

ZOOLOGY 142L ANATOMY AND PHYSIOLOGY LABORATORY

1 Credit CRN 64148 – Monday, 1:00-3:45 pm in 103 Imiloa

INSTRUCTOR: Allison Beale

OFFICE: 118 Imiloa

OFFICE HOURS: TBA see office door after the semester starts

TELEPHONE: use email

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EFFECTIVE DATE: Spring 2017

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Laboratory to accompany ZOOLOGY 142. Reinforces the facts and concepts of human anatomy and physiology discussed in ZOOLOGY 142 through dissections, examination of models, laboratory activities, and other hands-on experiences. This course is intended for students entering health care or medically-related fields such as nursing, physical therapy and medical technology.

Prerequisite: Credit for or registration in ZOOLOGY 142 or equivalent preparation or consent of instructor.

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Activities Required at Scheduled Times Other Than Class Times

No **REQUIRED** scheduled activities outside of lab. There may be **OPTIONAL** activities.

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are as follows:

1. Use the scientific method to design and conduct a clinical research study.
2. Describe the anatomy of the endocrine, circulatory, lymphatic, respiratory, digestive, urinary, and reproductive systems from prepared slides, models, and real and virtual animal dissections.
3. Use basic laboratory and medical equipment (microscopes, sphygmomanometers, stethoscopes, ECG apparatus, and respiratory spirometers) to evaluate functions of the above body systems.
4. Use critical thinking to analyze and interpret clinical data.
5. Prepare an oral presentation and written summary of lab activities using the scientific method.

COURSE CONTENT

Concepts or Topics (the terms, topics, or concepts students should know or understand)

- Scientific method
- Chemistry including biochemistry related to osmosis, diffusion, metabolism and respiration.
- Homeostasis
- Anatomical terms
- Cell anatomy and physiology
- Organ system anatomy and physiology
 - Fat (adipose tissue)
 - Skeletal (bone, cartilage and joints)
 - Muscle, including origins and insertions of major muscles.
 - Nervous and sensory
 - Cardiovascular
 - Respiratory
 - Digestive system
 - Endocrine
 - Blood and Lymphatic systems
 - Urogenital system
- Tissue anatomy and physiology
 - Connective
 - Epithelial
 - Muscular
 - Nervous

Skills or Competencies (what students should be able to do in order to complete the student learning outcomes)

1. Identify the anatomy of major organ systems;
2. Explain the physiology of major cell types;
3. Explain the physiology of major tissues;
4. Explain the physiology of major organs.
5. Identify the major cellular components of major tissues and organs.
6. Use the “tools of the trade” appropriately, including microscopes, dissection tools, and microscope slides.
7. Interpret visual, hands-on materials, including slides, models and virtual dissections into an oral and written presentation and lab notebook.
8. Interpret visual, hands-on materials and data into clinical profiles.

COURSE TASKS

1. Attend class at scheduled times, **not arriving late or leaving early without prior consent** of instructor.
2. Participate in all lab activities, including:
 - a. Making yourself familiar with all lab safety procedures
 - b. Taking appropriate precautions at all times to ensure your own safety and the safety of others and the environment
 - i. Know the locations of important safety equipment and the fundamentals of their use including:
 1. Eyewash stations
 2. Safety shower(s)
 3. Fire extinguisher
 4. First Aid kit
 5. Who to summon in the event of an accident or emergency
 - c. Follow instructions
 - d. Dress appropriately for lab

