BIO 407 – Biology and Society 102 Practicum in Laboratory Teaching

Course Syllabus: Spring 2020

Instructor: Lisa L. Harmon
Email: lisah@uidaho.edu
Office: LSS 265
Phone: 885-6185
Office Hours: MW 8-10AM in LSS 265 or by appointment
Laboratory: All Lab Sections & TA Meetings in LSS 363

Course Description:
Practicum in Biology Laboratory Teaching is an experience that allows students to become peer mentors, tutors and teaching assistants to other students within the department. In this course students will prepare introductory lectures to laboratories, help set-up and take down weekly labs, tutor students inside the classroom, monitor laboratories in progress and provide students with feedback on their responses to laboratory questions. This experience helps students practice and solidify their own knowledge of a broad range of biology concepts, and it allows students to practice teaching using various methodologies.

University Learning Outcomes:
Learn and Integrate—Students will learn a variety of new laboratory skills and apply their knowledge to help guide other students in laboratory exercises and independent research projects for each course.

Think and Create—Students will create and communicate weekly introductions to the laboratories that help explain the main concepts being addressed. They will use multiple teaching strategies and apply the concepts to real world issues to gain student attention and fully explain the information under study in the laboratory that week.

Communicate—Students will create and articulate a broad range of scientific concepts to primarily freshmen and sophomore students. Teaching Assistants will spend three hours a week circulating within laboratory classes helping answer student questions or mentoring students completing independent research projects. Teaching Assistants must also communicate in written form to their students, providing them with valuable feedback on the concepts under study.

Clarifying Purpose and Perspective—Students will learn to manage information, time, people and their own work. They will be open to mentoring a diverse group of students. Students will gain a tremendous amount of confidence and expand their knowledge of self and others from teaching and mentoring.

Practice Citizenship—In the Laboratory Practicum Experience students will establish themselves as leaders within a group of twenty-four peers. They will make ethical decisions and use responsible behaviors in order to gain the respect of their classes. They will learn how to be firm and fair in dealing with the diverse groups of students they teach. They will collaborate with the instructors, technicians and other Teaching Assistants in order to successfully complete this job. Finally, teaching assistants will mediate semester project debates, discussions and presentations.
Class Notes and Other Course Information:
All class information can be found on the class site on BB Learn
https://www.bblearn.uidaho.edu. You will be prompted to enter your username
(vand1234) and password (same as your email account) to access course materials.

Grading: Scoring Guide for Laboratory Practicum Teaching Assistants:

Weekly Score (0-5 pts awarded weekly for 15 Weeks):

<table>
<thead>
<tr>
<th>Weekly Task:</th>
<th>No=0</th>
<th>Yes=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA comes to Lab TA meeting on time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA arrives at their Lab 10 minutes prior to the start of class.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA grades students in a fair manner, providing written feedback.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA helps clean up the lab at the end of the lab period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA turns in weekly grades on time to Instructor.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Points Possible for Semester= 75

Final Reflection Paper (Due at End of Semester):
1-2 page summary
- TA shares three things they gained and learned from the Practicum Experience
- TA shares one lab they would change and one they would keep and why
- Typed, 10-12 Font, Double-spaced
- Grammar/Spelling Correct

Paper Scoring Guide:

<table>
<thead>
<tr>
<th>Points Awarded</th>
<th>Description of Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 pts.</td>
<td>*Student discusses three things they have gained or learned from the Practicum Experience (2 pts per idea)</td>
</tr>
<tr>
<td>6 pts.</td>
<td>*Students discuss their favorite and least favorite lab (with improvement suggestions) (3 pts per idea)</td>
</tr>
<tr>
<td>1 pt.</td>
<td>*Paper is typed with correct formatting (1pt.)</td>
</tr>
<tr>
<td>2 pts.</td>
<td>*Paper has correct grammar and spelling (2 pts.)</td>
</tr>
</tbody>
</table>

Total Points Possible for Semester=15

Other Scores for Semester:
-5 pts. awarded for TA helping proctor/grade matching one exam during the semester
-5 pts. awarded based on TA end of the semester evaluations (average of scores)

Total Points for TA Practicum Class=100
Calculating Your Grade:
Letter grades are awarded based on the University of Idaho grade scale:

- **A** 90 – 100%
- **B** 80 – 89.9%
- **C** 70 – 79.9%
- **D** 60 – 69.9%
- **F** 0 – 59.9%

Grades will be provided on the “My Grades” section of Bb Learn.

