



UNIVERSITY of HAWAII®  
**WINDWARD**  
COMMUNITY COLLEGE

**Zoology 141L Anatomy and Physiology Laboratory Section**  
One (1) Credit CRN 60398 Tuesdays 1:00 p.m. to 3:45 p.m., 103 'Imiloa

**INSTRUCTOR:** Allison Beale  
**OFFICE:** Hale 'Imiloa 118  
**OFFICE HOURS:** TBA – See office door or Laulima Homepage for course  
**TELEPHONE:** Please use email **EMAIL:** [abeale@hawaii.edu](mailto:abeale@hawaii.edu)  
**EFFECTIVE DATE:** Spring 2019

### 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 ZOOL 141. Reinforces major concepts of human anatomy and physiology discussed in ZOOL 141 through dissections, examination of models, laboratory activities, and other hands-on experiences. This course is intended for students entering health care or other medically related fields such as nursing, physical therapy, and medical technology. (3 hours laboratory)

Prerequisite: Credit for or registration in ZOOL/PHYL 141, equivalent preparation or consent of instructor.

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**Activities Required at Scheduled Times Other Than Class Times:** Writing Lab.

### STUDENT LEARNING OUTCOMES

The course student learning outcomes (SLOs) are:

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, skeleton models and real and virtual animal dissections.
3. Use basic laboratory equipment (microscopes, slides, and dissecting tools) to observe and characterize human tissues.
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
      - 1. You will not be allowed to participate in lab without closed-toed shoes.
    - ii. A lab coat or other appropriate coverage is REQUIRED
      - 1. Lab coats may be purchased from the Book Store
    - iii. Safety glasses and gloves are REQUIRED for any lab using chemicals, hot-plates or which may expose you or others to body fluids.
      - 1. Safety glasses and gloves are provided in the lab.
  - 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.
    - iii. Wash your lab bench down after lab using paper towel and spray cleaners provided in lab.
  - 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.
      - 1. Do not bring food or beverages of any kind into the lab.
      - 2. Do not apply cosmetics 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. WASH YOUR HANDS immediately following lab to reduce the possibility of infection or contamination.
- 3. Record results of lab activities in a lab notebook.
  - 4. Complete weekly quiz if scheduled.
  - 5. Complete 2 in-class practical exams.
  - 6. Present (orally and in writing) results of lab activities.

## ASSESSMENT TASKS AND GRADING

**Quizzes** – one per week, approximately 10 total. 10 points each quiz, for an approximate total of **100 points**.

Quizzes cover:

1. Material from lab.
2. Quizzes are based on review sheet for each lab and are used to make sure you have studied BEFORE coming to lab.

**Practical Exams** – two in-class, non-cumulative practical exams. 100 points each, for a total of **200 points**.

Practical exams cover:

1. Anatomy (gross and cellular structures) and physiology (function) of major systems covered in lab.
2. The practical exams will be similar in content to the quizzes, but completely multiple-choice in format.

**Lab Notebook** – Worth **240 points**

1. THREE (3) lab notebook sections will be submitted. See lab schedule for due dates. Some sections encompass multiple lab exercises. **Each requires a minimum of one Writing Lab appointment.**
  - a. **Microscope and cell anatomy/division (Exercises 3-4) – 80 points**
  - b. **Integumentary system (Exercises 7) – 80 points**
  - c. **Appendicular skeleton, joints, movements (Exercises 10-11) – 80 points**
2. Using a rubric and standard science lab write-up style guides, each of these three labs will be thoroughly documented and submitted for grading.
3. Due at the start of the subsequent (next) lab. No late work accepted.
4. May be handwritten or created on a computer, but all figures must be labeled by the student.
5. Each of these three labs must include ONE (1) primary literature citation that reflects the primary objectives of the lab exercise. This may include a Clinical Trial evaluation.
  - a. Primary literature is peer-reviewed and written by someone who has actually done the research being described.
6. Students are required to make Writing Lab appointments (see Laulima homepage for contact information) as part of completing this task.

