BIO 407 – Biology and Society 102 Practicum in Laboratory Teaching
Course Syllabus: Spring 2019

Instructor: Lisa L. Harmon
Email: lisah@uidaho.edu
Office: LSS 265
Phone: 885-6185
Office Hours: MW 9:30-10:20 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](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>
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<tr>
<td>TA turns in weekly grades on time to Instructor.</td>
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</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 Possible for Semester=10

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</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 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:
TAs will be required to watch the university approved discrimination program entitled, “Our Inclusive Workplace: Discrimination and Harassment Prevention Training for University of Idaho Employees.” Students will need to pass the quiz that goes along with this program.
BIO 102L – Biology and Society Lab  
Course Syllabus: Spring 2019

Instructor: Lisa L. Harmon  
Email: lisah@uidaho.edu  
Office: LSS 265  
Phone: 885-6185  
Office Hours: MW 9:30-10:20 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; genes; 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 and complete discussion questions from this site.

Grading:  
- 11 Laboratories & 1 Project (20 pts. Each)  
- Lab Work & Clean-up (2 pts. for 10 Labs)  
- Comprehensive Laboratory Exam  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>11 Laboratories &amp; 1 Project</td>
<td>240</td>
</tr>
<tr>
<td>Lab Work &amp; Clean-up (2 pts. for 10 Labs)</td>
<td>20</td>
</tr>
<tr>
<td>Comprehensive Laboratory Exam</td>
<td>40</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>300</strong></td>
</tr>
</tbody>
</table>

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:  
Absences from a lab or lab exam 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.
**Exam Policy:**
Students with university excused absences during the exam period 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 exam.* Not showing up for the exam means you get a zero.

**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 it is late.

**Exam Format:**
The final laboratory exam will be given during the week of April 23-24 during your normal laboratory time.

**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 11:30-2:20 (Section 02): Meredith Butts/ Christy Clark
Tuesday 2:30-5:20 (Section 03): Zachary Blume/ Niels Mitchell
Tuesday 5:30-8:20 (Section 04): Hannah Cummings/ Tyler Hand
Wednesday 12:30-3:20 (Section 05): Elisabeth Bermingham/ Kimberly Scheffelmaier
Wednesday 3:30-6:20 (Section 06): Trenna McDaniel/ Dennis Paulsen
## Laboratory Course Outline:

<table>
<thead>
<tr>
<th>DATE</th>
<th>Lab Name</th>
<th>Prelab Assignment</th>
<th>Postlab Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/9-1/11</td>
<td>No Labs/Short Week</td>
<td></td>
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</tr>
<tr>
<td>1/15-1/16</td>
<td>Safety/Tree of Life Lab</td>
<td>Print Tree of Life Lab</td>
<td>Discussion Quest. #1 Due 1/22-1/23</td>
</tr>
<tr>
<td>1/22-1/23</td>
<td>Nutrient Pollution Lab/Plates for Nat. Select</td>
<td>No Lab to Print</td>
<td>Discussion Quest. #2 Due 1/29-1/30</td>
</tr>
<tr>
<td>1/29-1/30</td>
<td>Natural Selection Lab</td>
<td>Print Nat. Select. Lab</td>
<td>Discussion Quest. #3 Due 2/5-2/6</td>
</tr>
<tr>
<td>2/5-2/6</td>
<td>Bone Homology Lab</td>
<td>Print Bone Lab</td>
<td>Discussion Quest. #4 Due 2/12-2/13</td>
</tr>
<tr>
<td>2/12-2/13</td>
<td>Macromolecules Lab</td>
<td>Print Macromol. Lab</td>
<td>Discussion Quest. #5 Due 2/19-2/20</td>
</tr>
<tr>
<td>2/19-2/20</td>
<td>Cell Diversity Lab</td>
<td>Print Cell Lab</td>
<td>Discussion Quest. #6 Due 2/26-2/27</td>
</tr>
<tr>
<td>2/26-2/27</td>
<td>Cell Membrane Lab</td>
<td>Print Membrane Lab</td>
<td>Discussion Quest. #7 Due 3/5-3/6</td>
</tr>
<tr>
<td>3/5-3/6</td>
<td>Energy &amp; Enzymes Lab</td>
<td>Print Energy Lab</td>
<td>Discussion Quest. #8 3/19-3/20</td>
</tr>
<tr>
<td>3/11-3/15</td>
<td>No Labs/Spring Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/19-3/20</td>
<td>Cell Division Lab</td>
<td>Print Cell Div. Lab</td>
<td>Discussion Quest. #9 Due 3/26-3/27</td>
</tr>
<tr>
<td>3/26-3/27</td>
<td>DNA/Cancer Lab</td>
<td>Print DNA Can. Lab</td>
<td>Finish Packet Next Week In Class</td>
</tr>
<tr>
<td>4/2-4/3</td>
<td>Finish DNA/Herbal Med. Lab (Week #1)</td>
<td>Print Herbal Med Lab (WK#1)</td>
<td>Herbal Report Due 4/16-4/17</td>
</tr>
<tr>
<td>4/23-4/24</td>
<td>Lab Final Exam</td>
<td>No Lab to Print</td>
<td>Lab Exam in Class</td>
</tr>
<tr>
<td>4/30-5/1</td>
<td>Dead Week/Lab Checkout</td>
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<tr>
<td>5/6-5/10</td>
<td>Finals Week/No Lab</td>
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</table>

*All Postlab Discussion Questions are to be typed and stapled to completed laboratories. This packet will be worth 20 points and is to be turned in to your TA the following week at the beginning of lab unless otherwise stated by your TA.*
**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.
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.
6) Students will suggest possible local, regional and international solutions to a particular ecological problem.

**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 like homologous structures in different mammal groups.
4) Students will understand how to create a phylogeny, be able to label its main parts and know what represents a clade on an evolutionary tree.
5) 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.