Absence from Laboratories and Meetings:
_tAs must show up for every laboratory and TA meeting. If a TA needs to be absent for any reason, it is their responsibility to find a substitute for the classes they will miss. Substitutes can be other TAs for that semester or the course instructor. Please plan to attend all TA meetings. If you need to be absent, it is your responsibility to reschedule a meeting time with the instructor._

Confidentiality:
_tAs will receive FERPA training and pass a standard university assessment on this knowledge. TAs will keep all student information and educational records confidential._

Discrimination:
No discrimination or harassment will be tolerated in the laboratories. TAs will be asked to watch the university approved discrimination program entitled, “Our Inclusive Workplace: Discrimination and Harassment Prevention Training for University of Idaho Employees.”

Center for Disability Access and Resources (CDAR):
Students with disabilities needing accommodations to fully participate in this class should contact the Center for Disability Access and Resources (CDAR). All accommodations must be approved through CDAR prior to being implemented. To learn more about the accommodation process, visit CDAR’s website at [www.uidaho.edu/cdar](http://www.uidaho.edu/cdar) or call 208-885-6307.
BIO 102L – Biology and Society Lab

Course Syllabus: Spring 2020

Instructor: Lisa L. Harmon
Email: lisah@uidaho.edu
Office: LSS 265
Phone: 885-6185
Office Hours: MW 8-10AM LSS 265 or by appointment
Laboratory: All Lab Sections Meet in LSS 363

Course Description:
There has never been a better day to start learning biology. Being a living thing, you interact with the natural world each day. BIO 102 Lab is similar to the lecture course in that it is organized around four core areas: evolution and ecology; cells and processes; genetics and inheritance; and animal systems. The goals of the course are to create a better understanding of biology, relate the core content to students’ lives, clarify the process of science and develop practical laboratory skills.

Class Notes and Other Course Information:
All class information can be found on the class site on Bb Learn http://www.bblearn.uidaho.edu. You will be prompted to enter your username (vand1234) and password (same as your email account) to access course materials. Students will be required to print labs before coming to class from this site.

Grading:
- 9 Laboratories (15 pts. each) 135
- 2 Unit Quizzes (15 pts. each) 30
- DNA Lab, Herbal Medicine & First Aid Summaries (20 pts. each) 60
- Final Research Project & Presentation 25

TOTAL 250

Calculating Your Grade:
Letter grades are awarded based on the University of Idaho grade scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90 – 100%</td>
</tr>
<tr>
<td>B</td>
<td>80 – 89.9%</td>
</tr>
<tr>
<td>C</td>
<td>70 – 79.9%</td>
</tr>
<tr>
<td>D</td>
<td>60 – 69.9%</td>
</tr>
<tr>
<td>F</td>
<td>0 – 59.9%</td>
</tr>
</tbody>
</table>

Grades will be updated each week on the “My Grades” section of Bb Learn. Early Warning Grades (D’s & F’s) will be entered into the VandalStar program and an advisor will contact you within the first few weeks of classes. Midterm and Final Grades will be entered into the Vandal Web program.
Clothing Requirements:
Students are required to wear pants or skirts that reach below the knee, shirts that cover the shoulders to elbow area and close-toed shoes to each lab. Students who do not have this clothing on for lab will not be allowed in the lab room.

Absence from Laboratories:
Absences from a lab will only be excused with a written letter in advance documenting reasons of illness, family emergency or conflict with an official university function (Athletics, FFA, Ag Ambassadors, course field trips etc.). If a student needs to miss a laboratory, please email the TA in advance of the lab. 10% of the points for a lab will be taken off each day the student does not notify their TA of an excused absence up to seven days after the lab is complete. Failure to contact the TA during the same week of the lab missed will result in a zero for the lab. Students may NOT attend other lab sections without permission due to space and safety issues.

