Fall 9-1-2022

BIOB 160N.02: Principles of Life Systems

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BIOB160: *Principles of Living Systems* syllabus Fall 2022

Instructor: Greg Peters
Contact: greg.peters@mso.umt.edu; 207-6154
Office Hours: M & W 10:00 - 10:50 & 12:00 - 12:50 in room MC 407

Text: Custom book available through Moodle & in print through the UM bookstore
Labs: The optional lab BIOB 161 lab meets separately at the main campus

Description
Principles of Living Systems explores biological relationships at diverse levels of organization. Key content includes reproduction, genetics, evolution, life molecules, cells, and energy transformations. This broad course is a requirement for biology, wildlife, and most health majors. The purpose of this course is to prepare students for success in the more detailed curriculum that follows. We will therefore address the nature of scientific discovery alongside key foundations of biology. Credit is not allowed for both BIOB 101 and 160.

Moodle online supplement
Some essential features of this course are offered online through Moodle, accessed using your UM netID. If you are unfamiliar with Moodle, please read the UMOnline Moodle tutorial soon. Contact the helpful staff at UMonline (umonline-help@umontana.edu or 406-243-4999) with technical questions. This course uses Moodle for exams and assignment submissions. You can also find copies of presentation materials, course documents, and current grades on Moodle.

Recommendations
Please ask questions any time! Office hours and email are reliable ways to get in touch. Keep up with readings to get the most out of classroom meetings. Committing to **regular attendance and on-time completion of work** is essential for success in this class. It is equally important to avoid the classroom if you are ill, especially if you are experiencing any symptoms of COVID. To balance these goals:

- Portions of class lectures will be shared on Moodle as recorded vides and slides
- Friday classes are devoted to review, exams, and collaboration on assignments
- Missed in-class worksheets may be completed for partial credit
- Exams will be available on Moodle from Friday morning to Sunday night
- Your lowest exam score will be dropped for any reason

Assessment	points	grade
1) Exams (highest 5 of 6 @ 50 pts. ea.)	250	90-100% = A- to A
2) In-class worksheets (highest 25 of 27 @ 5 pts. ea.)	125	80-90% = B- to B+
3) Textbook Editing assignment (5 @ 25 pts. ea.)	125	70-80% = C- to C+
TOTAL:	500	60-70% = D- to D+

Course Policies
Your lowest exam score will be dropped from your final grade; therefore, there will be **no late or make-up exams offered** unless accompanied by signed documentation of extreme circumstances. In other words, missed exam will count as your dropped exam. The final exam is cumulative. Students are expected to work alone and without outside resources.

A late Textbook Editing assignment will lose 10% per week, beginning immediately after the due date.

All features of the UM student conduct code will be followed in this course. Per university policy, please use only your university account for email communication.

Students with disabilities will have appropriate accommodations. Please contact your professor and provide a letter from your ODE coordinator so that accommodations can be made.

After the 45th day of the semester, drops, adds, or changes of grade options are not automatically approved; they may be requested by petition, and the petition must be accompanied by documentation of extreme circumstances.

Missoula College **values diversity** of students, faculty, and staff as an essential strength that contributes to our shared educational mission. Students of all backgrounds and perspectives are recognized and respected in this class. Please notify your instructor if components of this course present barriers to your inclusion. Contact Dr. Salena Beaumont Hill in the Office of Inclusive Excellence for Student Success for support for BIPOC and LGBTQ+ students and groups. For counseling or advocacy related to discrimination and other concerns, please visit SARC.

Core learning objectives
For foundational biology goals, upon completion of this course, you will be able to:
- describe and apply methods of scientific investigation
- understand basic physical and chemical properties that characterize living systems
- recognize the structures and roles of molecules common to all living systems;
- understand how energy is captured, stored, and used in living systems;
- understand how genetic information is stored, inherited, and used to instruct function
- describe the processes of natural selection and evolution
- recognize some of the ways that humans affect biological processes on Earth

For general education requirements, upon completion of this course, you will be able to:
- understand the general principles associated with the discipline(s) studied
- understand the methodology and activities scientists use to gather, validate and interpret data related to natural processes
- detect patterns, draw conclusions, develop conjectures and hypotheses, and test them by appropriate means and experiments
- understand how scientific laws and theories are verified by quantitative measurement, scientific observation, and logical/critical reasoning
- understand the means by which analytic uncertainty is quantified and expressed in the natural sciences

BIOB 160 Class Schedule

Date	Topic	Reading	Assignment Due
Unit One: Science, Biology & Evolution			
8/29	Course Introduction		
8/31	Overview of biology	Ch 1 & 2	
9/2	Discuss assignments		
9/5	*No class: Labor Day*		
9/7	Evolution	Ch 3	
9/9	Textbook Editing 1		Textbook Edit 1 due 9/11
9/12	Mechanisms of Evolution	Ch 4 & 5	
9/14	Reproductive Isolation	Ch 6	
9/16	Exam 1		Exam closes 9/18
Unit Two: Ecosystems & Populations			
9/19	Climate	Ch 7	
9/21	Terrestrial Biomes	Ch 8	
9/23	Textbook Editing 2		
9/26	Aquatic Biomes	Ch 9	
9/28	Dynamic Ecosystems	Ch 10	
9/30	Textbook Editing 2		Textbook Edit 2 due 10/2
10/3	Populations	Ch 11	
10/5	Human Population	Ch 12	
10/7	Exam 2		Exam closes 10/9
Unit Three: Chemistry of Life & Cells			
10/10	Chemistry of Life	Ch 13	
10/12	Life Molecules	Ch 14	
10/14	Textbook Editing 3		
10/17	Cells	Ch 15	
10/19	Membrane function	Ch 16	
10/21	Textbook Editing 3		Textbook Edit 3 due 10/23
10/24	Mitosis	Ch 17	
10/26	Meiosis	Ch 18	
10/28	Exam 3		Exam closes 10/30

