Syllabus

P531-P532: MEDICAL PHYSIOLOGY

Fall 2015

Class session: 10:10 – 11:00 M/W/F Jordan Hall 009

FACULTY CONTACT INFORMATION

Course Director
Bruce Martin, PhD
Jordan Hall 200
855-0982
E-mail: martin1@indiana.edu
Office hours: 8:00 – 10:00 M – F

Rick Mynark, PhD
Jordan Hall 004
855-9067
E-mail: rmynark@indiana.edu

Ken Nephew, PhD
Jordan Hall 302
855-9445
E-mail: knephew@indiana.edu

Students can contact faculty for counsel and assistance with questions in several ways: (1) immediately before or after class session, (2) via email, (3) by visiting their offices, (4) by calling Shirley Braden (855-0616) or Jackie Cullison (855-9066) in the Medical Sciences Departmental Office, or (5) by leaving a note in one of their mailboxes located in the Program Office in Jordan 104.

Skip to select sections of the syllabus by clicking on the headers below.

DESCRIPTION/OVERVIEW
COURSE OBJECTIVES
LEARNING MATERIALS AND RESOURCES
LEARNER ASSESSMENTS
GRADING POLICY
IUSM COMPETENCIES
IUSM POLICIES
COURSE SCHEDULE AND SYLLABUS

COURSE DESCRIPTION/OVERVIEW

This physiology course is an intensive introduction to the function of the whole person as well as of the individual organ systems, such as the gastrointestinal, cardiovascular, and respiratory systems. Although not focused primarily on structure, structure and function are interwoven at every level of physiology. The course is divided into six units: 1) Introduction and Neuromuscular, 2) Cardiovascular, 3) Respiratory, 4) Renal, 5) Gastrointestinal, and 6) Endocrine physiology. The laboratory portion of the
course, in the spring semester, provides a mixture of team-based learning, problem-based learning, and direct measurement exercises that complement and supplement the classroom portion of the course.

**CONTEXT**

A standard week during the course will consist of three 50-min class sessions each week during each of the two semesters. A 2 – 3 hour laboratory will be included each week during the spring semester. Each “class session” will consist of roughly 50% explanation and question answering by the instructor, and 50% group-based problem solving. The class workbook, to be provided both electronically and, if desired, in print, contains an outline of the material and all of the problem sets and discussion questions. It is recommended that students read ahead and be prepared for each class session, which will maximize the productivity of the entire class.

**MEDICAL PHYSIOLOGY COURSE OBJECTIVES**

**Knowledge Objectives**
At the successful completion of the course, students will be able to

1. Explain the morphological and functional characteristics of skeletal, cardiac, and smooth muscle.
2. Understand the role of the autonomic nervous system in the regulation of physiological systems.
3. Evaluate the main functions of the heart and blood vessels, as well as regulatory and integrative aspects of the cardiovascular system.
4. Describe the organization and function of the respiratory system.
5. Name and analyze the structure-function relationships of the renal system and its integration with other organ systems.
6. Comprehend the physiological responses to acid-base disturbances.
7. Explain how gastrointestinal motility, secretion, digestion, and absorption are controlled.
8. Describe the major components of thermoregulation and the functions and structure of sleep
9. Understand the various organ system responses to exercise.
10. Describe the organization of the endocrine system, and the functions and regulation of all significant hormones involved in physiological regulation.
11. Describe and explain male and female reproductive endocrinology.

**Psychomotor Objectives**
By participating in laboratories, students will acquire the skills to

1. Sample venous blood and interpret a complete blood count, blood electrolytes, a comprehensive metabolic panel, and a cholesterol panel.
2. Perform and analyze pulmonary function tests, urinalysis, cardiac exams involving heart sound detection, central venous pressure estimation and venous pulse detection, and measurement of GFR via creatinine clearance, determination of osmolar and free water clearance, semen analysis, blood pressure, ECG measurement and interpretation, a glucose tolerance test, and indices of coagulation.
3. Increase awareness, understanding, and empathy for patients subjected in similar ways to clinical procedures.
Affective Objectives
By participating in small group exercises (team-based and problem-based), and in daily problem solving in pairs in a classroom setting, students will

1. Develop individual and group communication skills by interacting with fellow students and observing group dynamics.
2. Collaborate in groups ranging in size from 2 to 6 in both the formulation and solution of problems.
3. Express individual ideas and points of view while showing respect for those of others.