Final Project Policy:
Students with university excused absences during the final project presentation week must notify the instructor in advance. Failure to notify instructor in writing (email) three days in advance will result in you NOT being allowed to make-up the presentation. Not showing up for the presentation means you get a zero. The Final Presentations will be on Tuesday 4/28!

Grading Concerns:
If you think your laboratories, projects or exams were incorrectly graded, you must submit your concern to the Teaching Assistant (TA) within 7 days of receiving your graded assignment. If you would like to resubmit an answer for re-grading, a paragraph including at least one reference about your grading concern must be submitted to the TA within 7 days. Late Assignments will receive a 10% reduction each day they are late.

Center for Disability Access and Resources (CDAR):
Students with disabilities needing accommodations to fully participate in this class should contact the Center for Disability Access and Resources (CDAR). All accommodations must be approved through CDAR prior to being implemented. To learn more about the accommodation process, visit CDAR’s website at www.uidaho.edu/cdar or call 208-885-6307.

Academic Dishonesty:
Acts of cheating or plagiarism will not be tolerated. Your exams and writing assignments must be your own work. According to university policy cheating or plagiarism can result in you failing this class. This includes giving your work to others to copy.

→Cheating refers to the acquisition of answers to class questions in a dishonest fashion.

→Plagiarism is defined as i) the representation of another person’s work as your own, in its entirety or with slight changing of wording, ii) the use of writing from published sources without citing the author(s) or iii) downloading material from the Internet and presenting it as your own work.

UI Student Handbook outlines the expected code of conduct for students at the University of Idaho. Article II addresses academic honesty of students.
**Laboratory Schedule:**
Tuesday 8:30-11:20 (Section 01)
Tuesday 11:30-2:20 (Section 02)
Tuesday 2:30-5:20 (Section 03)
LAB Teaching Assistants: Lisa Harmon, McKenna Hull & Kimberly Scheffelmaier

**Laboratory Course Outline:**

<table>
<thead>
<tr>
<th>DATE</th>
<th>Lab Name</th>
<th>Pre-Lab Assignment</th>
<th>Post-Lab Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/21</td>
<td>Safety/Tree of Life Lab</td>
<td>Print Tree of Life Lab</td>
<td></td>
</tr>
<tr>
<td>1/28</td>
<td>Nutrient Pollution Lab/ Prep</td>
<td>No Lab to Print</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nat. Select Plates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/4</td>
<td>Natural Selection Lab</td>
<td>Print Nat. Select. Lab</td>
<td></td>
</tr>
<tr>
<td>2/11</td>
<td>Comparative Anatomy Bone Lab</td>
<td>Print Bone Lab</td>
<td></td>
</tr>
<tr>
<td>2/18</td>
<td>Macromolecules Lab</td>
<td>Print Macromol. Lab</td>
<td>Eco and Evo Quiz #1</td>
</tr>
<tr>
<td>2/25</td>
<td>Cell Diversity Lab</td>
<td>Print Cell Lab</td>
<td></td>
</tr>
<tr>
<td>3/3</td>
<td>Cell Membrane Lab</td>
<td>Print Membrane Lab</td>
<td></td>
</tr>
<tr>
<td>3/10</td>
<td>Energy &amp; Enzymes Lab</td>
<td>Print Energy Lab</td>
<td></td>
</tr>
<tr>
<td>3/16-3/20</td>
<td>UI Spring Break/No Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/24</td>
<td>Cell Division Lab</td>
<td>Print Cell Div. Lab</td>
<td>Cell Quiz #2</td>
</tr>
<tr>
<td>3/31</td>
<td>DNA/Cancer Lab</td>
<td>Print DNA/Can. Lab</td>
<td>Finish Packet Next Week In Class</td>
</tr>
<tr>
<td>4/7</td>
<td>Finish DNA/Herbal Med. Lab</td>
<td>Print Herbal Med Lab</td>
<td>DNA/Cancer Lab Due</td>
</tr>
<tr>
<td></td>
<td>(Week #1)</td>
<td>(WK#1)</td>
<td></td>
</tr>
<tr>
<td>4/14</td>
<td>Finish Herbal (Wk #2)/ First</td>
<td>Print Herbal (WK#2)</td>
<td>First Aid Packet Due</td>
</tr>
<tr>
<td></td>
<td>Aid Lab Stations</td>
<td>&amp; First Aid Lab</td>
<td></td>
</tr>
<tr>
<td>4/21</td>
<td>First Aid Demos (Finish) &amp;</td>
<td>Herbal Report Due</td>
<td>Herbal Report &amp; First Aid Demo Due</td>
</tr>
<tr>
<td></td>
<td>Project Work Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/28</td>
<td>Project Presentations</td>
<td>Print Papers &amp; Bring</td>
<td>Project Papers &amp; Presentations Due</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presentation of Flash</td>
<td></td>
</tr>
<tr>
<td>5/4-5/8</td>
<td>Dead Week/ Lab Checkout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/11-5/15</td>
<td>Finals Week/No Lab</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All labs must be completed in class and turned in at the end of the lab time. Assignments that are completed outside of class are listed in the Post-lab column above.*
Ecology Learning Outcomes:
1) Students will be able to define basic terms like niche, habitat, consumer, producer, population, community and ecosystem that relate to topics within ecology.
2) Students will be able to simulate how nutrients are recycled within an ecosystem and some problems that cause imbalances in these cycles.
3) Students will be able to draw and label a food chain or food web showing how energy flows within an ecosystem.
4) Students will survey the diversity of life and classify organisms into various phyla.
5) Students will be able to describe some distinguishing characteristics of plants, animals and fungi.

