Biology 100 Laboratory - CRNs 64404 & 64405
One Credit
64404:  R (2:30 – 5:00 pm)
64405:  F (2:30 – 5:00 pm)

INSTRUCTOR: Allison Beale
OFFICE: 118 Imiloa
OFFICE HOURS: R/F (1:30 – 2:30 pm)
TELEPHONE: use email
EMAIL: abeale@hawaii.edu

EFFECTIVE DATE: Fall 2013

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 intended to accompany BIOL 100 (Human Biology). Emphasizes the application of the scientific method, basic laboratory methods and procedures in biology, and facts and principles of human anatomy and physiology. (3 hours laboratory)

Pre-Requisite(s): Credit for or registration in BIOL 100 or equivalent preparation or consent of instructor.

Activities Required at Scheduled Times Other Than Class Times

None

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

1. Use the scientific method to answer scientific questions.
2. Analyze and interpret scientific data.
3. Become proficient in the use of standard laboratory equipment (microscopes, sphygmomanometers, stethoscopes, etc.).
4. Be able to identify common body tissues and classify epithelial tissues based on cell shape and number of layers.
5. Compare and contrast the physical, chemical, and biological factors governing the transport of materials across the cell membrane.

6. Identify the major anatomical features of the integumentary, skeletal, muscular, digestive, endocrine, reproductive and nervous systems.

**COURSE CONTENT**

**Concepts or Topics** – The student will describe and integrate basic biological principles and define basic biological terms presented in lecture, the required texts, and other instructional materials, citing specific examples when asked. These principles include the following:

- The scientific method
- The basic biochemistry of life and the function of major biological molecules
- The characteristics of animal, plant, fungal and bacterial cells
- Basic cell metabolism and division
- Basic human genetics and inheritance
- Hierarchical architecture of an animal: molecules, cells, tissues, organs, organ systems, and the whole organism
- Anatomy and physiology of human organ systems including: skeletal, integumentary, muscular, circulatory, digestive, respiratory, excretory, nervous, endocrine, immune, and reproductive systems

**Skills or Competencies** – Students should be able to do the following in order to complete the student learning outcomes:

1. Keep a lab note book in a standard format
2. Create a lab report based on the scientific method
3. Use the library and/or internet to search for reference material for lab reports
4. List important biochemical molecules and identify their biological function
5. Describe the basic metabolic pathways essential to life (e.g., Kreb’s cycle)
6. Describe the process of cell division
7. Describe the basic chemistry of DNA and how it relates to inheritance
8. Describe how a whole organism is composed of parts organized into functional groups
9. Be able to identify, from models, diagrams or other visual materials including dissected specimens, the anatomical names of tissues and organs in the human body
10. Be able to describe, from models, diagrams or other visual materials including dissected specimens, the physiological function of organs, tissues or cells.
11. Use the “tools of the trade” appropriately including microscopes, models, dissection tools, etc.

**COURSE TASKS**

1. Attend class at scheduled times.
   a. Wear appropriate attire (closed-toed shoes, for instance)
   b. Wear safety equipment as necessary (gloves and safety glasses, for instance)
2. Complete assigned reading(s) prior to lab.
3. Complete weekly quizzes (may be online, or in lab – and may be “practical” in nature)
4. Participate in laboratory exercises, including:
a. Making yourself familiar with all lab safety procedures
b. Know the locations of important safety equipment and the fundamentals of their use including:
   i. Eyewash stations
   ii. Safety shower(s)
   iii. Fire extinguisher(s)
   iv. First Aid kit(s)
   v. Who to summon in the event of an accident or emergency
5. Record data and answer questions in lab and in laboratory manual

ASSESSMENT TASKS AND GRADING

ATTENDANCE is MANDATORY. Lab set ups are generally elaborate and will NOT be recreated for anyone who misses a lab.

QUIZZES (10 points each). The first 5-10 minutes of class will be a short quiz based on material from the previous lab and on the reading for the current lab. YOU MUST ARRIVE ON TIME IN ORDER TO TAKE THE QUIZ. If you are late, you will receive a zero.

LAB ACTIVITIES (20 points each lab). Each lab exercise in the lab manual contains questions and fill-in-the blank exercises. You are to complete these DURING the lab. If you have an assignment during a lab, it must be completed prior to the next lab. Lab books may be checked at random.

LAB NOTEBOOKS (100 points). Lab notebooks will be collected twice per semester (50 points each time) to evaluate (a scoring matrix will be provided):
   1. Adherence to standard lab notebook recordkeeping format
   2. Completeness
   3. Creativity, originality, and depth of inquiry
   4. Neatness

EXAMS (200 points). Two practical, or mixed practical multiple-choice exams, that is, one midterm and one final (not cumulative). Each is worth 100 points.

Point tall for all activities: approximately 500 points.

