

Clinical Microanatomy 6110C Lecture Syllabus

This syllabus is intended to be a current guide to the activities and grading of this course. The content of the syllabus can change during the course and will be reflected at the Blackboard site for the course. Check your Blackboard announcements for any changes in the course syllabus or schedule.

OVERVIEW

Course Description:

This course will provide a solid foundation in clinical microanatomy and cell biology with relation to clinical presentation. This course will introduce students to the cellular mechanisms of disease processes. This course will also offer an introduction to current techniques in Molecular Medicine and how these techniques are used to target accurate clinical diagnoses. All major tissue groups will be covered in the course. The course will be taught concurrently with Doctoring 101 and Clinical Neurosciences courses. The course will promote student-directed problem solving skills in a lecture (large group), laboratory and small group setting. Group presentations will be performed to improve student interaction, sharing of intellectual property and public speaking skills. This course will enable the students to apply their knowledge to learning pathophysiologic and biochemical principles in later courses.

Learning Objectives

Students will be able to:

- 1) demonstrate a measurable and substantial knowledge of normal and abnormal human microanatomy on varying microscope-based slides from multiple sources.
- 2) understand cell structure and function and correlate to disease states
- 3) demonstrate an ability to identify histopathology and give the underlying mechanisms that led to the pathology.
- 4) understand Molecular Medicine techniques and explain how they are used to diagnose clinical disease.
- 5) demonstrate an ability to utilize a variety of resources (faculty, textbooks, e-books, CD-ROM, internet) to find information about microanatomical issues related to normal function and clinical disease
- 6) demonstrate an ability to do self and peer evaluations of performance and knowledge levels.

Integration of course objectives with College of Medicine Educational Goals and objectives

1. Broad Educational Goals:
 - a. Provide a comprehensive educational experience in clinical microanatomy that can be integrated into courses running concurrently and subsequently in the medical curriculum.
2. Knowledge Objectives:
 - a. Describe the structure and function of the healthy human body at the cellular and molecular levels.
 - b. Recognize the implications of altered microscopic structure seen in various clinical problems.
 - c. Describe cellular aspects and mechanisms of disease based on an understanding of how normal cell and molecular biology has been altered.
 - d. Identify resources (faculty, print and electronic) that support continued learning about the applications of knowledge in the field of microanatomy as it relates to clinical problems.
3. Skills
 - a. Evaluate medical problems and formulate hypotheses related to microscopic anatomy in making diagnostic and treatment decisions.
 - b. Demonstrate the ability to use microscopic anatomy and cell biology concepts and apply them to clinical reasoning.
 - c. Demonstrate the ability to use Molecular Medicine techniques for diagnosing select clinical diseases.
4. Attitudes and behaviors
 - a. Demonstrate professionalism and high ethical standard while participating in the course activities and examinations
 - b. Exhibit peer and self evaluation during the activities of the course.

Course Director:

Jacob W. VanLandingham, Ph.D. Assistant Professor

Office hours: Tuesday, Wednesday and Thursday 10-12. Please feel free to make an appointment.

E-mail: jacob.vanlandingham@med.fsu.edu

Phone: 850-645-7465

Course Faculty:

Edward Klatt, M.D. Professor and year 2 director

Morton Levitt, M.D. Associate Professor

Andrew Payer, Ph.D. Professor and year 1 director

Sebastian Alston, PhD Associate Dean for Educational Development

Bradley Bonett Coordinator years 1 and 2

COURSE COMPONENTS

Lectures: The lectures are meant to introduce major concepts, explain difficult concepts and relate the content to clinical applications in regard to cellular and molecular biology. The sessions will also include interactive discussions about content from assigned reading topics.

Clinical Cases in Small Groups: This course will incorporate the use of small group case-based sessions to apply microanatomical concepts covered in the previous weeks to clinical diagnoses. There will be 7 small-group sessions that are 1 hour in length. Students, working in small groups, and under the guidance of faculty facilitators, will discuss the information in the case. From this information they will attempt to apply their microanatomical knowledge to understanding the clinical problem. They will identify problems and develop a hypothesis list of what may be causing the clinical problem. Occasionally, they may even identify learning issues they have to get electronic information about in order to move forward in the case. These activities will further emphasize the relevance of microanatomy on clinical practice and will prepare the students for the process of daily medical education they will need to be successful physicians in the future. Peer and facilitator evaluations will be performed and submitted at mid and final term timepoints. Small group cases will be posted on the Blackboard site (in 'Course Materials' for that week) after your group meets.