LEARNING MATERIALS AND RESOURCES

Class Session Materials:
Dr. Mynark’s class session outlines and audiocasts will be available on the P531/532 web page: http://www.indiana.edu/~msci531/home.html

Dr. Martin’s workbook, including descriptive and explanatory material, and problem sets and discussion questions, can be purchased at either the IU Bookstore or TIS Bookstore, and will also be provided via PDF.

Dr. Nephew’s class session notes will be distributed in class session.

Textbooks:

Required:
1. Linda Costanzo, *Physiology* 5th Ed., (2010) [Board Review Series] ISBN # 0781798760 (Amazon $41; used $34). This is the outline review text that the class workbook is built to follow.

Highly Recommended:

Recommended:

TEACHING PHILOSOPHY

We have one classroom rule: the Respect Rule

Respect for the material
Respect for each other
Respect for the teacher, and respect from the teacher

Our *Rules of Effective Teaching*, which are rules that your instructors will try to follow:

1. Be prepared
2. Be kind and courteous to students
3. Make students feel comfortable in the classroom
4. Remember the names of your students

The goal of this class is to facilitate your learning of medical physiology. To this end, the course is designed to emphasize active student learning by integrating class session, discussion, problem-based learning exercises, and laboratories.

Class sessions will involve periods of explanation interspersed with problem solving and discussion. The time will be split roughly 50/50 between these two modes of learning. We encourage questions at any time. Questions before and after class, during office hours, and via e-mail, are encouraged as well.

Your teachers do not expect you to know everything. We certainly don’t! We encourage you to voice your confusions to us; we learn as much from you as you do from us. Part of the respect rule is to make the classroom learning environment as safe and open as possible, so you can relax and feel free to be confused and to work on those items that are confusing.

We have all worked to develop teaching styles and methods that best meet the needs of our students. There will be periodic opportunities to voice your opinions (which are welcome at any time) about things that may or may not be working for you in the classroom. We will try to make any change that we can that will help facilitate your learning.

*Laboratories*

In the second semester, the laboratories are unique opportunities to learn hands-on. These are designed to be safe, fun, robust, and as clinically relevant as possible. They are also designed to minimize time wasted and maximize yield-per-hour.

Several of the experiments involve novel and potentially stressful or embarrassing measurements. We expect students to conform to the highest levels of professionalism throughout every laboratory exercise.
LEARNER ASSESSMENTS: Attendance, Daily Quizzes, and Exams

Attendance

Attendance will be taken, and is mandatory at all class sessions and laboratories. All reasonable excuses to miss a class session are accepted; if there is a time conflict with a lab, we can almost always accommodate with a switch to the other lab section. Please inform me as far in advance as possible by e-mail or in person. Each failure to attend a class session without a valid excuse will cause a four point deduction from the grade (two for attendance, and two for the daily quiz [see below]), and if continued beyond three will also result in a failing grade in the professionalism competency. Attendance will be taken in the first two or three minutes of the class.

Daily quiz

Promptly at the beginning of class session time (10:10 a.m.), we will begin with a single question concerning a central point from the material covered in the previous class session. Each question is worth 2 points. The “window” for answering this question will be < 3 minutes. Please be ready to take the quiz at 10:10 a.m.

Exams

There will be six exams and a final, comprehensive exam (from the National Board of Medical Examiners (NBME)) in the course. Each will be taken during a block exam week, with the day of the exam randomized among the several medical courses.

Exams 1 (Nerve and Muscle), Exam 2 (Cardiovascular), Exam 4 (Renal), Exam 5 (Gastrointestinal), and Exam 6 (Endocrine) will have 50 multiple-choice questions and will each be worth 100 points. Exam 3 (Respiration), is the final exam of the first semester, will have 80 questions and, in addition to 50 questions covering respiratory physiology, will include material from the first and second blocks of the course.

The "written" tests will consist of multiple-choice and NBME-style questions mainly over material presented in lecture, and will have a strong clinical/functional emphasis. They are computer based exams using the ExamSoft program and are taken in the Jordan 009 classroom during the normal class time.

Whenever possible, faculty will provide practice questions similar in format to exam questions. In some instances, this may include providing entire exams from past semesters, with keys. Any questions made available to students are open for all to use, copy, or distribute to whoever might find them useful.

If a student fails a unit exam, the course director will contact the student by email (with a cc to the Center Director, if applicable, and Medical Student Affairs) inviting the student to meet to discuss their performance and to implement study strategies to avoid recurrence on a subsequent exam.

