Physiology 6051

PHSL 6051 SYSTEMS PHYSIOLOGY (Spring Semester)
Sample Syllabus and Schedule
(Primarily for first year Dental Students - other students need permission from katzx001@umn.edu)

Course Purpose: (Objectives and Content): To understand both qualitative and quantitative approaches to the physiology of the organ systems through lectures and demonstrations. Topics include cellular, endocrine, circulatory, respiratory, digestive, energy metabolism, and renal physiology. The topics emphasize homeostasis, basic principles, and regulatory aspects of physiological processes using molecular mechanisms rather than descriptions of facts. The primary objective is to integrate the subject material at the molecular, cellular, organ, and whole organism level. Another major objective is to learn enough Physiology to at least pass the Dental Physiology/Biochemistry Part 1 National Board Exam. Students scoring at the C+ level or beyond in this course typically pass the Physiology section of the Board exam. A final objective is to familiarize first year Dental students with enough basic core Physiology so that they have an excellent idea of how the whole body functions.

School of Dentistry Competencies Addressed by PHSL 6051: Primarily Foundation Knowledge.

Text: Vander, Sherman, and Luciano’s Human Physiology, by– Widmaier, Raff, & Strang:

Schedule: 40 one hour lectures
7 two hour demonstrations or labs
4 Examinations

Credits: 4 credits

Staff:

Stephen Katz, (Course Director) 612-625-9178, katzx001@umn.edu Cell & Compartmental Physiology, Cardiovascular, Gastrointestinal, Energy Metabolism, Renal and Integrative Physiology

Lisa Anderson 612-624-9445 ander305@umn.edu Endocrine, Cardiac and Vascular Physiology

Douglas Wangensteen 612-625-5580 wange001@umn.edu Respiratory Physiology
In general, office hours are by appointment during your free time. Some instructors will provide office hours.

Grading and Evaluation Policies FOR PHSL 6051

A. EXAMINATIONS:

1. There will be four examinations consisting of objective type questions. These questions will not only involve simple recall of knowledge, but also the use of higher level cognitive processes (e.g. understanding, application, problem-solving, synthesis). The first three of these examinations consist of questions from lecture and demonstration material and are scheduled during the assigned lecture hour. The fourth exam will also consist of questions from lecture and demonstration material and is scheduled for final's week.

2. The total amount of time to complete the first three examinations is limited to 50-60 minutes. You will be told the exact time length. We have no flexibility since rooms must be vacated to accommodate other students and dental students need the “pencils down” practice. The final exam is limited to 3 hours, and is the only exam with plenty of time.

3. After exams, students may keep the examination questions for future reference. Exam answers are posted immediately after the exam. A student completes an exam by handing in an answer sheet. Once the answer sheet is handed in, the student may not revise the answer sheet.

4. Copies of previous exams & answers from the last two years will be in the class website. Use of old exams for studying purposes is always acceptable. However, the exams you will be taking will not all be derived from old exams. Course material varies from year to year so that the contents of old exams may or may not be appropriate.

5. Once you take an exam and hand in your answer sheet, your exam score cannot be changed. If you feel too ill or think you may be unable for any reason to take an exam, then consider obtaining an Absence With Acceptable Cause by contacting Stephen Katz before the exam.

6. Contact the course assistant (Jessica Sundin, 625-7456, sundi008@umn.edu) anytime you think an exam score is incorrect. We keep all score sheets.

7. In general, you will need to understand previous course information in order to do well on exams 2, 3, and 4 because the course uses preceding material to build new concepts.

B. ABSENCE FROM EXAMINATIONS:

1. ABSENCE WITH ACCEPTABLE CAUSE - the student(s) must provide the Course Director with a statement from the Dean of Students, Faculty Advisor, or Physician. The
statement must explain the reason for the absence. If a student is unsure if he or she can take an exam, contact Stephen Katz before the exam. All Dental student absences must be communicated to the Dental School (Lucy Hartel (lhartel@umn.edu), 612/624-3300).

a. The first three exams are given during the lecture hour: A student if absent with acceptable cause MAY BE excused from making up only one missed examination. If a student is excused from one of the first three examinations, then the other three examinations (each weighted at 33%) will be used to determine a letter grade. Alternatively, a student may request a make-up examination for any of the first three exams if the student will be absent with acceptable cause. Request for a make-up exam must be made within 1 week of the corresponding exam. Make-up exams are always written exams and not multiple choice. They can be taken shortly before or after the regularly scheduled exam if appropriate notice is given.

b. The fourth exam given during finals week: All students with cause for absence must contact the Course Director (Stephen A. Katz, 625-9178) to take a mandatory written make-up examination. You must take a final examination.