Attendance to all small group sessions is mandatory.

Microanatomy Laboratory: There is a separate outline on Blackboard for this component which is entitled 'Laboratory Design' and can be found in the Syllabus section.

Clinical Presentations: Students will return to their laboratory groups from the Clinical Anatomy course. Dr. Nancy Clark will give a one hour PowerPoint tutorial, in class, 2 weeks (Oct. 24th) before presentations are to be given. All presentations will be given in front of fellow students and invited faculty. Faculty will grade the students based on presentation 'dos and don'ts' expressed by Dr. Clark in her tutorial. Presentations will also be evaluated on material content and the ability of the student groups to relate gross anatomy to microanatomy concepts. The diagnosis of your cadaver will be the basis for your presentation. For example if your cadaver was diagnosed with end stage Alzheimer's disease you will collect and report on microanatomical structures which have been altered in the brain of an Alzheimer's disease patient. You will then relate these microanatomical structural alterations to functional outcomes of the cell. A microanatomical cause of death will be required of each student group. Each member of the group will be required to create one test question. Each group will report their findings for 15 minutes. Group members along with topic (cadaver diagnosis) will be listed on the Blackboard in the Course Materials under 'Presentations' approximately 2 weeks prior to the Nov. 6-11 week of presentations.

Self-Study

You will be responsible for reading the text and atlas assignments ahead of time. The lecture presentations will be interactive with test-like questions presented to entire class during the presentation using Turning Point. Three to five practice exam questions will be posted weekly (Thursday evening) on the Blackboard site (under 'Course Materials' for the week) to assist you in being a successful test taker.

Available Resources

The college of medicine has a variety of textbooks and digital texts at the library web site. Reading assignments can be found in the 'Course Materials' section of Blackboard. The resource will be especially emphasized when acquiring knowledge in the area of Molecular Medicine (Molecular Biology and Cellular Pathology, John Crocker).

Test Preparation

Along with lecture reviews every other Friday, there will be a final one hour 'Course Review' before Final Exam week. This date is listed on your Clinical Microanatomy Schedule. Students should take notice of the 'Major Concepts' section on the Blackboard site (under 'Course Materials' for the week) when reviewing for each of the exams. A 'Discussion Board' has been created under the 'Communication' section on the Blackboard site. This board is entitled 'Questions for Dr. VanLandingham'. This option can be used anonymously and each student can see the other student's question and my answer to the question. Please use this site for course questions only. Any personal questions or concerns should be sent to my e-mail address.

Assessment

Your performance on all activities will result in an accumulation of points which will determine your status in the course. Grades will be based on written exams, quizzes and small group/class participation. All grades will be represented as A, B+, B, C+, C, D and F. Four written examinations and the NBME shelf exam will be a combination of multiple-choice one best answer questions and questions related to microanatomy images. Quizzes will also be administered. The grade for each student will be reported at the end of the course.

Grading Scheme for Clinical Microanatomy

- **A = > 90%**
- **B+= 87 – 89.9%**
- **B = 80 – 86.9%**
- **C+= 77 – 79.9%**
- **C = 70 – 76.9%**
- **D = 65 – 69.9%**
- **F = <64.9%**

Grading:

Exams I, II, III & IV are each worth 15 %.	60 %
Quizzes (7)	10 %
Laboratory Quizzes (6) (See Lab Design)	10 %
Presentations	5 %
Shelf exam	15 %

FSU COM ATTENDANCE POLICY

COM Philosophy

We believe that:

Professionalism is a major component of our medical curriculum. We believe students should conduct themselves appropriately in the various educational activities of the curriculum. This conduct includes coming to educational activities on-time, using the laptop computers only for course work during the educational activity, and not disrupting the class if late. The faculty should also demonstrate professionalism, by starting and ending all scheduled educational activities on time and providing a course schedule with clearly explained course policies in the course syllabus. Any changes in the schedule should be given to the students in a timely manner.

Students will be accountable and personally responsible for attending all educational activities (small groups, labs, clinical experiences, examinations, lectures, computer sessions, etc.).

Unexcused absences reflect negatively on the goals and objectives of the medical curriculum and demonstrate unprofessional behavior by the respective student.

We owe it to our state legislature and the citizens of the State of Florida to provide a quality educational program that meets the needs of our students in preparing them for the M.D. degree.

