Zoology 141L (60269)
Anatomy and Physiology Laboratory

Thursdays: 1:30-4:15 PM
‘Imiloa 103

INSTRUCTOR: Edmund Bernauer, PhD
OFFICE: Hale ‘Imiloa 107
OFFICE HOURS: TBA
TELEPHONE: 235-7910 or 236-9104
EFFECTIVE DATE: Fall, 2010

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

CATALOG DESCRIPTION

Laboratory to accompany ZOOL 141. Reinforces major concepts of human anatomy and physiology through dissections, examination of models, laboratory experiments, and other hands-on activities. This course is intended for students entering health care or other medically related fields such as nursing, physical therapy, and medical technology. (3 hrs. lab) Activities Required at Scheduled Times Other Than Class Times: None

STUDENT LEARNING OUTCOMES

Upon successful completion of ZOOL 141L, the student should be able to:

1) Use the scientific method to design and conduct a clinical research study.

2) Describe the anatomy of the integumentary, skeletal, muscular, and nervous systems from prepared slides, models, and real and virtual animal dissections.

3) Use basic laboratory and medical equipment to evaluate functions of the above body systems.

4) Develop critical thinking to analyze and interpret clinical data.

5) Prepare an oral presentation and written summary of lab activities using the scientific method.

6) Develop basic skills of locating origins and insertions, tracking neural pathways, and identifying major skeletal joints.
COURSE CONTENT

Concepts or Topics
The student will describe and integrate basic biological principles and define basic biological terms presented in lecture, required texts, and other instructional materials. These principles include the following areas:
- Scientific Method
- Chemical Reactions
- Homeostasis
- Osmosis and Diffusion
- Cell Anatomy and Cell Division
- Classification of Tissues
- Body Fat
- Skeletal System and Bone Tissue
- Joints
- Muscular System and Muscle Tissue
- Nervous System and Nervous Tissue
- Sensory Systems
- Reflex Physiology

COURSE TASKS

1) Attend class at scheduled times.
2) Participate in lab activities.
3) Record results of lab activities in lab notebook.
4) Complete weekly quizzes ~ 12.
5) Complete 2 in-class practicums, a midterm and a final.
6) Present results of lab activities, oral presentation.

ASSESSMENT TASKS AND GRADING

QUizzes (100 points total- 10 points for each quiz). Students will take a short quiz at the beginning of each class. The quiz will be based on the material covered in the previous week as well as the reading for the current lab. Students who are late to lab or miss lab will receive a zero score (NO EXCEPTIONS!). The lowest two quizzes will be dropped.

LAB NOTEBOOK (100 points total- 50 points for each grading). The student will maintain a laboratory notebook to record all notes, observations, and information gathered during laboratory activities. The notebook will be collected twice during the semester and graded for completeness, accuracy, clarity, and effort. The format for the lab notebook will be discussed during the first laboratory session. See the guidelines supplement.

LAB PRACTICUMS (100 points total-50 points for each practicum). The student will take two lab practicums (non-cumulative) to demonstrate knowledge and understanding of information presented in lab activities. These practicums will cover anatomy (e.g., organ identification and histology) and
physiology of major systems covered during lab and will be similar in content and scope to the lab quizzes.

**RESEARCH PRESENTATION** (50 points).
Students will work together in groups of 3-4 individuals. Each lab group will give an oral presentation (15-20 minutes) summarizing the activities of a chosen laboratory session. The students will also submit a CD and slide outline for the presentation.

**ATTENDANCE** (50 points): Attendance is mandatory and is worth 50 points towards the final grade. Each student is allowed one absence without penalty. Each unexcused absence above one will result in a deduction of points from the student’s attendance score. Students with more than two un-excused absences will receive an “F” grade in the class. Because most laboratory sessions require special equipment and preparation, make-up labs will NOT be given.

**METHOD OF GRADING**
The assignment of points will be according to the following:

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes (10)</td>
<td>100</td>
</tr>
<tr>
<td>Lab Notebook (2 x 50)</td>
<td>100</td>
</tr>
<tr>
<td>Practicums (2 x 50)</td>
<td>100</td>
</tr>
<tr>
<td>Presentation - oral</td>
<td>50</td>
</tr>
<tr>
<td>Attendance</td>
<td>50</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>

**GRADING SCALE**

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Percentage Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>358-400</td>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>318-357</td>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>278-317</td>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>238-277</td>
<td>69-60</td>
<td>D</td>
</tr>
<tr>
<td>&lt;238</td>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

Grades may be curved at the instructor’s discretion; however, the student should use the above grading scale to evaluate their performance throughout the class. If you miss an examination because of an illness or legitimate emergency, you must contact the instructor within 48 hours to arrange a time to take a make-up exam. The instructor may request that the student present evidence of the illness or emergency that caused the student to miss the exam. If the student misses an exam for any other reason, the student may be prohibited from taking a make-up exam, thus failing to receive any points for the missed exam. While make-up exams will cover the same content area as a missed exam, the exam format and specific questions may be different. No retests will be given for any reason.