- i. **Closed toed shoes are REQUIRED**
 - ii. Safety glasses and gloves are REQUIRED for any lab using chemicals, hot-plates or which may expose you or others to body fluids.
 - iii. **Lab coat or other appropriate covering is REQUIRED**
 - e. Report any chemical spills, broken glassware or other hazardous situations immediately to the instructor
 - i. Place all broken glass, sharps and dissected specimens in the appropriate receptacles, NOT IN THE TRASH.
 - ii. All tissues and body fluids, human or otherwise, including saliva, blood, or other tissues, must be disposed of in the appropriate bio-hazard container, NOT IN THE TRASH.
 - f. Chemicals used in lab may be poisonous, corrosive or flammable.
 - i. Do not ingest any chemical, even those known to be safe, in the lab.
 - ii. Do not touch any chemical in the lab without wearing gloves unless specifically instructed by your instructor to do so.
 - iii. Unless otherwise instructed, chemical wastes should NOT GO DOWN THE DRAIN.
 - iv. **DO NOT CONSUME FOOD OR BEVERAGES IN LAB.**
 - v. Again: **NO FOOD OR BEVERAGES ALLOWED IN THE LAB!**
 - g. Know how to safely use and operate all lab equipment and tools, including:
 - i. Microscopes
 - ii. Glass microscope slides
 - iii. Hematology supplies
 - iv. Scalpels and other dissection tools
 - h. **Treat all organisms, living or dead, with care and respect.**
 - i. Always handle dissection specimens with gloves.
 - ii. Wash your hands, even if you have been wearing gloves, after handling dissection specimens.
 - i. **Clean all lab supplies and return them** to their proper location before leaving lab.
 - j. Clean your bench top before leaving by using the cleaning solutions available at the back of the lab and wiping down the counter with paper towels.
 - k. **WASH YOUR HANDS** immediately following lab to reduce the possibility of infection or contamination.
3. Record results of lab activities in a lab notebook.
 - a. Number, prior to the start of class, all the pages of your lab notebook using a pen (not a pencil) if you are using a bound composition-style notebook.
 - b. You may keep your notes on a computer, but make sure to personally label all figures, drawings, and photos.
 4. Complete weekly in class quiz, if given.
 5. Complete 2 in-class practical exams.
 6. Present (orally and in writing) results of lab activities.

ASSESSMENT TASKS AND GRADING

Practical Exams – 2 in-class practical exams. 100 points each, for **200 points**.

Practical exams cover:

1. Anatomy (gross and cellular) and physiology (function) of major systems covered in lab.
2. Practical exams may be online and taken in lab.

Quizzes – One per lab session, 10 points per quiz. Approximately 10 quizzes for **100 points**.

- At the beginning of lab covering anatomy and physiology of the lab to be done that day.
- Based on figures used to illustrate “anatomy to know” and which are taken from the lab manual.
- May be simple identification, as in point to the named structure, or require correct spelling of the name of a structure.

Lab Notebook – submitted twice, 100 points each time for a total of **200 points**.

Lab Reports – one written lab report, worth **50 points**:

1. Cardiovascular physiology
2. Respiratory physiology (if CV report score was less than 30 points)

Oral Report –

- **100 points**
- Clinical application of a topic covered in lab.
- Each lab session starting the second week, a lab group will be tasked with presenting the findings and analysis from the previous week’s lab.
 - One partner covers clinical relevance and applications (5 minutes)
 - One partner covers data collected and analysis (5 minutes)

Participation and attendance – **Attendance is mandatory**.

- The “bank” consists of **100 points**
- Each unexcused absence, late arrival or early departure will result in a deduction of **50 points** from the student’s attendance “bank”.
 - Excused absences include a medical emergency for yourself or an immediate family member, which must be confirmed with a written, signed and dated waiver on official stationary (e.g., a doctor’s work release note).
- Make up labs are not an option, so **two unexcused absences** will result in a failing grade (an “F”).
- Some labs involve non-invasive clinical measurements (such as skin-fold measurements or reflex testing). If you have a health condition or other reason why you should not be required to participate in these activities, you must notify the instructor. Experiments involving invasive or semi-invasive procedures will be performed on volunteers only. Such procedures may include finger sticks and urinalysis.

Optional lab

- Cadaver lab at the UH John A. Burns School of Medicine (JABSOM)
- Scheduled for an evening and it replaces one normal lab session
- Cost: nonrefundable \$25.00 to cover JABSOM administration and personnel
- Details to be announced in class

NOTE: All assignments are due ON or BEFORE the due date (at the START of lab on the due date). The following are NOT ACCEPTED:

1. Late assignments
2. eMailed work
3. Materials left in my office or mailbox.

Extra Credit –

- **5 points per lab**
- Involves completion of **ALL** the review questions at the end of each lab manual exercise performed in class.
 - No partial credit, all the questions for any lab exercise performed must be completed
 - Must be **100% complete**, anything missing will result in no credit.

