaphragmatic, epigastric, umbilical, Spigelian, lumbar, and incisional hernias. | SPM GIS | 1048 | Abdominal Hernias |
| 49802 | Correlate endoscopic descriptions of gastric lesions with their gross and microscopic appearance. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49803 | Identify mechanisms of mucosal protection from injury and the lesions which result when the mucosa is injured by H. pylori, NSAIDs, gastric hyperacidity, alcohol, and duodenal reflux; correlate the changes with their endoscopic, gross, and microscopic appearance. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49804 | Identify lesions which result from impaired mucosal defenses (ischemia, shock, NSAIDs) and correlate the changes with their endoscopic, gross, and histologic appearance. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49805 | Differentiate non-inflammatory gastric lesions (gastropathy) from those due to an inflammatory process and correlate their mechanism of formation with their gross and microscopic appearance. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49806 | Identify the common causes and mechanisms of acute gastritis and acute gastric ulcer and correlate them with clinical findings, gross, and microscopic appearances. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49807 | Compare the clinical settings of the most likely etiologies of peptic ulcer disease, chronic gastritis, and autoimmune gastritis and correlate them with their usual causes and the expected gross and microscopic pathology and microbiologic findings. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49808 | Define these pathologic terms and correlate them with the expected action to be taken by the clinician: acute vs. chronic gastritis; reactive atypia vs. glandular dysplasia vs. in situ adenocarcinoma vs. invasive adenocarcinoma. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49809 | Use the gross and microscopic appearance of a stomach to determine its likelihood of being benign peptic ulcer | SPM GIS | 124 | Pathology of Nausea and Vomiting |

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| | vs. adenocarcinoma vs. malignant lymphoma vs. carcinoid tumor vs. gastrointestinal stromal tumor (GIST). | | | |
| 49810 | Identify the usual gross and microscopic appearance of adenocarcinoma of intestinal or diffuse type, lymphoma, carcinoid tumor, and gastrointestinal stromal tumor; correlate them with the most common clinical presentation of the lesion and identify the findings necessary for staging, treatment, and prognosis. | SPM GIS | 124 | Pathology of Nausea and Vomiting |
| 49848 | Describe the basic organization of the peritoneum and peritoneal cavity, including subdivisions, mesenteries, and ligaments. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49849 | Describe the basic anatomy of the large and small intestines, including neurovascular supply and lymphatic drainage. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49850 | Know the pattern of diaphragmatic musculature and its fasciae, and its functional significance in respiration. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49851 | Know the three major passageways through the diaphragm and the structures traversing them. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49852 | Describe the position and vertebral level for all branches of the abdominal aorta and the inferior vena cava, and the reason for the difference in their patterns. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49853 | Identify the thoracic and lumbar splanchnic nerves and the collateral ganglia or regional subdivisions of the preaortic plexus to which each functionally relates. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |

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| 49854 | Recall the concept of perivascular plexuses, their position, nomenclature, and nerve fiber components. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49855 | Describe the parasympathetic innervation of the GI tract. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49856 | Identify the cisterna chyli and describe the general pattern of lymphatic drainage to the thoracic duct. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49857 | Identify and demonstrate the abdominal attachments of the two major posterior abdominal wall muscles and know the action of these muscles upon the vertebral column. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49858 | Locate the lumbar sympathetic trunk and white and gray rami communicantes; explain the reason for the inferior limit of the white rami. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49859 | Describe the four common locations of porto-caval anastomosis. | SPM GIS | 146 | Pre-Lab - Intestines |
| | | | 148 | Intestines - Team A |
| | | | 156 | Intestines |
| 49877 | Identify and describe the structure of the vertebral column, including its skeletal and ligamentous components. | SPM IMN | 727 | Pre-Lab - Deep Back |
| 49878 | Identify and describe the tissues that cover and protect the spinal cord within the spinal canal. | SPM IMN | 727 | Pre-Lab - Deep Back |
| 49879 | Identify and describe the basic pattern and function of the components of a typical spinal nerve. | SPM IMN | 727 | Pre-Lab - Deep Back |

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| 49880 | Identify and describe the blood supply and venous drainage of the spinal cord and vertebral column. | SPM IMN | 727 | Pre-Lab - Deep Back |
| 49881 | Identify and describe the basic features of the spinal cord and its roots. | SPM IMN | 727 | Pre-Lab - Deep Back |
| 49890 | Understand the source of calcitonin production and be able to delineate the function of calcitonin and its relative importance in the regulation of plasma calcium. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 49891 | Be able to describe the effects of parathyroid hormone (PTH), vitamin D, and other factors on calcium and phosphate regulation. | SPM END | 437 | Regulation and Function of Thyroid Hormones |
| 49892 | Create a presentation of their cadaver's case appropriate for an audience of their peers and faculty. | PICE | 1444 | Tankside Grand Rounds |
| 49895 | Clearly explain the relevant basic science content supporting their findings. | PICE | 1444 | Tankside Grand Rounds |
| 49896 | Defend the group's conclusions about the case. | PICE | 1444 | Tankside Grand Rounds |
| 49901 | Describe the main superficial neurovascular structures of the lower limb | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49902 | Describe the compartments of the lower limb and their boundaries | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49903 | Describe source, location, and branches of the neurovascular components of the anterior and medial thigh | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49904 | Describe the muscles of the anterior and medial thigh, including their neurovascular supply and actions | SPM IMN | 728 | Pre-Lab - Anterior & Medial Thigh |
| 49972 | Apply the principles of ACLS based on evidence-based principles from the 2010 AHA guidelines. | PICE | 1390 | Introduction to ACLS Training |
| | | | 1391 | ACLS Curriculum - Video Lectures |
| | | | 1392 | ACLS Skills Practice |
| | | | 1393 | ACLS Mega Code Testing |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 |