**Lab Reports** – ONE written lab report, on Osmosis and Diffusion related to membranes, worth **50 points**. A rubric and guidance are provided for the student. Students are required to make Writing Lab appointments (see Laulima homepage for contact information) as part of completing this task.

**Lab Presentations** – One (1) presentation per lab group of two (2) people. Worth **100 points** each.

1. Each lab team will choose and present a 10-minute oral presentation summarizing the activities of the previous lab. A rubric and guidance is provided.
  - a. One student covers basic data collected and it's analysis.
  - b. One student covers application of lab results to clinical medicine topics.

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

- Each student is allowed one absence without penalty, if the student brings a doctor's work-release note to the following lab. Students will not be reminded.
  - Second, or any unexcused absence will result in the student not achieving points for the daily quiz (10 points), lab write-up (50 points) and EC (5 points).
  - If a student arrives after the start of the daily quiz, the quiz will not be reset to accommodate them. EC will not be accepted from late students, nor will late lab

reports resulting a potential point loss of 55 points.

- **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 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.

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. Work 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

## METHOD OF GRADING

Total points for the course: 690.

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

Grade is a straight percentage of the total points.

### SUMMARY OF ASSESSMENT AND EXTRA CREDIT AWARD STRUCTURE

Assessment	Number	Type	Points each	Total
Quizzes	Up to 10	Matching, fill-in-the blank, multiple-choice	10	100
Lab practical	Two	Multiple-choice	100	200
Notebook	Three	Written	80	240
Paper	One	Written	50	50
Oral report	One	Oral	100	100
<b>TOTAL AVAILABLE POINTS</b>				<b>690</b>
Extra credit	Up to 11	Matching, fill-in-the blank, multiple-choice	5	55

POINTS	PERCENTAGE (%)	GRADE
621-690	90-100	A
552-620	80-89	B
483-551	70-79	C
414-482	60-69	D
345-413	50-59	F

## LEARNING RESOURCES

**Lab manual:** Marieb, EN. 2011. *Human Anatomy and Physiology Laboratory Manual*. 11<sup>th</sup> Ed or 12<sup>th</sup> Ed. (Cat Version). Pearson Benjamin Cummings, San Francisco, CA. Available in the WCC bookstore.

In addition, many students find it helpful to bring a **digital camera** and **USB flash drive** to class in order to photograph anatomical specimens and exchange data and picture files.

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.

A number of supplemental learning resources are available for the student, online in Laulima through our webpage.

- Camtasia recordings explaining lab procedures, and illustrating data collection, recording and analysis options.
- Links to lab images for use in lab write-ups and reports.
- Announcements with details of and links to resources to be used for each lab.
- Detailed rubrics for all assignments.
- Practice questions for quizzes and practical exams to help students master the Student Learning Objectives.
- Guidance documents such as “How to write an A&P paper” by Dr. Langston and guidance for the oral presentation.
- Supplemental sheets to tailor the experiments to our resources.
- Administrative links to:
  - The syllabus and Lab schedule
  - Rubrics
  - WCC services
    - Computer services
    - Counseling and advising
    - Disabilities
    - Library and Ka Piko Student Services
    - Testing center

## 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. A lab coat
    - iii. And may be required to wear safety glasses and/or protective gloves or other protective equipment.
  - 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.