BIOB 160 Class Schedule

Date	Topic	Reading	Assignment Due
Unit Four: Energy transformations in Life			
10/31	Energy in Life	Ch 19	
11/2	Energy in Life	Ch 20	
11/4	Textbook Editing 4		
11/7	Respiration	Ch 21	
11/9	Respiration	Ch 22	
11/11	*No class: Veterans Day*		Textbook Edit 4 due 11/13
11/14	Photosynthesis	Ch 23	
11/16	Photosynthesis	Ch 24	
11/18	Exam 4		Exam closes 11/20
Unit Five: DNA & Gene Expression			
11/21	DNA	Ch 25	
11/23	*No class: Thanksgiving travel day*		
11/25	*No class: Thanksgiving Holiday*		
11/28	Genetics	Ch 26	
11/30	Gene Expression	Ch 27 & 28	
12/2	Textbook Editing 5		Textbook Edit 5 due 12/4
12/5	Genetic Information	Ch 29	
12/7	Genetic Engineering	Ch 30	
12/9	Exam 5		Exam closes 12/11
12/12	Final Exam (Exam 6) available		Exam closes Thursday 12/15

Notes

- In-class worksheets are offered each Monday and Wednesday
- Late assignments will lose 10% per week beginning immediately after the due date
- The lowest Exam score will be dropped
- No late assignments will be accepted after the final exam closes

Overview of Class Responsibilities

These instructions are also available in the "Assignment Instructions" topic on our Moodle page.

Class meetings
We will explore core biology topics during Monday & Wednesday class meetings with instructor presentations and responses to questions. Copies of lecture slides and abbreviated recorded lectures will be available on Moodle for review and to accommodate a needed absence. Friday classes will be available for help with assignments, review for exams, and completion of exams.

Weekly readings
Reading assignments present much of the content on unit exams. These manageable readings complement active engagement in class. You may read in print using the text from the UM bookstore or using the full-color ebook on Moodle with the same content.

Please note the short supplemental readings available only through Moodle in each learning unit. These were submitted by earlier students to add to the textbook. Read them carefully because they include essential content for each exam. You will select one of these submissions each unit to improve for addition into the class textbook as your Textbook Editing assignment.

In-class worksheets
Each Monday and Wednesday will include short, low-pressure, in-class worksheets to accompany core content. Two worksheets may be missed for any reason. A missed worksheet may be completed late for partial credit; find the missed worksheet questions on Moodle and bring printed responses to the next class.

Exams:
Exams are offered through Moodle and close by 11:55pm on the Sunday night immediately following the listed date in the syllabus. You can take the exam at any time once it opens on a Friday, but it must be completed in a one-hour sitting; it cannot be "paused" and restarted. You must work alone but may use class resources. With a time limit, is essential to be prepared. You are strongly encouraged to start exams well before the end of the last day. Make sure to give yourself time for the unexpected.

When you are ready, open the exam on Moodle and follow the prompts. Make sure to press all the "submit" and "finish" buttons at the end. Please contact your instructor if you have concerns about taking a Moodle exam.

All exams except the final cover content from the current unit only. Your lowest exam score will be dropped from your final grade for any reason, so there will be no makeup exams offered unless accompanied by documentation of extreme circumstances during the entire period the exam is open.

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Textbook Assignments:
You have one written assignment due at the end of the second week of each learning unit (for a total of five). Our text was largely written by past students, and you are going to help make it better. Each Textbook Editing assignment is an opportunity to help future students, enrich your understanding in preparation for exams, and contribute to your class grade.

Complete your Textbook Editing assignment in each unit as follows:

- Select ONE of the topics (one page) from the supplemental readings on Moodle.
- Copy the content into your own Word document and save it with a clear file name.
- Improve the page as needed. Make sure the topic meets the core requirements:
    - One image that clarifies the topic. If the image is there, you are set! If not, you can create the image, share a photograph, or find an image online, but it ***cannot*** be a copyrighted picture. Consider the "labeled for non-commercial reuse" option (under tools → usage rights) in a Google image search.
    - A minimum of two sources, including citations or links.
    - 100-200 words
- **Make changes to improve the content.** This might include organizational changes, addressing issues of grammar or spelling, or simplifying sentences for clarity. Make any additions in your own words. Check in with any questions, some Friday classes are devoted to addressing questions about this assignment and providing help!
- Feel free to add a link to a useful webpage or video that clarifies the content.
- Save your work in .doc format and submit it through Moodle as outlined below.

To submit assignments

1) Save your work in .doc format.
2) Open the appropriate assignment link on Moodle.
3) Upload your assignment by clicking the "add submission" button, then select your file to upload or drag and drop it into the available box.

- Remember that a late assignment brings a late penalty.
- Feel free to work with others on all assignments and turn in work in your own words.