**LEARNING RESOURCES**

ADDITIONAL INFORMATION

LAB ATTIRE, CONDUCT, AND HYGEINE
Because biology labs often involve working with chemicals or hazardous materials, students MUST wear close-toed shoes. In addition, some lab activities will require students to wear gloves and safety glasses (provided by the college). Several labs will involve body measurements (e.g., body fat), light exercise, or the placement of electrodes or sensors on the body. Students should therefore wear loose-fitting clothing that allows for a free range of movement (i.e. no tight-fitting pants or jeans). Students failing to dress appropriately for lab will not be permitted to participate in laboratory exercises and will be considered absent. Students engaged in conduct that threatens themselves or others in the lab will be refused access to the lab for the remainder of the semester and receive and “F” grade for the course.

LAB SUBJECT POLICY
Most labs involve non-invasive clinical measurements (e.g., skin-fold measurement, reflex tests, etc). ALL students are required to participate in these activities. If you have a health condition or other reason why you should not participate you should inform the instructor. Experiments involving invasive or semi-invasive procedures (e.g., finger sticks and urinalysis) will be performed on volunteers only.

ACADEMIC DISHONESTY
Students involved in academic dishonesty will receive an "F" grade for the course. Academic dishonesty includes cheating on exams and plagiarism. See page 16 of the 2006-2007 course catalog for a description of the University’s policies concerning academic dishonesty.

ACCOMODATION FOR STUDENTS WITH DISABILITIES
If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale ‘Akoakoa 213 for more information.
LAB SAFETY RULES

1) Be familiar with lab safety procedures and take appropriate precautions at all times to insure the safety of all lab students.

2) Follow all instructions carefully, especially when hazardous materials are being used.

3) Know the locations of important safety equipment: eyewash, safety shower, fire extinguisher, and first aid kit.

4) Report all injuries to the instructor immediately.

5) Dress appropriately for lab. Closed-toe shoes are required for ALL labs. Safety glasses and gloves are required for labs utilizing chemicals, bodily fluids, or hot-plates.

6) Report any hazardous conditions (e.g. chemical spills or broken glass) to the instructor immediately.

7) NO FOOD ALLOWED IN LAB

8) Chemicals used in lab may be poisonous, corrosive, or flammable. No chemicals, even those known to be safe, should be ingested or touched with un-gloved hands unless you are specifically directed to do so by your instructor.

9) Know how to safely operate all lab equipment and tools (e.g., microscopes, scalpels, and hematology supplies). Safe usage will be demonstrated by your instructor.

10) Clean all lab supplies and return them to their proper location before leaving lab.

11) Treat all organisms, living or dead, with care and respect. Use gloves when handling dissected specimens.

12) Place broken glass, sharps, and dissected specimens in the appropriate receptacles (NOT IN THE TRASH!)

13) Unless otherwise instructed, chemical wastes should NOT be disposed of down the drain.

14) Human tissues and bodily fluids (e.g., saliva and blood) must be disposed of in appropriate bio-hazard containers (NOT IN THE TRASH!).

15) Wash your hands immediately following each lab to reduce the possibility of contamination or infection.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TR 8/26</td>
<td>Lab Introduction &amp; Syllabus Organization Lab groups and guidelines</td>
<td>Syllabus</td>
</tr>
<tr>
<td>2</td>
<td>TR 9/2</td>
<td>Scientific Method; Review of Body Organization</td>
<td>Supplement Exercise 2</td>
</tr>
<tr>
<td>3</td>
<td>TR 9/9</td>
<td>The Microscope – user guidelines Cell Anatomy and Division</td>
<td>Exercise 3</td>
</tr>
<tr>
<td></td>
<td>TR 9/16</td>
<td>Cell Transport Mechanisms: Osmosis and Diffusion; Macromolecular/Electrolytes</td>
<td>Exercise 4</td>
</tr>
<tr>
<td>5</td>
<td>TR 9/23</td>
<td>Classification of Tissues; Basic properties; Protection Integementary System Temp Regulation Body Size and Composition</td>
<td>Exercise 5 Exercise 6</td>
</tr>
<tr>
<td>6</td>
<td>TR 9/30</td>
<td>Bone Tissue and Skeletal System</td>
<td>Exercise 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axial Skeleton – Macro Inspection</td>
<td>Exercise 8</td>
</tr>
<tr>
<td>7</td>
<td>TR 10/7</td>
<td>Appendicular Skeleton - Macro Inspection</td>
<td>Exercise 9</td>
</tr>
<tr>
<td>8</td>
<td>TR 10/14</td>
<td>Joints: Articulations and Body Movements* Fundamental Body Movements around joints/types</td>
<td>Exercise 10A Exercise 10B</td>
</tr>
<tr>
<td>9</td>
<td>TR 10/21</td>
<td>Lab Practicum # 1</td>
<td>Practicum #1</td>
</tr>
<tr>
<td>10</td>
<td>TR 10/28</td>
<td>Review; Turn in Lab Books Lympathetic System: Major Functions</td>
<td>Exercise 11</td>
</tr>
<tr>
<td>11</td>
<td>TR 11/4</td>
<td>Muscle Tissue Three basic types – Sarcomeres Gross Anatomy and Classification of Muscle Skeletal Muscle Physiology Strength, Endurance &amp; Lever Type of Contractions*</td>
<td>Exercise 12 Exercise 13</td>
</tr>
<tr>
<td>12</td>
<td>TR 11/11</td>
<td>Holiday Veteran’s Day</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>TR 11/25</td>
<td>Thanksgiving Holiday</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>TR 12/2</td>
<td>Human Reflex Physiology* General Senses Autonomic N.S.</td>
<td>Exercise 16-18 Review</td>
</tr>
<tr>
<td>16</td>
<td>TR 12/9</td>
<td>Research Presentation: Reflex Physiology Special Senses Clinical Measurements</td>
<td>Exercise 24-26</td>
</tr>
</tbody>
</table>

