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Summer 6-1-2022

### BIOB 161N.01: Principles of Living Systems Laboratory - Remote Delivery

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Holick, Katie M., "BIOB 161N.01: Principles of Living Systems Laboratory - Remote Delivery" (2022).

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# **BIOB 161 Syllabus Summer 2020**

## **Principles of Living Systems Laboratory Remote Delivery**

### **Instructor**

Katie Holick, PhD

e-mail: katie.holick@umt.edu

Office Hours: Announced on Moodle or whenever you like

### **General Course Information:**

During this course, we will cover the unifying principles of biological structure-function relationships at different levels of organization and complexity. Lab experiences illustrate biological principles underlying growth, reproduction, development, genetics and physiology.

Principles of Living systems is a broad survey course that is a prerequisite for all options in the Biology and Wildlife majors and is generally required for all pre-professional programs in the health sciences. The content of this course will provide foundational knowledge for future studies in Cell and Molecular Biology, Genetics and Evolution, Developmental Biology, Anatomy and Physiology, Ecology, and related options.

### **Course Goals:**

Upon successful completion of this course, you will have a broad knowledge of biology including cell and molecular biology, genetics and evolution, development biology, physiology, and ecology. You will also have a better understanding of the scientific method and the means by which scientific discoveries shaped our current understanding of biology.

### **Course Objectives:**

- 1) Gain an appreciation for how science works and how the scientific method increases our understanding of biology.
- 2) Gain an appreciation of biological concepts from the most basic macromolecules syntheses to the diversity of living systems.
- 3) Understand how biological systems work to maintain homeostasis.
- 4) Use critical thinking skills to predict the consequences of homeostatic imbalances.

**Course outcomes:**

- 1) Demonstrate understanding of chemical and biological principles and knowledge.
- 2) Understand and analyze cellular processes governing development, growth and normal function of living organisms.
- 3) Understand the processes involved with maintaining homeostasis in living organisms and anticipate what may occur when homeostatic balance mechanisms are lost.
- 4) Demonstrate practical knowledge of basic chemistry, biological molecules, cells, membranes, energy and metabolism, the cell cycle, evolution and ecology.
- 5) Identify biological molecules and structures and analyze their relationship with other structures.

**Course Information:**

Teaching methods: Laboratory

**Student Responsibilities:**

- 1) Students are expected to complete the required reading and pre-laboratory assignments prior to completion of lab activities.
- 2) Students are expected to log on to the course Moodle site regularly to download course materials and read updated course announcements.
- 3) Regular online attendance is required for successful completion of the course.
- 4) If absence from the class necessary due to illness, it is your responsibility to reach out to your instructor immediately. Due to the accelerated nature of the course, missing one or two days of class activities can be very difficult to make up.
- 5) Students are expected to be respectful during all discussion board posts and during meetings with course staff and Dr. Holick. Students who fail to do so will be subject to the student conduct code.

**Recommended Course Materials Information:**

eScience Lab kit- available for purchase through the bookstore. REQUIRED.

**Computers and Course Website Information**

Students are expected to be familiar with computers and the Internet. Students are responsible for their own software and computer equipment maintenance and setup as recommended by the University of Montana.

<http://umonline.umt.edu/student-support.php>

Class-Specific Computer and Software Requirements:

- Students will complete activities in the University of Montana Moodle BIOB160 course website. Students are expected to have a 'back up plan' if personal computers become compromised.

- The University of Montana maintains several computer labs on campus:

<http://www.umt.edu/it/support/computerlabs/default.php>

- Students are expected to download copies of course information from the Moodle website and to check email for class announcements.

- For technical support for using Moodle, please contact UM IT support:

<http://www.umt.edu/it/support/default.php>

Course policies

These policies include but are not limited to:

- Student Conduct ([http://life.umt.edu/vpsa/student\\_conduct.php](http://life.umt.edu/vpsa/student_conduct.php))
- Class attendance
- Credit/No Credit Grading
- No more than 18 CR credits may be counted toward graduation.

Courses taken to satisfy General Education Requirements must be taken for traditional letter grade. Courses required for the student's major or minor must be taken for traditional letter grade, except at the discretion of the department concerned.

