

**GOVERNORS STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
DIVISION OF SCIENCE**

COURSE SYLLABUS

INDEX NUMBER: BIOL 706/707
COURSE TITLE: Physiology of Disease I Lecture/Laboratory
CREDIT HOURS: 3 credit lecture/1 credit lab
TRIMESTER: Fall
PROFESSOR: Phyllis M. Klingensmith, Ph.D.
office #: F1647
laboratory #: F1640
phone/voice mail: (708) 534-4538
e-mail: p-klingensmith@govst.edu

CATALOG DESCRIPTION:

The lecture emphasizes the physiological principles of human health and disease by examining the cell and organ physiology of the nervous, muscular, blood, immune, cardiovascular, respiratory, renal, endocrine, sensory, and digestive systems. The laboratory covers experiments and demonstrations associated with BIOL 706.

COREQUISITES:

BIOL 706: BIOL 707.
BIOL 707: BIOL 706.

RATIONALE:

Knowledge of the physiological principles underlying human health and disease processes is critical for students pursuing advanced degrees in any profession related to medicine. MPT and MOT students will:

1. demonstrate increased knowledge in biology content areas and increased awareness of the importance of interdisciplinary thinking and study.
2. communicate ideas in a scientific style that is clear and logically organized.

INTENDED AUDIENCE:

Master of Physical Therapy and Master of Occupational Therapy majors.

REQUIRED TEXTBOOKS:

1. Fox, S.I., 2009. *Human Physiology with MediaPhys3.0 CD-ROM*. Wm. C. Brown Publishers
2. Stabler, T. and G. Peterson, 2009. *PhysioEx 8.0 with CD-ROM*. Benjamin Cummings Publishers.
3. Klingensmith, P.M., 2009. *Physiology of Disease I Lecture Outline and Laboratory Manual*.

EXPECTED STUDENT OUTCOMES:

Upon completion of this course, students are expected to be able to:

1. Describe the normal physiological mechanisms and regulations governing the activities of the central and autonomic nervous systems, skeletal muscle, and the cardiovascular, immune, hemopoietic, respiratory, renal, and digestive systems of humans.
2. Apply the concepts of homeostasis and negative feedback to the regulatory mechanisms governing specific physiological processes throughout the body.
3. Apply the concepts governing membrane transport and membrane potentials to neurotransmission and muscle contraction.
4. Distinguish normal from abnormal values for common physiological laboratory tests.
5. Evaluate simple medical case studies by interpreting clinical laboratory data in support of diagnostic and treatment recommendations.
6. Solve physiological problems using appropriate formulas.
7. Demonstrate the proper use of bioinstrumentation and analytical techniques to study physiological concepts.
8. Analyze the physiological significance of data obtained from actual and virtual physiology lab experiments.

9. Demonstrate mastery of computer applications, including word processing, spreadsheets, and graphing to communicate ideas in a scientific style that is clear and logically organized.
10. Utilize writing to assimilate knowledge and improve comprehension in the discipline.

EVALUATION:

1. Expected student outcomes are evaluated primarily by exams and lab reports. Lecture exams may include objective questions (multiple choice, matching, short answer, and calculations) and short discussion questions. Exam questions are derived from lecture, reading assignments, and laboratory experiments, both real and virtual. Lab reports require students to collect and organize experimental data, solve problems using appropriate formulas, graph data using spreadsheets, explain how dependent variables are influenced by independent variables, and explain the physiological significance of experimental data. Case study assignments or alternative projects are used to help students assimilate and apply knowledge in the discipline.
2. Exams collectively represent 75% of the final grade, while lab reports/projects collectively represent 25% of the final grade. In other words, it is not possible to receive an "A" or "B" final grade without completing the lab reports. The following grading scale will be employed: 100-90% = A; 89-80% = B; 79-70% = C; 69-60% = D; 59- 0% = F.