Important Dates: 9/13 Last day to drop (No "W" on transcript) 10/26 Last day to withdraw from class ("W" on transcript) Practicum #2 TO BE ARRANGED

*One of five labs that can be reported on by a lab group.
GUIDELINES FOR ORAL GROUP REPORTS

Each laboratory group composed of three or four individuals is required to make one oral and written report. The topics for these reports are obtained by analyzing data collected from one of six designated laboratory exercises specifically lab exercises number 3, 6, 9, 12, 15 & 16. Each laboratory group will list and rank three labs that they would prefer to report on. The specific assignment will be made by the instructor based on group preference and availability of the topic, i.e., any give topic of the six will only be presented by one group.

The six laboratory exercises designed for group reports represent data collected by clinical measurements made by all groups separately on their individual group members or the designated clinical reactions outlined. These data are entered onto a spreadsheet (Excel) with appropriate ID information. The Excel data for each group will be given to the Laboratory Group assigned the topical oral and written report. These data are combined – class data – and analyzed statistically – number of entries, sums, means, ranges, etc. These data are also presented in chart or graphic format. Each member of the Laboratory Group will be responsible to report orally on some aspect of the laboratory exercise. Suggested breakdown:

Presenter A:
1. Introduction of the laboratory exercise and the purpose of the clinical measurements.
2. What were the expected outcomes/responses?
3. How were the data organized and presented.
Presenter B:

4. Presentation of the data collected and analyzed.
   - Use power point or overheads
   - Describe each chart, table and/or graph
   - What were the limitations of the data collected, if any?
   - What were the major findings? Were they as expected? If not, explain.

Presenter C:

5. Summary of the findings in the respect to the associated structure or function given by the authors of the text.
   - Highlight the results/findings with respect to gender, age, ethnicity, or other relevant factors
   - Draw general conclusions
   - Answer questions: All members of the team.

The guidelines for the Oral report are the following:

1. Collect all data sheets
2. Organize for general analysis
3. Prepare for the power point/overhead presentation
4. Use charts, tables or graphic formats
5. Prepare clear summary information
6. Compare your results with those expected – normative standards
7. Explain results with respect to established structure and function – textbook
8. Prepare specific conclusions; use bullet points
9. Note limitations, if any, in your data set, e.g., errors in measurement or not representative of population, etc.
10. Answer questions.
Guidelines for Written Lab Report

Title:

Purpose/Primary Questions:

Objectives/specific tasks, observations, or measurements:

Methods/Approach: micro/macscopic, direct measurement, indirect estimates by use of reference tables or norms, values, etc., calculations using formula or nomographic charts, observations, sketches, illustrations, etc.

Results: Depending on the outlined, designated objects or tasks present, a brief, comprehensive yet coherent summary of the information/observations gathered.

1. Tables or charts (organize and construct)*
2. Sketches or illustrations (lab coloring book)
3. List, enumerate or identify
4. Notable observations or comments

Discussion: Briefly summarize structural – functional features, physiological (principle, functional unit and response) and general meaning.

Conclusions: Brief, concise statements as appropriate, especially of structure – functional relationships or physiological response, profile or regulation – control mechanism.

Documentation: Five (5) citations of which at least two (2) must be documented research papers.
LACTORY CONSENT FORM
FOR ZOO 141L
ANATOMY AND PHYSIOLOGY
FALL 2011

I have read the section on the responsibilities of students in the laboratory course
and understand and agree to adhere to the instructions state therein. I understand that
there may be some elevated risks involved in some of the laboratory exercises and have
the responsibility to follow specific instructions to minimize these risks.

I also have the responsibility to inform the instructor of any condition or state of
health I may have that would elevate my level of risk to participate in the planned
laboratory exercise.

I also understand that attendance at laboratory is mandatory and will be monitored
and be considered in assigning my final grade in this course.

Signature

Date