2. ABSENCE WITHOUT ACCEPTABLE CAUSE - a score of zero will be recorded.

C. EXAMINATION DATES: Test dates on page 6 cannot be changed. Make sure you are present on all 4 exam dates shown on page 6.

D. GRADING POLICY FOR PHSL 6051

The four exams are based on lecture and laboratory/demonstrations. A single lecture period and single laboratory/demonstration are given equal importance for examination purposes. Each exam including the Final is worth 25% of your grade. Total = 100% = the highest possible Average % Score.

Your Average % Score is:
{( % correct on Exam I) + ( % correct on Exam II) + ( % correct on Exam III) + ( % correct on Final) } / 4

All PHSL students are graded using the same cut-offs.
An Average % Score of 90 or above will be given at least an A
An Average % Score of 80 - 89 will be given at least a B
An Average % Score of 70 - 79 will be given at least a C

NOTE the elimination of the "D grade from the School of Dentistry. (As of January 2009, no course grades of D will be allowed in the Dental School.

Hence, An Average % Score of 0 - 69 will be given an F grade

The above cut-off percentages may be lowered (but not raised) if deemed appropriate by the staff. After each exam, the course director (Katz) will inform the class as to the approximate cut off percentages for the exam. (Note: Over the last few years, approximately 65% of the class received a final grade of an A or a B, 30% received a C, and 5% a D. A table will be posted after each exam containing a confidential student identification with corresponding exam scores, and
approximate cumulative grade.

There may be a mixture of students from different programs in PHSL 6051. However, almost all students are Dental students, and the Dental school does not use the +/- grade system. Therefore, all PHSL 6051 students will be evaluated with the same A through F letter grading system, without +/- grades.

Exam 1 - Covers all Cell, Endocrine, & Energy Metabolism lectures & the Cell Demo

Exam 2 - Covers all Cardiovascular lectures, 3 Cardiovascular Demos & 3 Compartmental lectures

Exam 3 - Covers all Respiratory & G.I. lectures, and 2 Respiratory & 1 G.I. Demos

Exam 4 - Covers Compartmental distributions, Renal and Integration lectures as well as the renal demo. This is also the final exam. The final is a longer exam given during finals week. It’s the only exam with plenty of time and enough questions so that missing a few does not necessarily lead to a lower grade. Although the final exam is not strictly cumulative, we review and use many of the objectives that have been covered in exams 1-3.

Complaints about unfair and inappropriate exam questions:
Occasionally a student feels that a particular exam question was unfair or in some way inappropriate. Any student may petition to receive credit for an unfair or inappropriate exam question by emailing a typed paragraph to Katz (katzx001@umn.edu). For exams 1, 2, and 3, paragraphs must be received within 1 week of the corresponding exam. For the final, you typically have only a couple of days to email a paragraph before grades are due. The paragraph should state the students name, the exam and question number, the correct answer as indicated on the answer key, the students answer, and what the student thought was wrong with the question or answer. State why you did not select the correct answer as indicated. The course director and appropriate teaching staff will review the typed paragraph. The teaching staff takes these paragraphs very seriously. Therefore, sloppy or trivial paragraphs are to be avoided!

You may wish to contact the Student Dispute Resolution Center in 211 Eddy Hall (624-7272 or sos@umn.edu or http://www1.umn.edu/sos/) for assistance if you feel your campus-based concerns regarding grading or instruction need further resolution.

GRADE DISPUTES: Grade disputes will follow University and SOD policies listed in the student handbook. All grade disputes must first be addressed to the course director.

WARNING: Any grade below a C on the 1st exam is an indicator that you require some form of tutoring or help. Help should be sought immediately after the 1st exam.

Seek help from Katz. It is easy and it works.

Remediation Policy
If you receive a grade below a C as your final grade in PHSL 6051, you may choose to do
nothing. However, for some students in some situations at certain times, any grade below a C may result in major academic difficulty. Therefore, three other options are available:

1. **After spring semester is over, tutoring can be arranged, and you must also meet with Katz at least twice. You can then register for PHSL 6051 over the summer and take a comprehensive exam covering all of PHSL 6051. The exam will be of equal difficulty compared to your last four class exams, although it will be longer since it is comprehensive. Consult with Katz or your program director concerning this option.**

2. **Students may also register again for PHSL 6051 and re-take the course in the following Spring Semester, or take PHSL 6061 this Fall. Contact your program director and Katz to determine if a better grade in a future course will erase your past grade, or at least be satisfactory for advancement in your program.**

3. **Obtain permission from your program director to take another equivalent course.**

4. **All Dental student failures are also reviewed by the Scholastic Standing Committee and the ultimate decision for remediation for Dental students in academic difficulty lies with that committee.**

**Other Grading Policies:**

- A student is **NOT** permitted to submit extra work in an attempt to raise his or her grade.