Attendance Policy

Students are expected to attend all scheduled activities. Students are expected to be on time. Being on time is defined as being *ready to start* at the assigned time. If a student has an emergency that prevents her/him from attending a scheduled activity, s/he is to call and notify the Office of Student Affairs (Year 1/2) or the Regional Campus Dean (Year 3/4) and request that they inform the supervisors/professors/clerkship faculty/education director for that activity. If at all possible, the student should also call and at a minimum, leave a message with one of the course/clerkship directors. *It is important that students realize that their absence or tardiness negatively impacts a number of other people.* Attendance, including tardiness, is part of the student's evaluation for professionalism. Negative evaluations may result in decreased grades and in severe cases, referral to the Student Evaluation and Promotion Committee.

Procedure for Notification of Absence

Year 1/2

If the student knows in advance of an upcoming legitimate absence, the "Advance Notification of Absence from Educational Activity (ies)" form should be completed with signatures from the student, the Assistant Dean for Student Affairs, the course faculty member and the Course Director. The form will be filed in the Office of Student Affairs. The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the course director and final decisions regarding these actions shall rest with the course director.

If the absence occurs due to an unforeseen emergency, the student should contact the course director and the Assistant Dean for Student Affairs immediately to report the absence including the reason for the absence. The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the course director and final decisions regarding these actions shall rest with the course director.

Remediation Policy for Absences from Examinations, Quizzes, Small Group Sessions, Laboratory Sessions, Clinical Learning Center Sessions, Preceptor visits, and Clerkship Call

The remediation policies for absences from examinations, quizzes, small group sessions, laboratory sessions and clerkship call are:

1. **POLICY ON MISSED EXAMINATIONS:** Students are required to take major in-term and final examinations. According to the curriculum committee a student can only be excused from an examination by a course/education director decision based on the personal situation of the student. The course/education director will determine the time of the exam make-up session. Also, according to the curriculum committee

decision and the existence of the FSU-COM honor code, the student will be given the same examination given to the other students.

2. **POLICY ON MISSED QUIZZES:** Students are required to take quizzes in the courses. A student can only be excused from a quiz by a course director decision based on the personal situation of the student. The student must make arrangements with the course/education director to make up a missed quiz. Also, according to the curriculum committee decision and the existence of the FSU-COM honor code, the student will be given the same quiz given to the other students.
3. **POLICY ON MISSED SMALL GROUP SESSIONS, LABORATORY SESSIONS, CLINICAL LEARNING CENTER SESSIONS, PRECEPTOR VISITS, AND CLERKSHIP CALL:** The student should contact the course director, small group leader or education director for instructions on remediation of the missed session and material covered.

Policy on un-authorized absences for clinical microanatomy:

A grade of zero will be given for that component if it is determined that a student has an un-excused absence from any graded activity.

Remediation Policy for Students Who Fail a Course

Remediation of courses/clerkships will be planned and implemented by a combined decision of the Evaluation and Promotion Committee in collaboration with the course/education director.

Academic Honor System:

"The Academic Honor System of The Florida State University is based on the premise that each student has the responsibility to: 1) Uphold the highest standards of academic integrity in the student's own work, 2) Refuse to tolerate violations of academic integrity in the academic community, and 3) Foster a high sense of integrity and social responsibility on the part of the University community." Please note that violations of this Academic Honor System will not be tolerated in this class. Specifically, incidents of plagiarism of any type or referring to any unauthorized material during examinations will be rigorously pursued by these instructors. Before submitting any work for this class, please read the Academic Honor System in its entirety (as found in the FSU General Bulletin and in the FSU Student Handbook) and ask the instructors to clarify any of its expectations that you do not understand.

ADA Statement:

Florida State University provides high-quality services to students with disabilities, and we encourage you to take advantage of them. Students with

disabilities needing academic accommodations should: 1) register with and provide documentation to the Student Disability Resource Center in Kellum Hall (644-9566), and 2) bring a letter to the instructor from the SDRC indicating that you need academic accommodations. Please do this as soon as possible so that you present the proper paper work to the course director five days prior to the course.