Evolution Learning Outcomes:
1) Students will be able to explain in writing how natural selection works and will simulate how this works within a population in the laboratory.
2) Students will be able to define the term evolution and give five pieces of evidence for evolution.
3) Students will observe pieces of evidence for evolution in the laboratory.
4) Students will survey the tree of life and observe the main similarities and differences between the three domains and various kingdoms of organisms on planet Earth.

Cell & Cell Processes Learning Outcomes:
1) Students will be able to list the similarities and differences between prokaryotic and eukaryotic cells based on laboratory examples provided.
2) Students will be able to list the similarities and differences between plant and animal cells based on laboratory examples provided.
3) Students will be able to list the four macromolecules that help build cells.
4) Students will be able to state the simple monomers, polymers and functions of the four macromolecules.
5) Students will be able to identify and draw various organelles and know their functions for the cell.
6) Students will be able to list which organelles belong to the endomembrane system.
7) Students will observe various single cell and simple multicellular organisms within the lab.
8) Students will learn to clean and use microscopes within the lab.
9) Students will be able to observe and define active (primary and secondary active transport) and passive transport (simple diffusion, facilitated diffusion and osmosis).
10) Students will observe photosynthesis, cellular respiration and fermentation within the laboratory, and answer written questions about these processes.
11) Students will do reactions with enzymes and inhibitors. Students will relate information on enzymes and inhibitors to their importance in facilitating the chemical reactions inside cells.
12) Students will compare and contrast mitosis to meiosis.

Genetics, Human Body and Scientific Method Learning Outcomes:
1) Students will follow the steps of the scientific method to answer a question and will complete a formal laboratory report to demonstrate how they followed the various steps of the method.
2) Students will collect a data set, analyze this data and make conclusions about a data set.
3) Students will compare how well herbal medicines work to inhibit bacterial growth.
4) Students will research how herbal medicines and prescription drugs are approved by the FDA.
5) Students will know the chemical shape and structure of DNA, and be able to define terms like gene, chromosomes, phenotype, genotype, recessive traits and dominant traits.
6) Students will build the structures of DNA and RNA and compare them with guided questions.
7) Students will be able to identify various inheritance patterns in humans.
8) Students will understand how PCR and gel electrophoresis works, and will run a gel within the laboratory.
9) Students will be able to create and read a pedigree that traces a recessive or dominant trait through a family.
10) Students will be able to create and read Punnett Squares to determine offspring genotype and phenotype ratios.
11) Students will explain human body myths based on their knowledge of physiology and anatomy.
12) Students will explore first aid techniques and how they connect to human body form and function.