The comprehensive NBME final will cover both semesters of the material and is worth 25% of the entire course grade (363 points). The question format on all exams will always be the same, and will be as
similar as possible to the format of the NBME final. Each question will have five choices and one best answer.

Laboratories will be credited on a ten points/lab basis, with 5 points awarded for completing the work in the lab. Although the course cannot be passed without attending and working through each laboratory, our goal is to emphasize working through the lab exercise, not memorization of details. There will be lab quizzes worth five points per lab. These quizzes will be given the next week in lab. Potential laboratory, attendance, and competency points will total 190.

**Policy on Make-up Examinations:**

Occasionally, circumstances may interfere with a students' ability to complete an examination at the scheduled time. Students may request an extension or delay when health or life circumstances would preclude effective performance on an examination. Such circumstances might include death in the immediate family, serious illness, or trauma. Students are required to talk with the course director if they believe circumstances might justify a postponement. The course director will have the discretion to reschedule the examination or to deny the student's request. Requests for exam postponement will be considered only if the student provides documentation written by an official (e.g., counselor, physician, clergy) on official letterhead stating the reason for the absence. Exam postponement due to illness or injury will require a statement signed by a physician that has examined the student at the time of illness documenting that the student was unable to take the exam as scheduled; the exact nature of the illness need not be disclosed. Exams must be made up no later than one week after the originally scheduled exam date. Requests to extend this time must be accompanied by additional official documentation and the course director will have the final say on whether an extension will be given. A student that fails to comply with the above requirements will receive a 0 for the missed exam. The make-up exam may or may not be of the same type given to regular students.

**GRADING POLICY**

At the end of the first semester, grades will officially only be given to graduate students. After two semesters (class session + laboratory), an overall grade will be given to medical students, while second-semester grades will be given to graduate students.

**Basis of grade:**

<table>
<thead>
<tr>
<th>Basis of grade</th>
<th>Total points possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five hourly exams: (50 questions; 100 points total)</td>
<td>500</td>
</tr>
<tr>
<td>First semester final: (80 questions; 160 points total)</td>
<td>160</td>
</tr>
<tr>
<td>Laboratory quizzes and attendance</td>
<td>110</td>
</tr>
<tr>
<td>Final comprehensive exam:</td>
<td>363</td>
</tr>
<tr>
<td>Attendance (daily)</td>
<td>160</td>
</tr>
<tr>
<td>Daily quiz</td>
<td>160</td>
</tr>
</tbody>
</table>

As noted above, the points are distributed such that the NBME counts 25% of the overall course grade.
Grades are assigned on the curve provided by the medical school (designed to help all nine teaching sites around the state provide similar grading policy).

For medical students, the top 10 – 15% of the class earns the honors (H) grade, while the next 25 – 40% of the class earns the high pass grade (HP). The remainder of the class earns the pass (P).

The grade of F is given to persons who are significantly below the rest of the class in point total, and is also given to anyone who has scored in the lowest 5% of the national distribution of final exam scores. A student who earns an F in this class will be required to take a similar comprehensive final exam again, in late June, after a period of independent study under the guidance of any faculty member in the statewide system. The independent study can be carried out while the student continues with other summer plans; the only official requirement is that the student must be present in Indianapolis to re-take the exam on a single morning in late June.

Graduate students in the H or HP range earn the A grade; students in the P range earn the B, and students in the F range receive a C.

The grading philosophy is that a P (or B, for graduate students) is an excellent grade. Remember that your teachers probably got P’s or the equivalent much of the time in school! We write enthusiastic letters of recommendation for students who earn the P grade.

If you are struggling, some extra review sessions can help a surprising amount. Your teacher can provide these. In general, if the material seems overwhelming, and your grades are suffering, this is probably a joint problem, and we can usually work together during the teacher’s office hours to get back on track. We have had many students over the years that were failing, and after extra help sessions were able to reach—or exceed—the class mean, and perform admirably on the comprehensive final exam. If there are issues regarding grading or of competency evaluation, refer to the Grade and Competency Appeal Process.

Course Failure and Remediation: Students who fail the course will be referred to the Student Promotions Committee which will determine the course of action for the student. Generally, if a student fails only this course, the student may be given the opportunity to re-take the physiology NBME exam. In this case, the student must achieve a score at the 25th percentile which corresponds to a scaled score of 43. Students who fail more than one course in the first year may be given the opportunity to repeat the entire year. For more information, please refer to the remediation policy described in the Student Promotions Committee (SPC) portion of the student handbook at http://msa.medicine.iu.edu/studenthandbook/spc/.