Required Textbook and Atlas:

- 1.) Histology A Text and Atlas: With correlated cell and molecular biology 5th edition, Ross and Pawlina, LWW
- 2.) Wheater's Functional Histology A Text and Colour Atlas 5th edition, Young, Elsevier

Recommended Textbooks:

- 1.) Wheater's Basic Histopathology, Stevens

e-Book Resources:

- 1.) Basic Histology, Junqueira
- 2.) Internet Atlas of Histology, Kokko-Cunningham
- 3.) Histology Image Review, Wilson
- 4.) Molecular Biology of the Cell, Alberts
- 5.) Molecular Cell Biology, Lodish
- 6.) Color Atlas of Cytology, Kuehnel
- 7.) Color Atlas of Pathology, Riede
- 8.) Molecular Biology and Cellular Pathology, Crocker
- 9.) Cell Biology/A Short Course, Bolsover

More detail on these resources may be found on the Blackboard site under 'Course Library' and entitled MicroSources.

Important

- 1.) This is a 'living' document and may be subject to change. You will be notified on the Blackboard site (Announcements) of any changes.

2.) You are *required* to fill out all assigned peer, self and faculty evaluations monitored by the Medical Education staff. The field of Medicine requires heavily on evaluation of its personnel to ensure patient safety and optimal care. Take this opportunity to get familiarized with this process and take it seriously. For your final grade I will round down or round up from .5 based on your full completion of these evaluation forms.

Clinical Microanatomy 6110C: Laboratory Design

Laboratory is separated into two groups but will be taught at the same time. Students will be in their group # from the Clinical Anatomy course

Groups 1-10: Payer and Alston

Groups 11-20: VanLandingham and Klatt

General Laboratory:

You will bring your laptop computers and connect with the imaging databases assigned for the specific lab session. The lab exercises will be based on the system of the week and come from many sources which may include; Wheater's Atlas of Histology 5th Edition, Atlas of Cytology, Backus, Virtual Slidebox, Color Atlas of Histology 3rd Edition and Gold Standard Media. The use of these various resources will be reviewed in the first laboratory session. Students are also encouraged to become familiar with other web based resources (webpath is one example). Two faculty will be available to assist you as needed during the one hour time period. There will be an LCD projection system connected to a networked computer to project images of the lab session to the class as a whole during the facilitator review. Team testing will be used to encourage student interaction, assist in test preparation and enhance public speaking skills.

Course Components:

Laboratory Slide Presentations: A 30 minute review of slides will be carried out in the first half of the laboratory meeting by the facilitator. These slides will be taken from a variety of sources listed above and in the MicroSources attachment found in the 'Course Library' on Blackboard. The slides will pertain to the system/systems of the week and will be composed approximately of 80% normal histology and 20% histopathology. Dr. Payer will be the primary lead for Laboratory Group #1 and Dr. VanLandingham will be the primary lead for Laboratory Group #2. Dr. Payer will be assisted by Dr. Alston and Dr. Vanlandingham will be assisted by Dr. Klatt.

Team Testing: Following the 30 minute review students will join their assigned team to participate in slide testing. A different set of slides (similar in nature) for the same system will be downloaded by the team onto 2 laptop computers. Ten slides will be analyzed (1 by each group) with each slide requiring the team to answer 3 questions. These questions will ask the team to 1) identify the labeled structure, 2) give the structure's primary function for that system and 3) acknowledge clinical diagnoses if that structure were to no longer function properly (to ensure the correct answer is achieved a clinical clue may be given as there is often overlap of microanatomical alterations in multiple disease states). An example would be a histological preparation of liver hepatocytes. The mitochondria would be labeled and look significantly larger than normal. Teams

would 1) identify the mitochondria, 2) express that it is involved in oxidative ATP (energy) production, and 3) report that mitochondrial enlargement is a common sign in alcoholic liver disease. Each week you will have a new team leader, which will be decided by your group. That leader will come up and give the answers to your slide using the LCD projector to view the slide and its content.

Quizzes: There will be 6 quizzes on the dates represented in your course schedule. These quizzes will be taken independently (not in teams) and represent 10% of your grade for the course. The time for facilitator review and team testing will be proportionally decreased on quiz dates. Quizzes will be given using overhead PowerPoint presentations with student use of bubble sheets.

Evaluations: Peer and facilitator evaluations will be conducted by the Medical Education Department at mid and final term timepoints.

Laboratory Topics by Session:

Using Blackboard go to the Course Materials section and click on the current week. From here click on the 'Lab' component of the list. In this folder you will find three headings.

The first heading is entitled 'The List', this folder will have your emphasized cellular components for that lab which must be identified based on structure and given a function. Keep in mind that the structure and function may vary based on the cell type we are discussing. This folder will also have your diseases for the week that we are focusing on at the cellular level. These diseases must be identified based on cellular changes in morphology and or changes in expression of cellular components.