### STUDENT CONDUCT

- ANY student who engages in behavior or language inconsistent with accepted codes may be subject to academic disciplinary action. Please review the following policies if you have any question about what constitutes appropriate behavior. **Absolutely not tolerated** will be swearing, racist or sexist speech or behavior meant to intimidate any person in class. All UH policies may be found at <http://www.hawaii.edu/policy/?action=search>
  - EP 1.204 – Sexual Harassment and Sexual Assault
  - EP 7.205 – System-wide Student Disciplinary Sanctions
  - EP 7.208 – System-wide Student Conduct Code

### *MySuccess Student Support System*

At Windward Community College we want every student to be successful. **MySuccess** is a system-wide effort that seeks to support students early in the semester, if and when they first begin experiencing difficulty in class. If, within the first few weeks of the semester, your scores, or attendance record, indicate that you're having difficulty in this class (e.g. missing class, missing assignments, or low test scores) you may be referred to your assigned counselor. A referral is a tool to help you get on track. Once referred, MySuccess will:

- Call you and send an email to your Hawaii.edu account to let you know about the referral;
- Have a Counselor follow up with you by phone or by email to find out what kinds of help you might need. They can then connect you with the necessary resources to help you devise a strategy for success.

If you are referred, know that I am doing so in an effort to connect you with all of the help you may need to do well this semester as your success is important to me.

### ACADEMIC INTEGRITY

Work submitted by a student must be the student's own work. The work of others should be explicitly marked, such as through use of quotes or summarizing with reference to the original author. Such work must be credited using standard citation styles (MLA or APA for instance). Style guides may be found in the library, or:

- Modern Language Association (MLA): <https://style.mla.org>
- American Psychological Association (APA): [www.apastyle.org/index.aspx](http://www.apastyle.org/index.aspx)

Academic dishonesty includes, but is NOT LIMITED to:

- Cheating on exams, or helping someone else cheat
  - During quizzes and practicals, only ONE window may be open on the student's computer during the assessment.
- Plagiarism

In this class, students who commit academic dishonesty, cheating or plagiarism will have the following consequence(s):

- At a minimum, students will receive a failing grade for plagiarized assignments.
- All cases of academic dishonesty are referred to the Vice Chancellor for Student Affairs.

See the current WCC Course Catalog for a description of policies concerning academic dishonesty.

## DISABILITIES ACCOMMODATIONS

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](mailto:lemke@hawaii.edu), or you may stop by Hale ʻĀkoakoa 213 for more information.

## TITLE IX

Title IX prohibits discrimination on the basis of sex in education programs and activities that receive federal financial assistance. Specifically, Title IX prohibits sex discrimination; sexual harassment and gender-based harassment, including harassment based on actual or perceived sex, gender, sexual orientation, gender identity, or gender expression; sexual assault; sexual exploitation; domestic violence; dating violence; and stalking. For more information regarding your rights under Title IX, please visit: [https://windward.hawaii.edu/Title\\_IX/](https://windward.hawaii.edu/Title_IX/).

Windward Community College is committed to the pursuit of equal education. If you or someone you know has experienced sex discrimination or gender-based violence, Windward CC has resources to support you. To speak with someone confidentially, contact Karla Silva-Park, Mental Health Counselor, at 808-235- 7468 or [karlas@hawaii.edu](mailto:karlas@hawaii.edu) or Kaahu Alo, Designated Confidential Advocate for Students, at 808-235- 7354 or [kaahualo@hawaii.edu](mailto:kaahualo@hawaii.edu). To make a formal report, contact the Title IX Coordinator at 808-235-7393 or [wccitix@hawaii.edu](mailto:wccitix@hawaii.edu).

## ALTERNATE CONTACT INFORMATION

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

Location: Alakai 121  
 Phone: 808-235-7422  
 Email: [wccaa@hawaii.edu](mailto:wccaa@hawaii.edu)

## Human Anatomy and Physiology Zoology/Physiology (ZOOL/PHYS) 141L SPRING 2019

Sec 60398 ZOOL 141L T 1:00 pm – 3:45 pm Imliloa 103 – Schedule subject to change.