Laboratories (2nd semester)

Laboratories are designed to measure clinically-relevant information in us. Past students describe the labs as low-stress, which is a goal for us. We all leave lab at the same time, when everyone is finished collecting data and we have briefly discussed the data, so if you finish a little earlier than someone else, give them a hand. The labs are designed to increase confidence and experience with clinically-relevant skills and information.
All experiments are completely safe unless there are other risk factors. For example, if you have a clotting disorder, tell us since you should not participate in the venipuncture laboratories. Or, if you are sensitive to aspirin, don’t take aspirin before the blood clotting lab. As another example, if you are running a fever, do not exercise in the metabolism lab. Be sure to tell us about any possible problem with participation in any lab.

There will be no animal experiments, no slow experiments (the longest lab is less than 3 hours), and the class is always divided in half. You can switch lab sections anytime if you can find someone to switch with, and it fits both of your schedules. We don’t care if you switch every other week all year.

Several of the laboratories will be problem-based learning (PBL) and team-based learning (TBL) exercises. These written cases emphasize student-led learning. During the first week of each PBL, your group of 4-6 will work through and solve the problem. The second week will involve oral presentation of your findings. We emphasize active participation in every laboratory session.

**Laboratory staff:**

Jw Ramsey  
Jordan Hall 107  
855-0982  
E-mail:  
ramseyj@indiana.edu  
Dr. David Matlack  
CCB 207  
855-9067  
E-mail:  
dmatlack@indiana.edu

**IUSM COMPETENCIES and ASSESSMENT**

The School of Medicine has a competency-based curriculum. The nine competencies are intended to broaden the scope of medical education from a sole emphasis on factual knowledge and test scores. In this course, we will facilitate development of Level One competency in the following areas:

- **Competency I: Effective Communication**
  The competent graduate: listens attentively; communicates clearly with patients, families, and health care team members; understands the key elements of a professional therapeutic relationship; understands the importance of relationship-centered care to the healthcare outcomes of the patient, family, health system, and society; and can effectively and efficiently communicate using oral, written, and electronic means.
    - This competency is fulfilled by regular contributions to oral discussion during regular class periods, by consistent attendance at and verbal participation in group exercises (including TBL and PBL) that require verbal and written skills, and by generation of PowerPoint presentations to the whole class following each PBL exercise.

- **Competency III: Using Science to Guide Diagnosis, Management, Therapeutics, and Prevention**
  The competent graduate knows and can explain the scientific underpinnings, at the molecular, cellular, organ, whole body, and environmental levels for states of health and disease based upon current understanding and cutting-edge advances in contemporary basic science. The graduate uses this information to diagnose, manage and present the common health problems of
individuals, families, and communities in collaboration with them. The graduate develops a problem list and differential diagnosis, carries out additional investigations, chooses and implements interventions with consultation and referral as needed, determines outcome goals, recognizes and utilizes opportunities for prevention, monitors progress, shares information and educates, and adjusts therapy and diagnosis according to results.

- Achieving a passing grade in this course will fulfill this competency.

**Competency V: Self-Awareness, Self-Care, and Personal Growth**

The competent graduate approaches the practice of medicine with awareness of his/her limits, strengths, weaknesses and personal vulnerabilities. The graduate assesses personal values and priorities in order to develop and maintain an appropriate balance of personal and professional commitments. The graduate seeks help and advice when needed for his/her own difficulties and develops personally appropriate coping strategies. The graduate recognizes his/her effect on others in professional contacts. The graduate seeks, accurately receives and appropriately responds to performance feedback.

- Fulfilling this competency involves participation in laboratories devoted to measurements on ourselves of numerous clinically-relevant variables, including blood pressure, ECG, complete blood counts (obtained by venipuncture), semen analysis, renal function, and pulmonary function. Both collecting and providing data enhances self-awareness and increases awareness of one’s effect on others.

- Discussion of specific aspects of self-awareness and self-care are included in the relevant portions of the physiology course. For example, discussion of the physiology of sleep and sleep disorders (including the effects of anxiety, stress, and depression) is included in the first block of material. In the endocrine portion of the course, a discussion of stress hormones is expanded to consider specific aspects of stress and stress management for medical students.

**Competency IX: Professionalism and role recognition**

The competent graduate recognizes the powerful impact of his/her professional attitudes and behavior on others and consistently demonstrates the highest standards of excellence, duty, and accountability to the patient. The competent graduate values the humanity of all patients and does not exploit patients for personal gain. The competent graduate recognizes his/her role in working collaboratively with others to meet the health care needs of the individual and the community.