LEARNING RESOURCES


REQUIRED: Fetal pig kit (including a book and instruments).

May be purchased at the WCC bookstore.

Additional Information
ANIMAL DISSECTIONS

1. All students will participate in studying animal dissection specimens similar to human organs as well as a whole dissection specimen (a fetal pig). You must purchase the fetal pig kit from the WCC bookstore.

2. All students will take tests, potentially including practical exams, which will include questions from these specimens.

3. Please honor the specimens. Take your time and be respectful. Do not turn animal parts into mystery meat; we are not training hamburger grinders, we want to learn the art of separating (dissecting) tissues.
   a. Always handle dissection specimens with gloves.
   b. Wash your hands, even if you have been wearing gloves, after handling dissection specimens.
   c. Do not dispose of dissection specimen materials in the trash, only in the Biohazard container provided.

4. You must wear appropriate clothing for lab, this includes:
   a. Close-toed shoes.
   b. Safety equipment such as gloves and eye protection.

5. You must adhere to a strict code of conduct.
   a. Any student engaging in behavior that threatens the safety of themselves or others in lab will be expelled and receive an “F” grade for the course.
   b. Any student who willfully disregards biohazard or sharps disposal procedures will receive an “F” for the lab.

6. Know how to safely use and operate all lab equipment and tools including:
   a. Microscopes
   b. Glass microscope slides
   c. Scalpels and other dissection tools
   d. Safety equipment including eyewashes, showers and First Aid Kit
      i. Notify the instructor immediately in the event of any accidents including (even minor) cuts.
   e. Sharps disposal
   f. Biohazard disposal

7. NO FOOD or BEVERAGES ALLOWED IN THE LAB
   a. NO EATING OR DRINKING IS ALLOWED IN THE LAB
      i. Just in case you missed that: Absolutely no food or drink in the lab

LABORATORY MATERIALS

Some of the equipment or specimens that you will be using are very expensive and/or fragile. Please use care with all materials in the laboratory.

CLEAN UP

It is your responsibility to thoroughly clean your lab bench at the end of each lab.

1. Put away all lab equipment and supplies
   a. Return microscopes to their proper storage location
   b. File all microscope slides in their appropriate trays

2. Properly dispose of specimens and contaminated paper towels
   a. Use the container (biohazard or autoclave bag) provided
   b. DO NOT LEAVE ANY SPECIMEN SCRAPS IN THE SINK OR ON YOUR BENCH!
i. Students who leave early or who fail to follow clean up procedures will be
docked points for the lab.
3. Wash down the lab bench and properly dispose of towels.
4. Wash your hands thoroughly.

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 23 August 2013

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<th>Lab</th>
<th>Date</th>
<th>Topic</th>
<th>Exercise</th>
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<tr>
<td>1.</td>
<td>8/27 &amp; 30</td>
<td>Introduction, Lab protocols</td>
<td>Syllabus</td>
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<td>30 August – LAST day to drop with 100% Refund</td>
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<td>2 September – LABOR DAY HOLIDAY</td>
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<td>2.</td>
<td>9/3 &amp; 6</td>
<td>Scientific method</td>
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<td>3.</td>
<td>9/10 &amp; 13</td>
<td>The Microscope, Cellular Anatomy and Diversity</td>
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<td>4.</td>
<td>9/17 &amp; 20</td>
<td>Cell Physiology: Osmosis and Diffusion</td>
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<td>9/24 &amp; 27</td>
<td>Cell Respiration and Fermentation</td>
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<td>6.</td>
<td>10/1 &amp; 4</td>
<td>Tissues - Integument</td>
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<td>10/8 &amp; 11</td>
<td>Tissues – Skeleton</td>
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<td>10/15 &amp; 18</td>
<td>Tissues – Muscles</td>
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<td>16 September – LAST day to drop with 50% Refund</td>
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<td>LAST day to drop without a “W” grade</td>
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<td>9.</td>
<td>10/22 &amp; 25</td>
<td>Tissues – Nervous System</td>
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<td>10.</td>
<td>10/29 &amp; 11/1</td>
<td>Tissues – Cardiovascular System</td>
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<td>Monday, 4 November – LAST day to withdraw with a “W” grade</td>
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<td>Tuesday, 5 November – ELECTION DAY HOLIDAY</td>
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<td>11.</td>
<td>11/8 &amp; 11/12</td>
<td>The Senses</td>
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<td>12.</td>
<td>11/15 &amp; 11/19</td>
<td>The Respiratory System</td>
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<td>13.</td>
<td>11/22 &amp; 11/26</td>
<td>The Endocrine System, The Digestive System and Nutrition</td>
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<td>Thursday and Friday, 28 &amp; 29 November – THANKSGIVING HOLIDAY</td>
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<td>14.</td>
<td>12/2 &amp; 12/6</td>
<td>Urinary System, Reproductive System</td>
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