GENERAL COURSE POLICIES:

1. You are expected to attend lecture and lab, and to arrive promptly for both! Attendance will be taken regularly. If you miss a lecture or lab, you are responsible for obtaining the missed content.
2. If an exam or lab is missed, a zero grade will be given. It is the instructor's discretion to accept a late lab report or to allow a make-up exam once during the trimester for a substantiated extenuating circumstance. Point deductions are concomitant with the submission of late work. Late work must be submitted prior to the next lecture period to be considered for a grade. There will be no make-up labs unless special arrangements are made with the instructor to complete the experiment with another lab section. Recognize that your absence from lab puts your regular lab partner at a disadvantage. If you are absent for a particular lab, you may not submit a lab report for a grade without instructor approval.
3. You are expected to read and familiarize yourself with the lab experiments prior to class so that we may all complete the laboratory work in a timely manner. General lab guidelines and instructions for preparing lab reports are provided in the lab manual and will be reviewed in class. Lab reports are due on the dates identified in the lab syllabus schedule unless otherwise announced in class.
4. As always the major responsibility for learning is in your hands. You do not have the luxury of time to procrastinate as the course content builds on itself rapidly. Be an active learner rather than a passive one. Be assured that your attitude, preparation, participation, and promptness will have an impact on your final grade.
5. Please address any questions or concerns you may have about grades, attendance, or course policies to the instructor and not to the laboratory teaching assistant. Although the instructor has set office hours, do not hesitate to leave a voice mail or e-mail message or to request an appointment if you need help or would like to talk.
6. GSU is committed to providing all students equal access to all university programs and facilities. Students who have a documented physical, psychological, or learning disability and need academic accommodations, must register with Access Services for Students with Disabilities (ASSD). Please contact the Coordinator of ASSD in Room B1201 in person; by email, assd@govst.edu; or by calling 708.235.3968. If you are already registered, please contact your instructor privately regarding your academic accommodations.

DATE	EXPECTED STUDENT OUTCOMES	CHAPTER	LECTURE TOPIC (Exam #)	LABORATORY EXPERIMENTS Lab experiments in bold refer to PhysioEx labs. Those in regular font refer to lab experiments within the manual's yellow pages.
	1, 2, 3, 6	1, 2, 3, 4	Homeostasis (I) Cell Structure and Function (I)	Bioinstrumentation, Calculations, Virtual Physiology Software #1
	1, 2, 3, 6	6	Membrane Transport and Potentials (I)	PhysioEx #1 The Cell-Transport Mechanisms and Permeability
	1, 2, 3, 4, 6	7	Neurons and Neurotransmission (I)	PhysioEx #3 Neurophysiology of Nerve Impulses
	1, 2, 4, 6	12	Muscle Dynamics (II) EXAM I	PhysioEx #2 Skeletal Muscle Physiology
	5 1, 2, 4, 6	8	Central Nervous System (II)	Blood Pressure and Exercise Physiology #6
	1, 2, 4, 6	9 12	Autonomic Nervous System (II) Reflexes (II)	Reflexes, EMG, EEG #13
	1, 2, 4, 6 5	13	Blood (III) EXAM II	PhysioEx #11 Blood Analysis
	1, 2, 4, 6	15	Immune Response (III)	PhysioEx #12 Serology and Hematology #5
	1, 2, 4, 6	15 13	Immune Response (III) Cardiac Mechanics (IV)	ECG # 4, Spirometry and Oximetry #8
	5 1, 2, 4, 6	14	EXAM III Cardiovascular Regulation (IV)	PhysioEx #6 Frog Cardiovascular Physiology
	1, 2, 4, 6	14 16	Cardiovascular Regulation (IV) Respiratory Mechanics (IV)	PhysioEx #5 Cardiovascular Dynamics
	1, 2, 4, 6	16 17	Respiratory Regulation (IV) Renal Mechanics/Regulation (V)	PhysioEx #7 Respiratory System Mechanics
	1, 2, 4 5		EXAM IV THANKSGIVING HOLIDAY	PhysioEx #8 Chemical and Physical Processes of Digestion
	1, 2, 4	17 18	Acid Base Balance (V) Digestive Mechanics (V)	PhysioEx #10 Acid-Base Balance and Urinalysis #11
	1, 2, 4 5	18	Digestive Regulation (V) EXAM V	