- Fulfillment of this competency is achieved by at least 95% punctual attendance at class sessions, and 100% punctual attendance at group and laboratory learning projects. Working with laboratory partners in a professional and collaborative manner is essential for fulfillment of this competency.
IUSM POLICIES

IUSM HONOR CODE
As a first year student, you signed the IUSM Honor Code, thus agreeing to following the tenets of honesty, integrity and respect while learning, caring for others, performing research, and/or participating in education activities at IUSM. You are expected to continue following these tenets in this course/clerkship. The full text of the Honor Code is as follows:

Embarking on a career in the life sciences and health care professions means accepting the responsibilities and unique privileges of these professions. These include self-monitoring and self-governance, and the responsibilities for these professional duties begin the moment that an individual starts medical school or graduate school. I understand that it is a great honor and privilege to study and work in the health care profession. As a member of the Indiana University School of Medicine community, I promise to uphold the highest standards of ethical and compassionate behavior while learning, caring for others, performing research, and/or participating in educational activities. I do so according to the following tenets that will guide me through my career. I will strive to uphold the spirit and the letter of this code during my years at Indiana University School of Medicine and throughout my career in the health professions.

Honesty
- I will maintain the highest standards of honesty.
- If engaged in research, I will conduct these activities in an unbiased manner, report the results truthfully, and credit ideas developed and worked on by others.
- If engaged in patient care, I will be considerate and truthful, and will accurately report all historical and physical findings, test results, and other pertinent information.

Integrity
- I will conduct myself professionally.
- I will take responsibility for what I say and do.
- I will recognize my own limitations and will seek help when appropriate.

Respect
- I will respect the dignity of others, treating them with civility and understanding.
- I will contribute to creating a safe and supportive atmosphere for teaching and learning.
- I will regard privacy and confidentiality as core obligations.
- I will not tolerate discrimination.

Expectations of the University and your colleagues:
Indiana University School of Medicine promises to create a professional environment that fosters excellence, rejects intolerance, and values each individual's unique contribution to our learning community.

Academic Dishonesty
As explained in the Academic Dishonesty section of the Student Handbook:
Any form of cheating is incompatible with the moral conduct expected of members of the medical profession and will not be tolerated.
Cheating is dishonesty of any kind with respect to examinations or any graded or assessed in-course assignment or activity, and includes acts such as seeking or accepting assistance on an exam, being in the unauthorized possession of examination materials, sharing exam information to assist another
student, collaboration on individually graded assignments or projects, alteration of records or the creation of false records, forging a signature or the unauthorized use of another person’s electronic signature, and plagiarism. It is the responsibility of the student not only to abstain from cheating but, in addition, to avoid the appearance of cheating and to guard against making it possible for others to cheat. Plagiarism is a form of unethical conduct in which one claims someone else’s work for his/her own. Materials taken from another source must be fully acknowledged and the author must be given proper credit. The origin of plagiarized work may be print or digital media such as books, journals and periodicals, databases, laboratory notes, patient exam notes, electronic medical records and also materials used in oral presentations.

Students suspected of academic dishonesty will be referred to the Student Promotions Committee and may be dismissed from medical school.

**Adaptive Educational Services**

Any student at any IUSM campus requesting accommodations for a disability must apply to the Indiana University School of Medicine Disabilities Accommodations Committee and must register with the adaptive educational services office at the host campus. Guidelines for application along with a list of the adaptive services offices on each campus are available in the Disabilities Accommodations Policy of the Student Handbook.

Accordingly, "no qualified individual with a disability shall, by reason of such disability, be either excluded from participation in or be denied the benefits of the services, programs, or activities" of Indiana University School of Medicine. Please be aware, “faculty and staff are prohibited from discriminating or retaliating against any individual who has opposed any act or practice that the individual believes is discriminatory, or because the individual made a charge, testified, assisted, or participated in any manner in an OCR or EEOC investigation.” Moreover, university faculty and staff shall not coerce, intimidate, threaten, or interfere with any individual in the exercise of enjoyment of the protections or rights granted by Section 504 or Title II.

Graduate students with documented disabilities who will require accommodations should contact the Office of Disability Services for Students in Bloomington to obtain appropriate documentation of their disability and the determined accommodation.