Week	Date	Topics	Lab Exercise
		Based on Human Anatomy & Physiology Lab Manual 11 <sup>th</sup> Ed. Marieb et al. Pearson	
1	1.8	Lab Introduction; How to keep a notebook and how to write a scientific report. Safety..... Language of Anatomy and Organ System overview .....	Syllabus 1 (p. 7) 2 (p. 23)
2	1.15	The Microscope ..... Cell Anatomy and Division..... EC & QUIZ: Microscope and Cell anatomy/division DUE: NONE PRESENTATION: Language of anatomy & organs	3 (p. 37) 4 (p. 49)
3	1.22	Cell Transport Mechanisms: Osmosis and Diffusion ..... EC & QUIZ: Osmosis and diffusion DUE: Microscope and Cell anatomy/division (#1) PRESENTATION: Microscope & Cell anatomy/division	5 (p. 65)
4	1.29	Classification of Tissues ..... EC & QUIZ: Classification of Tissues DUE: NONE PRESENTATION: Microscope & Cell anatomy/division	6 (p. 79)
5	2.5	The Integumentary System ..... EC & QUIZ: Integumentary system DUE: Osmosis Research Paper PRESENTATION: Classification of tissues	7 (p. 107)
6	2.12	Bone Tissue ..... Axial Skeleton ..... EC & QUIZ: Bone tissue and axial skeleton DUE: Integumentary system (#2) PRESENTATION: Integumentary system	8(p. 123) 9 (p. 137)
7	2.19	Appendicular Skeleton..... Joints: Articulations and Body Movements ..... EC & QUIZ: Appendicular skeleton, joints DUE: NONE PRESENTATION: Bone tissue, axial skeleton	10 (p. 165) 11(p. 187)
8	2.26	<b>Lab Practical #1 (up to joint movements)</b>	
9	3.5	Muscle Tissue..... Gross Anatomy and Classification of Muscles ..... EC & QUIZ: Muscle tissue and muscle gross anatomy DUE: Appendicular skeleton, joints (#3) PRESENTATION: Appendicular skeleton, joints	12 (p. 207) 13 (p. 217)
10	3.12	Muscle Physiology ..... EC & QUIZ: Muscle physiology DUE: NONE PRESENTATION: Muscle as a tissue	Supplemental activity
11	3.19	<b>SPRING BREAK</b>	
12	3.26	<b>PRINCE KUHIO DAY</b>	
13	4.2	Histology of Nervous Tissue ..... Gross Anatomy of the Brain & Cranial Nerves ..... Spinal Cord & Nerves ..... EC & QUIZ: Nervous tissue, brain and cranial nerves DUE: NONE PRESENTATION: Muscle physiology	14 (p. 255) 15 (p. 267) 16 (p. 293)
14	4.9	Human Reflex Physiology ..... General Senses ..... EC: Human reflex physiology (no quiz) DUE: NONE PRESENTATION: Nervous tissue, brain and cranial nerves	17 (p. 309) 18 (p. 323)

See next page....

Continued from previous page.

Week	Date	Topics Based on Human Anatomy & Physiology Lab Manual 11 <sup>th</sup> Ed. Marieb et al. Pearson	Lab Exercise
15	4.16	Anatomy of Visual system ..... Visual Tests & Experiments..... EC & QUIZ: Vision DUE: NONE PRESENTATION: Human reflexes	23 24
16	4.23	Hearing & Equilibrium ..... Olfaction & Taste ..... EC & QUIZ: Hearing and Equilibrium, Smell and taste DUE: NONE	25 26
17	4.30	<b>Lab Practical #2 Muscle tissue through special senses</b>	

### Drop Dead Dates Spring 2019

1. Last day for 100% Refund ..... 15 January
2. Last day for 50% Refund..... 30 January
3. Last day to withdraw without a “W” grade ..... 30 January
4. Spring Break.....18-22 March
5. Last day to withdraw with a “W” grade ..... 25 March

### HOLIDAYS Spring 2019

1. MLK day ..... 21 Jan
2. President’s day ..... 18 Feb
3. Spring Break ..... 18-22 Mar
4. Prince Kuhio day ..... 26 Mar
5. Good Friday ..... 19 Apr