- Improvement or deterioration in exam grades over time is **NOT** a factor in determining the final grade. The final grade is determined from your weighted percent correct scores on all 4 exams and the corresponding grade cut-offs for each exam.

- If you elect to take the course "Pass-Fail" (S/N), you must obtain an A or B equivalent to be awarded the S grade (pass).

- There will be no graded assignments other than the four exams.

- Use of old exams for studying purposes is acceptable. *Copies of previous exams & answers from the last two years are available on the class web site.* The exams you will be taking will not all be derived from old exams. Material varies from year to year so that the contents of old exams may or may not be appropriate.

**Student Expectations:**

*Attendance: See Below.* Students’ evaluation of the course and the participating faculty are considered to be a mandatory requirement for the successful completion of this course and are used to help improve the course each year. Dental students will be required to complete evaluations on line (using CourEval) before a grade will be given in this course.

**ATTENDANCE**
Attendance is not recorded but is encouraged. (Students with past grade problems have often had poor attendance).

“If you are unable to attend class due to a medical or family emergency, Dental Students should contact the Academic Affairs attendance office at 612.624.3300 or dentars@umn.edu

STUDENT INTEGRITY
Scholastic misconduct is broadly defined as “any act that violates the right of another student in academic work or that involves misrepresentation of your own work. Scholastic dishonesty includes, (but is not necessarily limited to), cheating on assignments or examinations; plagiarizing, which means misrepresenting as your own work any part of work done by another; submitting the same paper, or substantially similar papers, to meet the requirements of more than one course without the approval and consent of all instructors concerned; depriving another student of necessary course materials; or interfering with another student’s work.” Scholastic misconduct during an exam will result in the student having to re-take the exam as a written make-up exam and notification of the first year class committee, who may take further action.

COMMUNICATION
Individual and full class communication will be through your University of Minnesota e-mail account. Announcements intended for the whole class will be sent by e-mail. It is a requirement of the course to check your e-mail. While in class, please turn off all pagers and cellular phones.

DISABILITIES
It is University policy to provide, on a flexible and individualized basis reasonable accommodations to students who have documented disability conditions (e.g., physical, learning, psychiatric, vision, hearing, or systemic) that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact Disability Services and their instructors to discuss their individual needs for accommodations. Disability Services is located in Suite180 McNamara Alumni Center, 612/626-1333 voice or TTY, http://ds.umn.edu

Dental Students are referred to the SOD’s Office of Student Affairs and/or the University’s Office of Disability Services for evaluation and determination of accommodations. To make an appointment for evaluation, please call Barbara Blacklock at Disability Services (626-7379).

Counseling and Consulting:
If you are having problems with coursework, feel free to contact Dr. Katz or, your own school, or the University Counseling and Consulting Services at 624-3323.

Scholastic dishonesty:
Scholastic dishonesty means plagiarizing; cheating on examinations; engaging in unauthorized collaboration on academic work; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the
expectations for a specific assignment or exam, ask.

Class Behavior and Sexual Harassment:
You are expected to be attentive during class, ask questions if you do not understand something, and participate in class discussions. You are also expected to listen respectfully to other students and teachers when they are speaking. Racism, sexism, homophobia, classism, ageism, and other forms of bigotry are inappropriate to express in this class. University policy prohibits sexual harassment as defined in the University policy statement of 17 May 1984; copies of this statement are available in 419 Morrill Hall. Complaints about sexual harassment can be reported to the University Office of Equal Opportunity, 419 Morrill Hall. Also, the U of MN Aurora Center in Boynton handles sexual harassment, sexual assault, relationship violence and stalking (626-9111).