- Due at the start of the following (subsequent) lab.
- No late work

Total points for the course: approximately 750.

Total optional, EC: approximately 45-55 points. Doing all the EC can raise your grade a full grade!!

Grade is a straight percentage.

LEARNING RESOURCES

Lab manual: Marieb, EN. 2011. *Human Anatomy and Physiology Laboratory Manual*. 10th Ed (Cat Version). Pearson Benjamin Cummings, San Francisco, CA ISBN 0-321-61612-X. Available in the WCC bookstore.

Laulima: <https://laulima.hawaii.edu/portal>. Students need a UH email account and access to a computer (available in Imiloa and the WCC Library Learning Commons). Laulima hosts a webpage for our course where you will find additional resources including, guidance and instructions, updates, announcements, links to lab activities and the Extra Credit materials.

Additional Information

LAB ATTIRE, CONDUCT AND HYGEINE

1. Biology labs often involve the use of chemicals, including potentially hazardous materials, and potentially dangerous equipment, including sharps such as scalpels and glassware.
 - a. Therefore students **MUST** wear:
 - i. Closed toe shoes
 - ii. And may be required to wear safety glasses and/or protective gloves or other protective equipment.
 - iii. Lab coat
 - b. Therefore students **MUST** adhere to a strict code of conduct.
 - i. Any student engaging in conduct that threatens the safety of themselves or others in lab will be expelled from class and receive an “F” grade for the course.
2. Some lab activities involve body measurements (such as body fat determination through skin fold analysis), light exercise, or the placement of electrodes or sensors on the body. Therefore, students should wear:
 - a. Loose-fitting clothing that allows for a free range of movement
 - b. Students failing to wear appropriate clothing will not be allowed to participate in lab exercises and will be considered absent for the day.
3. Some lab activities involve contact with chemicals as described in #1 above, other students, as described in #2 above, or with biological fluids during dissections. Therefore, students should:
 - a. Maintain a clean lab bench, free of excess personal belongings;
 - b. Promptly clean up any spills;
 - c. NEVER bring food or beverages into the lab;
 - d. ALWAYS WASH YOUR HANDS at the end of lab.

DISABILITIES ACCOMMODATION STATEMENT

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.

Revised November 2014

Schedule subject to change. See posted schedule online and watch for announcements in Laulima.

Week	Date	Topics	Reading	EC – 5 points each
1.	1/9	Introduction, syllabus, safety Endocrine 1 Dissection of pig pancreas	Syllabus Exercise 27	None
2.	1/16	HOLIDAY: MARTIN LUTHER KING DAY		
3.	1/23	Blood, blood type, hematocrit	Exercise 29	Endo
4.	1/30	Anatomy of the heart and blood vessels Dissection of pig heart	Exercises 30 & 32	Blood
5.	2/6	Lymphatics and immunity	Exercise 35	Heart and blood vessels
6.	2/13	CV Physiology, EKG, Blood Pressure and Pulse	Exercise 33	Lymphatics
7.	2/20	HOLIDAY: PRESIDENT'S DAY		
8.	2/27	Lung Anatomy & Physiology Dissection of pig lungs Cardiovascular report due	Exercises 36 & 37	CV physiology
9.	3/6	Lab practical #1 – Endocrine, Lymphatics, Immunity, all CV and Lungs. Notebooks due		
10.	3/13	GIT anatomy Dissection of pig stomach Optional Lung report (only if score on CV report was less than 60%, score replaces CV score)	Exercise 38	Lung A&P
11.	3/20	Surface Anatomy	Exercise 46	GIT anatomy
12.	3/27	SPRING BREAK		
13.	4/3	Kidney Anatomy	Exercise 40	Surface Anatomy
14.	4/10	Cadaver Lab at JABSCOM – Date and time TBA		
15.	4/17	Male and female reproduction, embryology and development Notebooks due	Exercise 42-44	Kidney anatomy
16.	4/24	Heredity	Exercise 45	Male and Female Repro, Development, Heredity
17.	5/1	Lab practical #2 – Comprehensive final		