- A CR is given for work deserving credit (A through D-) and an NCR for work of failing quality (F). CR and NCR grades do not affect grade point averages. The grades of CR and NCR are not defined in terms of their relationship to traditional grades for graduate course work.
- Election of the credit/no credit option must be indicated at registration time or within the first 15 class days on CyberBear. After the fifteenth day, but prior to the end of the 30th day of instruction, an undergraduate student may change a credit/no credit enrollment to an enrollment under the A F grade system, or the reverse by means of a drop/add form.
- The University cautions students that many graduate and professional schools and some employers do not recognize non traditional grades (i.e., those other than A through F) or may discriminate against students who use the credit/no credit option for many courses. Moreover, students are cautioned that some degree programs may have different requirements regarding CR/NCR credits, as stipulated in the catalog.

- Audit
- Incomplete Grading Policy
- Plagiarism o Plagiarism is the representing of another's work as one's own. It is a particularly intolerable offense in the academic community and is strictly forbidden. Students who plagiarize may fail the course and may be remanded to Academic Court for possible suspension or expulsion. (See Student Conduct Code section of this catalog.) o Students must always be very careful to acknowledge any kind of borrowing that is included in their work. This means not only borrowed wording but also ideas. Acknowledgment of whatever is not one's own original work is the proper and honest use of sources. Failure to acknowledge whatever is not one's own original work is plagiarism.

**Students with Disabilities:** The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommason Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Disruptive behavior Students who are being disruptive in discussion boards will be warned once. Such behaviors impact the learning of other students in the classroom and will not be tolerated. Re-admittance to class is at the discretion of the instructor.

Late Work Policy Late work is not accepted in this class due to the condensed nature of the course. If you have an extenuating circumstance, please reach out to your instructor as soon as possible so that we can try to work with you.

### **Correspondence**

An official UM student email address must be used for all correspondence.

### **Laboratory Activities**

- In this course, you will practice good laboratory note-taking habits and laboratory preparation in order to attempt each lab exercise.
- All laboratory exercises must be completed by you using the materials required in the laboratory protocols.
- Missing Laboratory activities CANNOT be made up for any reason.
- Professional and courteous behavior during all class interactions is expected in each laboratory activity.
- Each student agrees to conduct the at-home laboratories using the appropriate safety precautions.
- Students can be injured or seriously harmed if they do not complete the lab procedures outlined in each activity.
- Please be sure to keep pets and children away from lab materials as some materials are harmful and could cause death.

- Students have access to Material Data Safety Sheets through the eSciences manual and website.

### **Laboratory Safety**

- 1) Students are expected to conduct laboratory exercises away from animals and children.
- 2) Students should wear the appropriate Personal Protective Equipment while conducting experiments and while handling reagents. Close toed shoes, pants and lab coats or long-sleeved shirts should be worn, Gloves and eye protection are available in the lab kits.
- 3) Contact lens wearers should be aware that chemical fumes can pass into gas permeable and soft lenses. These fumes irritate the cornea. Protective glasses (prescription or safety glasses) are recommended to protect against chemical splashes. Know the location of the eyewash station before you begin.
- 4) No foods, drinks, gum or the application of makeup are allowed while conducting experiments.
- 5) Wash hands after completing each lab exercise.
- 6) Label experiments so that housemates know not to disturb or ingest your lab activities.

### **Evaluation Methods:**

Your course grade will be determined by your performance weekly graded activities including pre-lab questions, lab report, lab quizzes, a video explaining a method used in biology.

<b>Your performance will be evaluated as follows:</b>	<b>%</b>	<b>#</b>	<b>Points /Item</b>	<b>Total Points</b>
Pre-lab	14.3%	10	5	50
Quizzes	14.3%	5	10	50
Labs	57.1%	10	20	200
Final Assignment	14.3%	1	50	50
Total	100%			350

## Schedule

Week	Lab	Pre-lab Questions	Lab Notebook	Quiz	Final Assignment
1	Lab 1: What is Science	5	20		
	Lab 2: General Lab Safety	5	20		
	Lab 3: Introduction to the Microscope	5	20		
	<b>Due Date</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Friday</b>	
2	Lab 4: Diffusion	5	20		
	Lab 5: Osmosis	5	20		
	<b>Due Date</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Friday</b>	
3	Lab 6: Enzymes	5	20		
	Lab 7: Respiration	5	20		
	<b>Due Date</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Friday</b>	
4	Lab 8: Cells	5	20		
	Lab 9: DNA and RNA	5	20		
	Lab 10: Energy and Photosynthesis	5	20		
	<b>Due Date</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Friday</b>	
5	Lab 11: Mendelian Genetics	5	20		
	Lab 12: Population Genetics	5	20		
	<b>Due Date</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Friday</b>	<b>Thursday</b>