**Unprofessional Behavior, Abuse, Harassment, and Discrimination**

As explained in the Teacher Learner Advocacy Committee (TLAC) brochure:

Indiana University School of Medicine is committed to maintaining an academic and clinical environment in which faculty, fellows, residents, students, and employees can work together to further education and research and provide the highest level of patient care, whether in the classroom, the laboratory or the clinics. The School’s goal is to train men and women to meet the highest standards of professionalism and work in an environment where effective, ethical and compassionate patient care is both expected and provided. All interactions, whether student-student, student-teacher, or teacher-teacher, should demonstrate mutual respect. This can be expressed in many ways, but all interactions shall include collegiality, honesty, fairness, and equal treatment.

*Unprofessional behavior, abuse, harassment, or discrimination as defined by the IUSM Core Values and Guiding Principles, will not be tolerated at IUSM.*
TLAC’s mission is to foster and ensure a professional learning environment by assisting in conflict resolution and sponsoring programs to enhance communication and professionalism in all learning environments. If you are unsure how to address or resolve a conflict, need an advocate, or have ideas for improving the IUSM learning environment, communication, or professionalism, please consult the materials on the TLAC website or contact TLAC directly at TLAC@iupui.edu.

**Learning Difficulties:**

If a student fails a unit exam, the course director will contact the student inviting the student to meet to discuss their performance and to implement study strategies to avoid recurrence on a subsequent exam. Students are advised that they should speak with their course director regarding assistance that may be locally available. In addition to faculty, students may also want to contact:

Patricia Ann Wade, Ph.D.  
Learning Specialist, Office for Mentoring and Student Development  
(317) 274-2042 patwade@iupui.edu

Mary Alice Bell, MS  
Director, Office for Mentoring and Student Development  
(317) 274-7173 mbell@iupui.edu

**Educational, Personal Services, Counseling and Special Needs:**

Please refer to the Medical Sciences website for links to agencies and services available on the Bloomington campus for educational services and personal needs counseling. Individual and/or special accommodations will need to be approved by the School of Medicine as described in the student handbook (http://msamedicine.iu.edu/studenthandbook/).

**Scheduling conflicts/Request for Time Away/Religious Accommodations:**

The policy referenced above may be found in the medical student handbook at http://msa.medicine.iu.edu/studenthandbook/
First-Year Medical Course & Exam Schedule: First Semester 2015 – 2016

Legend:
Biochemistry lectures/PBL’s: Times New Roman type
Histology lectures/labs: Times New Roman italics
Physiology lectures/labs/PBL’s: Times New Roman underlined
Gross anatomy lectures/labs: Arial Narrow type
Neuroscience lectures/labs: Courier New type
Microbiology/Immunology lectures: Mistral type
Patient/Physician relationship: Papyrus type
Exams in all courses: Copperplate gothic BOLD type

