

Function of the Human Body Second Semester 2010

OVERVIEW: Function of the Human Body builds upon core molecular and anatomical disciplines presented in the first semester. From physiology and histology to metabolic biochemistry and nutrition, major organ systems will be explored in an integrative fashion. Emphasis is placed upon the understanding of key concepts of normal physiological and biochemical systems in healthy humans. Selected aspects of pathophysiological processes will be discussed to illustrate how an understanding of normal function can be applied to clinical medicine. For students to succeed and perform their very best in this challenging course, it is mandatory for them to master the art of graph reading and logical thinking. The need to wrestle with challenging concepts, verbalize mechanisms, and reconstruct graphs with peers cannot be overstated. Comprehension and mastery of integrated FHB materials will prepare students for second-year courses in the curriculum, the USMLE board exams part I, as well as the clinical years.

EDUCATIONAL COMPETENCIES: The Central Curricular Authority (CCA) of Loyola has identified six core competencies encompassing 39 specifically defined goals which are applicable to academic courses in the four-year medical school curriculum at Stritch School of Medicine (SSOM). Four measurable goals from the first three competencies pertain to FHB as follows:

Section A. Competency: Medical Knowledge

Graduates must demonstrate knowledge of the basic biomedical sciences and clinical sciences, as well as the skills and attitudes necessary to use science to guide diagnosis, management, therapeutics and prevention. Students are expected to:

- know, understand and apply the basic concepts of the basic and clinically supportive sciences (Goal 1)

Section B. Competency: Interpersonal and Communication Skills

Graduates must demonstrate knowledge of the principles of communication and the skills and attitudes that allow effective interaction with patients, families, healthcare workers, and others who affect the health and well-being of patients; and to create and sustain a therapeutic and ethically sound relationship with patients. Students are expected to:

- use effective listening skills and elicit information using effective nonverbal, explanatory, and questioning skills (Goal 1)
- facilitate the learning of other students and health care professionals (Goal 6)

Section C. Competency: Professionalism, Moral Reasoning and Ethical Judgment

Graduates must demonstrate a combination of knowledge, skills, attitudes, and behaviors necessary to function as a respected member of the medical profession. They must know the obligations of medical professionals as members of a healthcare team, as members of a healthcare and educational institution, and as leaders in our society bringing about the common good. Our graduates will be able to: demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; and accountability to patients, society, and the profession. Students are expected to:

- behave professionally (Goal 1)

FACULTY: The success of FHB depends critically on the many experienced, dedicated and talented faculty associated with the course. Approximately fifty professional scientists and clinicians with demonstrated commitments to medical education cooperate in presenting lectures, facilitating small-group learning sessions, or leading laboratories or conferences. Individual faculty members are approachable and available for student questions. In addition, advanced graduate students may assist in small-group learning situations, and educational specialists help administer the course.

SECTIONS: FHB is partitioned into four main sections, each of which is followed by a sectional written examination including histological Kodachromes every four to six weeks. At the end of the course there is a comprehensive final examination divided into two parts: histology practical, and physiology written. As the course develops, students will recognize that unifying physiological principles keep recurring among the various organ systems. Students are encouraged to integrate the material as much as possible, minimizing the memorization of facts and maximizing the comprehension of concepts.

- Section 1: Cellular, Nerve, Muscle, Heart & Circulatory Physiology
- Section 2: Pulmonary, Renal & Acid-Base Physiology
- Section 3: Gastrointestinal, Metabolic, & Nutrition Physiology
- Section 4: Endocrine & Reproductive Physiology

TEXTBOOKS: There are four required textbooks in FHB as listed below. Class notes and/or PowerPoint slides with learning objectives and reading assignments will be posted online prior to each lecture. Sectional exam questions will be generated from lectures and reading assignments as well as other learning experiences within each section of the course. Students will gain more understanding from lectures if they complete the assigned readings before coming to lecture.