The 2nd heading in this folder is entitled 'The Slides', these are the chosen slides for that week's lab which will be used to identify structures and diseases given in 'The List'. These slides will be the ones in which the facilitator for your lab section will review in the 30 minutes prior to 'Team Testing'.

The 3rd heading in this folder is entitled 'Team Testing', these are the chosen slides for which your group will be asked to answer 3 questions per slide. The weekly slide to be analyzed by your group will match your group #. These slides will not be posted until the morning of the lab and should not be reviewed prior to lab. There is no reason to review them because your ability to answer them correctly does not affect your grade.

2006
Clinical Microanatomy
BMS 6110
Course Schedule

Color codes for course activities:
Microanatomy Lectures
Laboratory Sessions
Small group sessions
Molecular Medicine lectures
Lecture review and quizzes
Presentations
Examination

Week 1: Basic Cell Biology

Hour	Monday 8-28	Tuesday 8-29	Wednesday 8-30	Thursday 8-31	Friday 9-1
2:45-4 PM	Cell Structure and Function: Cell cytoplasm	Cell Structure and Function: Cell nucleus	Cellular Mechanisms of Disease: Cell death, Mitochondrial and DNA damage	2:45-3:45 Lab #1: Histological Methods and General Cell Structural components	Lecture review and Quiz # 1
4-5 PM				Small Group: Case # 1	

Week 2: Epithelial and Connective Tissue

Hour	Monday 9-4	Tuesday 9-5	Wednesday 9-6	Thursday 9-7	Friday 9-8
2:45-4 PM	Labor Day	Cell Structure and Function: Epithelial and Connective Tissue	Cellular Mechanisms of Disease: Cellular response to epithelial and CT damage	2:45-3:45 Lab #2: Histology of Epithelial and Connective Tissue: normal versus disease	Molecular Medicine: Immunohistochemical Techniques for clinical diagnosis
4-5 PM					

Week 3: Bone

Hour	Monday 9-11	Tuesday 9-12	Wednesday 9-13	Thursday 9-14	Friday 9-15
2:45-4 PM	Cell Structure and Function: Bone I	Cell Structure and Function: Bone II	Cellular Mechanisms of Disease: Cellular disorder in bone and cartilage	2:45-3:45 Lab #3: Histology of Bone and Cartilage: normal versus disease: Quiz 1	Lecture review and Quiz # 2
4-5 PM				Small Group: Case # 2	

Week 4: Blood

Hour	Monday 9-18	Tuesday 9-19	Wednesday 9-20	Thursday 9-21	Friday 9-22
2:45-4 PM	Cell Structure and Function: Blood I	Cell Structure and Function: Blood I	Cellular Mechanisms of Disease: Cellular aspects underlying blood disorders	2:45-3:45 Lab #4: Histology of Blood cells: normal versus disease	Examination # 1
4-5 PM			30 minute Examination Review: Q&A		

Week 5: Muscle

Hour	Monday 9-25	Tuesday 9-26	Wednesday 9-27	Thursday 9-28	Friday 9-29
2:45-4 PM	Cell Structure and Function: Muscle I	Cellular Structure and Function: Muscle II	Cellular Mechanisms of Disease: Disorders associated with cellular disruptions in muscle tissue	2:45-3:45 Lab #5: Histology of Muscle: normal versus disease: Quiz 2	Lecture review and Quiz # 3
4-5 PM				Small group: Case #3	

Week 6: Muscle

Hour	Monday 10-2	Tuesday 10-3	Wednesday 10-4	Thursday 10-5	Friday 10-6
2:45-4 PM	Cell Structure and Function: Nervous System 1 <i>Alston</i>	Cell Structure and Function: Nervous System II <i>Alston</i>	Cellular Mechanisms of Disease: Cellular aspects of Neuronal diseases	2:45-3:45 Lab #6: Histology of Neuronal Tissue: normal versus disease	Molecular Medicine: Blotting Techniques for clinical diagnosis
4-5 PM					

Week 7: Cardiovascular System

Hour	Monday 10-9	Tuesday 10-10	Wednesday 10-11	Thursday 10-12	Friday 10-13
2:45-4PM	Cell Structure and Function: Cardiovascular System I	Cell Structure and Function: Cardiovascular System II	Cellular Mechanisms of Disease: Hypertension/Ischemic Heart disease	2:45-3:45 Lab #7: Histology of Cardiovascular System: normal versus disease: Quiz 3	Lecture review and Quiz # 4
4-5 PM				Small Group: Case # 4	