---

**Fall Semester 2015**

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/10</td>
<td>8-10 Micro</td>
<td>9 Techniques of histo 10 Cell memb. 11 Cell signaling 1-2 Intro, medical imaging 2-4 Intro, medical imaging</td>
<td>8-10 Micro 10 Osmosis 11 Protein structure</td>
<td>9 Cell organelles 10 Cytoskeleton 11 Cytoskeleton 1-2 Back, vertebral column 2-4 Superficial back</td>
<td>8-10 Micro 10 Diffusion potentials 11 Protein folding</td>
</tr>
<tr>
<td></td>
<td>10 Membrane transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 Biochem intro</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30 Patient/Physician</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/17</td>
<td>8-10 Micro</td>
<td>9 Cell nucleus 10 Stem cells, cell fates 11 Cell lab 1-2 Spinal cord, nerves 2-4 Intermediate &amp; deep back</td>
<td>8-10 Micro 10 Chemical synapse 11 Hemoglobin I</td>
<td>9 Epithelia &amp; glands 10 Cell lab 11 Cell lab 1-2:30 Embryology I, II (no gross anatomy lab)</td>
<td>8-10 Micro 10 Synaptic Transmission 11 Hemoglobin II</td>
</tr>
<tr>
<td></td>
<td>10 Action potential</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 Collagen TBL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30 Patient/Physician</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/24</td>
<td>8-10 Micro</td>
<td>9 Muscle tissues 10 Muscle tissues 11 Muscle tissues 1-2 Autonomic nervous system 2-4 Vertebral column &amp; spinal cord</td>
<td>8-10 Micro 10 Motor unit function 11 Enzymes: Catalysis</td>
<td>9 Connective tissues 10 Connective tissues 11 Connective tissues 1-2 Thoracic wall 2-4 Thoracic wall</td>
<td>8-10 Micro 10 Muscle mechanics 11 Enzyme regulation</td>
</tr>
<tr>
<td></td>
<td>10 Neuromuscular Junction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 Enzyme kinetics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30 Patient/Physician</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/31</td>
<td>8-10 Micro</td>
<td>9 Cartilage and bone 10 Cartilage and bone 11 Cartilage and bone 1-2 Abdominal wall 2-4 Abdominal wall</td>
<td>8-10 Micro 10 Temp Regulation 11 Protein synthesis I</td>
<td>9 Bone formation/joints 10 Bone format’/’ joints 11 Bone format’/’ joints 1-2:30 Embryology III 2:30: Peer review of dissections; review</td>
<td>8-10 Micro 10 Sleep 11 Protein synthesis II</td>
</tr>
<tr>
<td></td>
<td>10 Autonomic function</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 DNA/RNA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30 Patient/Physician</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/7</td>
<td><strong>Block 1 Exam Week</strong></td>
<td><strong>Gross Anatomy Lecture Exam</strong></td>
<td><strong>Micro/Immu Exam</strong></td>
<td><strong>Histology Lecture Exam</strong></td>
<td><strong>9-11 Biochem Exam</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Physiology Exam</strong></td>
<td><strong>Gross Anatomy Lab Exam</strong></td>
<td></td>
<td><strong>Histology Lab Exam</strong></td>
<td></td>
</tr>
<tr>
<td>9/14</td>
<td>8-10 Micro</td>
<td>9 Nerve tissue 10 Nerve tissue 11 Nerve tissue 1-2 Mediastinum, lungs 24 Pleural cavity, lungs</td>
<td>8-10 Micro 10 Cardiovascular circuitry 11 Protein Sorting II</td>
<td>9 Eye &amp; Ear 10 Eye &amp; Ear 11 Eye &amp; Ear 1-2 Heart 2-4 Heart I</td>
<td>8-10 Micro 10 Hemodynamics 11 Actin Dynamics</td>
</tr>
<tr>
<td></td>
<td>10 Hemostasis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 Protein Sorting I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30 Patient/Physician</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Monday</td>
<td>Tuesday</td>
<td>Wednesday</td>
<td>Thursday</td>
<td>Friday</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>9/21 (7)</td>
<td>8-10 Micro 10 Cardiac electrophysiology 11 Intermediate Filaments 1:30 Patient/Physician</td>
<td>9 Circulatory system 10 Circulatory system 11 Circulatory system 1-2 Embryology of heart 2-4 Heart II</td>
<td>8-10 Micro 10 ECG 11 Microtubule Cytoskeleton</td>
<td>9 Blood cells 10 Hematopoeisis 11 Bl’d cells/hematopoii 1-2 Embryology of heart; GI tract introduction 2-4 Superior, posterior mediastinum</td>
<td>8-10 Micro 10 Autonomic control 11 Mitosis &amp; Cell Division</td>
</tr>
<tr>
<td>9/28 (8)</td>