GENERAL GUIDELINES FOR PHYSIOLOGY LAB REPORTS:

1. Traditional lab reports require students to collect and organize experimental data, solve problems using appropriate formulas, graph data using spreadsheets, explain how dependent variables are influenced by independent variables, and

explain the physiological significance of experimental data. Rather than focusing on writing lengthy Introduction, Materials and Methods, Results, and Discussion sections of a traditional lab report, you will be expected to focus on answering specific questions provided with each lab experiment or lab simulation and to create appropriate tables and graphs to present the data.

2. For the **PhysioEx Laboratory Simulations in Physiology** submit answers to all of the questions associated with each exercise. This includes all of the questions associated with each activity within the exercise and answers to all of the questions in each corresponding review sheet exercise at the back of the manual. To answer these questions you may copy/xerox or download the pages and simply fill in the answers NEATLY or use your word processor to type each question and answer. Be sure to include tables and graphs as required.
3. For the **Physiology Interactive Lab Simulations (Ph.I.L.S.)** submit the answers to your journal questions with the graphs and/or tabulated data that you collected. Printing a particular page may require using your Print Screen Key, the Print function key on the screen, and/or using the right click button on your mouse. (*Not Applicable*)
4. For the **BIOPAC experiments** save your journal notes and data to a disc or CD and submit the tabulated data, graphs (EXCEL), and answers to questions in the manual for your lab report. (*Not Applicable*)
5. For the **“wet” labs**, answer the questions that are distributed throughout the experiment. Be concerned with recording what you see rather than what you thought you were "supposed to" see. In the real world, scientists don't have any supposed to's and must be ready to observe what actually happens. Your grade in this course is not based on always getting the "right" result but rather on your understanding of what you do, what should have happened and why. Tabulate your data and always include examples of your calculations to show how you arrived at the numerical answer (i.e., show one sample calculation of each new type of calculation, so I can see at a glance whether you performed it correctly). Graph data properly using appropriate software and spreadsheets (watch the interval spacing), title the graphs and label the axes. If there is more than one line on the graph, somehow make them distinguishable from each other, as well as the points which determine the line (different colors, types of points, type of lines). If appropriate, include properly labeled and carefully trimmed chart paper recordings. Lab partners should work together after lab to label and trim the chart paper recordings and Xerox a copy so that each of you has copy to incorporate into your lab reports.
6. **Be sure to follow these ten points whenever you are required to graph “wet” lab results:**
 - a) **Design the graph using a spreadsheet.**
 - b) **Write a descriptive legend or title for the graph.**
 - c) **Depict the X and Y axes correctly, including units, labels, and placement of the dependent variable on the Y axis and the independent variable on the X axis.**
 - d) **Name or describe the shape of the curve and the interpretation of that shape relative to the data.**
 - e) **State how the dependent variable is influenced by the independent variable.**
 - f) **Locate specific points on the graph.**
 - g) **Make correct calculations using the graphed data.**
 - h) **Interpret the biological significance of the graphed data.**
 - i) **Write in a clear and organized scientific style.**
 - j) **Type the lab report using a word processor to create an organized report with a professional appearance.**
7. Lab reports are intended to help you synthesize lecture content and laboratory experiences, improve your laboratory techniques, learn to write in a scientific style, learn to organize and interpret data and gain an appreciation for having an open-mind in lab where things may not always go as expected. Feel free to discuss the lab results with your classmates and to ask questions. Do not leave the lab confused and at a disadvantage for completing your lab report.
8. Students may be required to obtain writing assistance at the Student Help Center where serious writing deficiencies may be addressed properly.