General Course Learning Objectives:

1. Describe fundamental cellular processes common to all cells.
2. Compare different hormonal systems and be able to express how each system functions.
3. Interpret the different mechanisms of hormone action.
4. Apply endocrine concepts to energy metabolism, cardiovascular, gastrointestinal, reproductive and renal Physiology.
5. Diagram major cardiovascular control systems.
6. Distinguish cardiac and vascular structure-function differences.
7. Compute cardiac output, total peripheral resistance, stroke volume, arterial pressures, ejection fraction and other related cardiovascular variables.
8. Explain the digestion and absorption of fat, carbohydrate, protein, H2O, and NaCl.
9. Describe lung structure, events in breathing, airway resistance and lung elastic recoil.
10. Compare O2 and CO2 gas exchange and the mechanisms for the control of breathing.
11. Apply cellular and capillary wall permeability concepts to compartmental distribution of solutions.
12. Analyze the forces and diagram the mechanisms necessary for glomerular filtration and tubular reabsorption.
13. Summarize the renal handling of H2O, Na+, Cl-, HCO3-, Urea, Glucose, organic acids, drug metabolites, K+, Ca++, and H+

Specific learning objectives will be given to you at the beginning of class for each main unit or subject.
### PHSL 6051 Systems Physiology Semester Schedule, Spring Semester

**Lectures MWF 1:25 – 2:15 in Moos T. 2-620,**

**Demo (or lecture or lab) Th 1:25- 3:20 in Moos T. 3-110**

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<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>Sample dates for class meetings:</td>
<td></td>
<td></td>
<td><em>Thursday Demos (2 hours) and Classes (1 hour) are in Moos T. 3-110</em></td>
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<tr>
<td>Jan 19, 21, 22, 23</td>
<td>HOLIDAY</td>
<td>Introduction and Cell Physiology (Katz)</td>
<td>Cell Physiology class</td>
<td>Cell Physiology</td>
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<tr>
<td>Jan 26, 28, 29, 30</td>
<td>Cell and Capillary</td>
<td>Endocrine (Anderson)</td>
<td>Cell Physiology Demo (Katz)</td>
<td>Endocrine</td>
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<tr>
<td>Feb 2, 4, 5, 6</td>
<td>Endocrine</td>
<td>Endocrine</td>
<td>Endocrine class</td>
<td>Energy Metabolism (Katz)</td>
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<tr>
<td>Feb 9, 11, 12, 13</td>
<td>Energy Metabolism</td>
<td><strong>Energy Metabolism</strong></td>
<td>Extra day</td>
<td>Exam I</td>
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<tr>
<td>Feb 16, 18, 19, 20</td>
<td>Cardiovascular (Anderson)</td>
<td>Cardiovascular</td>
<td>Cardiovascular Demo 1 (Anderson)</td>
<td>Cardiovascular</td>
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<tr>
<td>Feb 23, 25, 26, 27</td>
<td>Cardiovascular</td>
<td>Cardiovascular</td>
<td>Cardiovascular Demo 2 (Katz)</td>
<td>Cardiovascular</td>
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<tr>
<td>Mar 2, 4, 5, 6</td>
<td>Cardiovascular</td>
<td>Cardiovascular</td>
<td>Cardiovascular Demo 3 (Anderson)</td>
<td>Cardiovascular</td>
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<tr>
<td>Mar 9, 11, 12, 13</td>
<td>Exam II</td>
<td>Respiratory (Wangensteen)</td>
<td>Respiratory class</td>
<td>Respiratory</td>
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<td>MAR 16 - MAR 20</td>
<td>SPRING BREAK</td>
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<tr>
<td>Mar 23, 25, 26, 27</td>
<td>Respiratory</td>
<td>Respiratory</td>
<td>Respiratory lab (Wangensteen)</td>
<td>Gastrointestinal (Katz)</td>
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<tr>
<td>Mar 30, Apr 1, 2, 3</td>
<td>Gastrointestinal</td>
<td>Gastrointestinal</td>
<td>Gastrointestinal Demo (Katz)</td>
<td>Gastrointestinal</td>
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<td>April 6, 8, 9, 10</td>
<td>Gastrointestinal</td>
<td>Exam III</td>
<td>Compartments class (Katz)</td>
<td>Compartments</td>
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<tr>
<td>April 13, 15, 16, 17</td>
<td>Compartments/Renal</td>
<td>Renal (Katz)</td>
<td><em>Renal class</em></td>
<td>DEAN’S DAY NO CLASS</td>
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<td>April 20, 22, 23, 24</td>
<td>Renal</td>
<td>Renal</td>
<td><em>Renal Demo (Katz)</em></td>
<td>Renal</td>
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<tr>
<td>April 27, 29, 30</td>
<td>Renal</td>
<td>Renal</td>
<td><em>Renal (Last Lecture)</em></td>
<td>NO CLASS</td>
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Exam IV is given after all coursework is completed and is a 2 hour exam.