- *Physiology* (Berne, Levy, Koeppen & Stanton, 6th edition, 2008, Mosby)
- *Basic Histology: Text and Atlas* (Junqueira & Carneiro, 11th edition, 2005, McGraw Hill)
- *Wheater's Functional Histology* (Young, Lowe, Stevens & Heath, 5th edition, 2006, Churchill Livingstone Elsevier)
- *Textbook of Biochemistry with Clinical Correlations* (Devlin, 6th ed., 2006, Wiley-Liss)

LEARNING EXPERIENCES: There are nine types of learning experiences in FHB, enabling the student to approach the didactic material from various perspectives. Progress in the course is assessed by objective sectional and comprehensive final examinations. A detailed FHB Course Schedule reports the session titles, times and locations for all activities within the course. This schedule should be followed carefully since planned variations occur from week to week.

- **Physiology Lectures** (L 1-92)
- **Histology Lectures** (HL 1-14)
- **Small-Group Problem-Solving Sessions & Recaps** (SGPSS 1-22; RECAPS 1-22)
- **Computerized Histology Laboratories** (HISTO 1-12)
- **Laboratories** (LAB 1-2)
- **Conferences** (CONF 1-10)
- **Simulations** (SIM 1-3)
- **Review Sessions** (REV 1-8)
- **Voluntary Review Sessions** (REV A-D)
- **Exams** (EXAM 1-4, PRACT, FINAL)

LECTURES: Fundamental concepts in physiological, histological and biochemical thinking will be presented in lecture format by the Lecturing Faculty. Students can expect professionalism from their faculty which includes a desire to teach, clear explanations, patience in answering questions, promptness, and a desire to enthusiastically communicate knowledge about the function of the human body. For convenience, key concepts and learning objectives will be provided.

SMALL-GROUP PROBLEM-SOLVING SESSIONS & RECAPS: Medical and graduate students will be assigned to one of twenty-four small groups, each consisting of six to seven students. The small groups will meet within designated learning clusters (SDLs) with large-group recaps conducted in the lecture hall. SGPSS Facilitators will shuttle among two to four small groups each session, but will rotate assignments on different days. **It is important that students prepare prior to each session by researching the cases from various resources.** Topics addressed in small-group sessions will be examined on written exams. Students are expected to attend and actively participate in all small groups. The small-group sessions also are designed to foster interpersonal and communication skills within a healthcare team.

HISTOLOGY LABORATORIES: Students are to report to their assigned SDLs to view histological specimens on a virtual microscope (computer). Several Histo Instructors will be available to assist students. Students should always be striving to link structure and function for the various organ systems. What makes an organ unique? What common features and unifying principles are found among different organ systems?

PHYSIOLOGY LABS: FHB will present two laboratory experiences where students will measure and evaluate human data derived from them.

- **Electrocardiogram and Blood Pressure (LAB 1):** All students will record their own EKGs and blood pressures. Students will measure their EKG waveforms, and determine their mean frontal plane vector.
- **Pulmonary Function Testing (LAB 2):** Breathing function will be assessed on all students using modern equipment. Grouped results will be tabulated and distributed. Volunteer class assistants will be invited to run the PFT computers.

CONFERENCES: Conferences are teaching sessions conducted with half of the class at a time (designated as groups A & B) in the Case-Method Rooms (CMRs). Conferences focus on specific topics in a mini-lecture and/or discussion format. These sessions are designed for more interactions between students and professors, offering students the opportunity to ask and answer questions. Conference handouts accompanying lecture notes allow students to prepare appropriately before attending these important and informative sessions.

SIMULATIONS: Computer simulations are designed to illustrate physiological principles and concepts in a dynamic and integrative format. They focus primarily on reinforcing and expanding on concepts presented in lectures and small group discussions. These sessions are presented to half the class at a time to encourage student participation.

- **Cardiomyocyte Video and Pressure-Volume Loop Simulation (SIM 1):** Students will first view a video of the electrical and mechanical activities of an actual cardiac myocyte under different experimental conditions. Then a computerized model will be introduced to simulate dynamic pressure-volume loops of the left ventricle.