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| | | | 1395 | ACLS Skills Practice Part 2 | | | |
| | | | 1396 | ACLS Review | | | |
| | | | 1397 | ACLS Written Exam | | | |
| 49973 | Recognize and initiate early management of periarrest conditions that may result in arrest. | PICE | 1390 | Introduction to ACLS Training | | | |
| | | | 1391 | ACLS Curriculum - Video Lectures | | | |
| | | | 1392 | ACLS Skills Practice | | | |
| | | | 1393 | ACLS Mega Code Testing | | | |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 | | | |
| | | | 1395 | ACLS Skills Practice Part 2 | | | |
| | | | 1396 | ACLS Review | | | |
| | | | 1397 | ACLS Written Exam | | | |
| | | | 49974 | Demonstrate proficiency in providing BLS care. | PICE | 1390 | Introduction to ACLS Training |
| | | | | | | 1391 | ACLS Curriculum - Video Lectures |
| 1392 | ACLS Skills Practice | | | | | | |
| 1393 | ACLS Mega Code Testing | | | | | | |
| 1394 | ACLS Curriculum - Video Lectures Part 2 | | | | | | |
| 1395 | ACLS Skills Practice Part 2 | | | | | | |
| 1396 | ACLS Review | | | | | | |
| 1397 | ACLS Written Exam | | | | | | |
| 49975 | Recognize and manage respiratory arrest. | PICE | 1390 | Introduction to ACLS Training | | | |
| | | | 1391 | ACLS Curriculum - Video Lectures | | | |
| | | | 1392 | ACLS Skills Practice | | | |
| | | | 1393 | ACLS Mega Code Testing | | | |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 | | | |
| | | | 1395 | ACLS Skills Practice Part 2 | | | |

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| 49976 | Recognize and manage cardiac arrest. | PICE | 1396 | ACLS Review |
| | | | 1397 | ACLS Written Exam |
| | | | 1390 | Introduction to ACLS Training |
| | | | 1391 | ACLS Curriculum - Video Lectures |
| | | | 1392 | ACLS Skills Practice |
| | | | 1393 | ACLS Mega Code Testing |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 |
| | | | 1395 | ACLS Skills Practice Part 2 |
| | | | 1396 | ACLS Review |
| | | | 1397 | ACLS Written Exam |
| 49977 | Recognize and initiate early management of ACS, including appropriate disposition. | PICE | 1390 | Introduction to ACLS Training |
| | | | 1391 | ACLS Curriculum - Video Lectures |
| | | | 1392 | ACLS Skills Practice |
| | | | 1393 | ACLS Mega Code Testing |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 |
| | | | 1395 | ACLS Skills Practice Part 2 |
| | | | 1396 | ACLS Review |
| | | | 1397 | ACLS Written Exam |
| 49978 | Recognize and initiate early management of stroke, including appropriated disposition. | PICE | 1390 | Introduction to ACLS Training |
| | | | 1391 | ACLS Curriculum - Video Lectures |
| | | | 1392 | ACLS Skills Practice |
| | | | 1393 | ACLS Mega Code Testing |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 |
| | | | 1395 | ACLS Skills Practice Part 2 |
| | | | 1396 | ACLS Review |

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|--------------|--|---------|------|--|
| 49979 | Demonstrate effective communication as a team member or team leader. | PICE | 1397 | ACLS Written Exam |
| | | | 1390 | Introduction to ACLS Training |
| | | | 1391 | ACLS Curriculum - Video Lectures |
| | | | 1392 | ACLS Skills Practice |
| | | | 1393 | ACLS Mega Code Testing |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 |
| | | | 1395 | ACLS Skills Practice Part 2 |
| | | | 1396 | ACLS Review |
| 49980 | Recognize the impact of team dynamics on overall team performance. | PICE | 1397 | ACLS Written Exam |
| | | | 1390 | Introduction to ACLS Training |
| | | | 1391 | ACLS Curriculum - Video Lectures |
| | | | 1392 | ACLS Skills Practice |
| | | | 1393 | ACLS Mega Code Testing |
| | | | 1394 | ACLS Curriculum - Video Lectures Part 2 |
| | | | 1395 | ACLS Skills Practice Part 2 |
| | | | 1396 | ACLS Review |
| 50000 | Discuss the anatomy of the bony pelvis. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 50001 | Discuss the vascular supply in the pelvis. | SPM REP | 466 | Anatomy of the Female Pelvic Floor |
| 50023 | Using correct technique, open a hollow needle, use it to perform phlebotomy, and dispose of the needle in a safe manner. | MSK HEM | 571 | Abnormal RBC / Phlebotomy |
| 50027 | Be able to describe the cytoskeletal proteins and associated diseases attributed to their deficiency. | SPM IMN | 256 | Histology and Mechanics of Skeletal Muscle |