Week 8: Lymphatic and Integumentary Systems

Hour	Monday 10-16	Tuesday 10-17	Wednesday 10-18	Thursday 10-19	Friday 10-20
2:45-4 PM	Cell Structure and Function: Lymphatic System	Cell Structure and Function: Integumentary System	Cellular Mechanisms of Disease: Cellular aspects of skin and lymphatic-associated cancers	2:45-3:45 Lab #8: Histology of Lymph tissue and skin cells: normal versus disease	Examination # 2
4-5 PM			30 minute Examination Review: Q&A		

Week 9: Digestive System

Hour	Monday 10-23	Tuesday 10-24	Wednesday 10-25	Thursday 10-26	Friday 10-27
2:45-4 PM	Cell Structure and Function: Digestive System I	Cell Structure and Function: Digestive System II	Cellular Mechanisms of Disease: Cellular aspects of GI-related disorders	2:45-3:45 Lab #9: Histology of Digestive System: normal versus disease: Quiz 4	Lecture review and Quiz # 5
4-5 PM		PowerPoint Presentation Tutorial: Clark		Small Group: Case # 5	

Week 10: Respiratory System

Hour	Monday 10-30	Tuesday 10-31	Wednesday 11-1	Thursday 11-2	Friday 11-3
2:45-4 PM	Cell Structure and Function: Respiratory System I: <i>Payer</i>	Cell Structure and Function: Respiratory System II: <i>Payer</i>	Cellular Mechanisms of Disease: Lung diseases; COPD/Cancer/Genetic	2:45-3:45 Lab #10: Histology of Respiratory-associated tissues: normal versus disease	Molecular Medicine: Use of the polymerase chain reaction (PCR) for clinical diagnosis
4-5 PM					

Week 11: Urinary System

Hour	Monday 11-6	Tuesday 11-7	Wednesday 11-8	Thursday 11-9	Friday 11-10
2:45-4 PM	Cell Structure and Function: Urinary System I	Cell Structure and Function: Urinary System II	Cellular Mechanisms of Disease: Cellular aspects of Urinary disorders	2:45-3:45 Lab #11: Histology of Urinary System: normal versus disease: Quiz 5	Lecture review and Quiz # 6
4-5 PM	Presentations: Groups 1-4	Presentations: Groups 5-8	Presentations: Groups 9-12	Small Group: Case # 6	Presentations: Groups 13-16

Week 12: Endocrine System

Hour	Monday 11-13	Tuesday 11-14	Wednesday 11-15	Thursday 11-16	Friday 11-17
2:45-4 PM	Cell Structure and Function: Endocrine System I	Cell Structure and Function: Endocrine System II	Cellular Mechanisms of Disease: Cellular aspects of Endocrine disorders	2:45-3:45 Lab #12: Histology of Endocrine System: normal versus disease	Examination # 3
4-5 PM	Presentations: Groups 17-20		30 minute Examination Review: Q&A		

Week 13: Reproductive System

Hour	Monday 11-27	Tuesday 11-28	Wednesday 11-29	Thursday 11-30	Friday 12-1
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Hour	Monday 12-4	Tuesday 12-5	Wednesday 12-6	Thursday 12-7	Friday 12-8
2:45-4 PM	Cell Structure and Function: Male Reproductive System <i>Payer</i>	Cell Structure and Function: Female Reproductive System I <i>Payer</i>	Cellular Mechanisms of Disease: Cellular aspects of Reproductive disorders	Thanksgiving	Thanksgiving
4-5 PM			Lab #13: Histology of Reproductive System: normal versus disease: Quiz 6		

Week 14: Visual, Olfactory and Auditory Systems

2:45-4 PM	Cell Structure and Function: Visual/Auditory/Olfactory System	Cellular Mechanisms of Disease: Cellular aspects of special sense diseases	2:45-3:45 Lab #14: Histology of Eye, Nose and Ear: normal versus disease	Stem Cells/Course Review: Q&A	Molecular Medicine: HighThroughput techniques: clinical diagnosis Gene Therapy: innovation and clinical use
4-5 PM		Lecture review and Quiz # 7	Laboratory Review: Q&A	Small Group: Case # 7	

Week 15: Final Examinations

2:45-4 PM				Examination # 4	NBME Shelf Examination
4-5 PM					