- **Cardiac Cycle and Heart Sounds (SIM 2):** This computer simulation will illustrate the dynamic changes in pressures and volumes of the heart and circulatory system during the normal cardiac cycle. We will also discuss the origins of the heart sounds and cardiac murmurs.
- **Human Patient Simulator (SIM 3):** The Human Patient Simulator (Vince) will be used to illustrate the dynamic interactions of the heart and circulatory system under normal and pathological conditions.

REVIEW SESSIONS: At the end of each section and prior to the examination for that section, voluntary reviews will be conducted by lecturing faculty in Tobin Hall (LH 190). Reviews of histology and physiology/biochemistry will be run separately, but the format enables students to get an overview of the section. Students can also contact individual faculty privately. One major mistake students make is that they fail to utilize their faculty in mastering difficult concepts. The primary focus should be on learning, not just passing exams. Students who understand the material and can explain and verbalize difficult concepts to their peers will benefit.

EXAMS AND GRADING: There will be four in-course examinations following each major section, plus a **COMPREHENSIVE** final examination in FHB. The final exam will consist of two parts, histology practical and written, linking both structural (microanatomy, histology) and functional (physiology, metabolic chemistry) aspects of tissues and organ systems. During the administration of each exam no PDAs, cell phones or calculators will be permitted, and students will not be allowed to ask questions. This board-style policy promotes an even playing field for all students in the course and minimizes disruptions. The number of questions on each exam is proportional to the time spent on the individual topics in each section of the course. **It is important to note that the histology and physiology components of the course will be graded separately. Students must pass both the histology and physiology components of the course to pass FHB.** Following each exam, students will be notified electronically of their performance on the histology and physiology components of the exam. Students receiving a final grade of 70% or better on both the histology and physiology components will pass FHB. Students receiving a final grade of less than 70% in either histology or physiology will be in jeopardy of failing the FHB course contingent upon final decisions made by the teaching faculty. Those students failing to meet the minimum requirements in either the histology and/or physiology components will have an opportunity to remediate their grade by taking another comprehensive examination (histology practical and/or physiology written exam) during the month of July. Students unable to successfully remediate histology and/or physiology will receive a failing grade in FHB. Remediated passes will be recorded as P* grades in the permanent record of the student, overwriting F grades. It is the policy of the SSOM that no student will be permitted to commence with second year medical studies until all failed courses are remediated. Graduate students will be graded separately, and there is no remediation policy for graduate students.

EXAM FEEDBACK: After the grading of each sectional exam has been finalized, students will have the opportunity to review the questions that they answered incorrectly during an Exam Review. Students will be notified via e-mail of the date and time and must RSVP to the Course Coordinator so that their exam information is available to them during that specific session. Students having difficulties with the exams should seek advice on how to improve their performance from Dr. Lipsius, Course Director; Dr. Webber, Assistant Course Director or Beth Sonntag, Director of the Teaching and Learning Center.

WEB FORUM: Students are encouraged to use the FHB Web Forum on the computer network to post academic questions for specific topic areas. Lecturing faculty will respond with written answers using the same medium. This is a very efficient mechanism for answering similar questions arising from a large population of students. Access to the Web Forum requires a logon identification code and password. Faculty can also be reached directly via e-mail, but this mode should be reserved for personal issues not didactic questions, *per se*.

COMMUNICATIONS: Students will receive up-to-date information about the FHB course from the Course Director either by mass e-mailings to the entire class or on the FHB Web Forum. Students should check their e-mail accounts on a daily basis. Clear and effective communications between faculty and students are not only necessary, but mandatory for fostering a positive learning experience.

COURSE COORDINATOR: The FHB course is supported by Maureen Locklund, Course Coordinator. Maureen is responsible for production and on-line posting of all course syllabi, examinations, evaluation forms, etc.

- **FHB Course Coordinator:** Maureen Locklund
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- **ASSISTANT COURSE DIRECTOR:**
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COURSE DIRECTOR:

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- **Questions:** Dr. Lipsius should be contacted regarding any issues pertaining to FHB organization, attendance, grading, and other student concerns. He can be reached at his office, by email or telephone. All deliberations with students are held in strict confidence.