<td>8-10 Micro 10 Cardiac pump 11 IUSM Medical Student Affairs visit 1:30 Patient/Physician</td>
<td>9 Immune system 10 Lymphoid organs 11 Immune lymphoid 1-2 GI tract embryology 2-4 Peritoneum &amp; peritoneal cavity</td>
<td>8-10 Micro 10 Heart &amp; vessels 11 DNA recombination/repair</td>
<td>9 Respiratory system 10 Respiratory system 11 Respiratory system 1-2 GI tract I 2-4 Celiac trunk, spleen, liver, gallbladder</td>
<td>8-10 Micro 10 Heart valves 11 Genomics in medicine I</td>
</tr>
<tr>
<td>10/5 (9)</td>
<td>8-10 Micro 10 Blood pressure regulation 11 Genes/chromosome structure 1:30 Patient/Physician</td>
<td>9 Skin 10 Skin 11 Skin 1-2 GI tract II 2-4 Mesenteric vessels &amp; intestines</td>
<td>8-10 Micro 10 Renin-angiotensin 11 Transcription initiation</td>
<td>9 Upper GI system 10 Upper GI system 11 Upper GI system 1-2 GI tract III 2-4 Duodenum, pancreas, hepatic portal vein</td>
<td>8-10 Micro 10 Microcirculation 11 Transcription and epigenetics</td>
</tr>
<tr>
<td>10/12 (10)</td>
<td>Block 2 EXAM WEEK Physiology EXAM</td>
<td>Histology Lecture Exam Histology Lab Exam</td>
<td>Micro/IMMUNO EXAM</td>
<td>Gross Anatomy Lecture Exam Gross Anatomy Lab Exam</td>
<td>Biochemistry EXAM</td>
</tr>
<tr>
<td>10/19 (11)</td>
<td>8-10 Micro 10 Special circulations 11 RNA processing 1:30 Patient/Physician</td>
<td>9 Lower GI system 10 Lower GI system 11 Lower GI system 1-2 Gross anatomy TBL I (no gross anatomy lab)</td>
<td>8-10 Micro 10 Exercise regulation 11 Post-transcriptional gene regulation</td>
<td>9 Digestive glands 10 Digestive glands 11 Digestive glands 1-2 Kidneys &amp; ureters 2-4 Post. abdominal viscera (kidneys, ureters, aorta)</td>
<td>8-10 Micro 10 Lung volumes 11 Genomics in Medicine II</td>
</tr>
<tr>
<td>10/26 (12)</td>
<td>8-10 Micro 10 Pulm mechanics 11 Cell signaling 1:30 Patient/Physician</td>
<td>9 Urinary system 10 Urinary system 11 Urinary system 1-2 Pelvis, perineum 2-4 Post. abdominal wall</td>
<td>8-10 Micro 10 Airways resistance 11 Cell signaling II</td>
<td>9 Neuroendocrine 10 Neuroendocrine 11 Neuroendocrine 1-2 Innervation: pelvis 2-4 Pelvis, external genitalia</td>
<td>8-10 Micro 10 Flow-volume loops 11 Cell cycle I: mechanics</td>
</tr>
<tr>
<td>11/2 (13)</td>
<td>8-10 Micro 10 Gas exchange 11 Cell cycle II: regulation 1:30 Patient/Physician</td>
<td>9 Endocrine system 10 Endocrine system 11 Endocrine system 1-2 Anal &amp; urogenital triangles 2-4 Perineum, anal triangle</td>
<td>8-10 Micro 10 Oxygen transport 11 Cancer I</td>
<td>9 Male reproductive 10 Male reproductive 11 Male reproductive 1-2 Genital system devel. 2-4 Urogenital triangle</td>
<td>8-10 Micro 10 Hypoxia 11 Cancer II</td>
</tr>
<tr>
<td>11/9 (14)</td>
<td>8-10 Micro 10 Pulmonary circulation 11 Biochem TBL day 1 1:30 Patient/Physician</td>
<td>9 Female repro I 10 Female repro I 11 Female repro I 1-2 Pelvis, bladder 2-4 Male, female pelvis I</td>
<td>8-10 Micro 10 Ventilation/Perfusion 11 Biochem TBL day 2</td>
<td>9 Female repro II 10 Female repro II 11 Female repro II 1-2 Female internal genital organs 2-4 Peer review of dissections, review</td>
<td>8-10 Micro 10 Respiratory control 11 Biochem review</td>
</tr>
<tr>
<td>11/16 (15)</td>
<td>Block 3 EXAM WEEK Physiology EXAM</td>
<td>Gross Anatomy Lecture Exam Gross Anatomy Lab Exam</td>
<td>Micro/IMMUNO EXAM</td>
<td>Histology Lecture Exam Histology Lab Exam</td>
<td>Biochem EXAM</td>
</tr>
<tr>
<td>Week</td>
<td>Monday</td>
<td>Tuesday</td>
<td>Wednesday</td>
<td>Thursday</td>
<td>Friday</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------</td>
<td>--------------------------------</td>
<td>--------------------------------</td>
<td>--------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>11/23</td>
<td><strong>Thanksgiving Break</strong></td>
<td><strong>Thanksgiving Break</strong></td>
<td><strong>Thanksgiving Break</strong></td>
<td><strong>Thanksgiving Break</strong></td>
<td><strong>Thanksgiving Break</strong></td>
</tr>
<tr>
<td>11/30</td>
<td></td>
<td>Statewide Comprehensive Immunology Final</td>
<td></td>
<td>Statewide Comprehensive Microbiology Final</td>
<td></td>
</tr>
<tr>
<td>12/7</td>
<td>Statewide Comprehensive Immunology Final</td>
<td>Statewide Comprehensive Microbiology Final</td>
<td></td>
<td>Statewide Comprehensive Histology Final</td>
<td></td>
</tr>
</tbody>
</table>