Fall 6-1-2020

BIOB 171N.01D: Principles of Biological Diversity Lab

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BIOL 171 Laboratory Outline
2nd 6 -week summer session 2020 Course Syllabus

Course runs: July 7 - August 13
Course meets: Remote instruction TWR 8:30 - 11:20 through Moodle
Instructor: Greg Peters
Contact: 207-6154; greg.peters@mso.umt.edu
Office hours: Please get in touch through email any time.

Required materials: 1) A Lab Notebook of your choice
2) Lab Manual for BIOB 171, available only through UM Bookstore
3) Camera or scanner for recording Lab progress (a phone is fine)

Overview:
This laboratory course meets the learning goals of a hands-on lab through guiding images and your demonstrated interaction with the content. Success depends strongly on self-motivated learning, but you are not alone. You have a lot of freedom to complete the lab activities and assignments on your own time and at your own pace, but there are regular deadlines every week.

Remote learning presents special challenges and opportunities in a lab class. Ask questions any time you are uncertain of a task or need guidance. This class meets the learning objectives of a semester-long course in five weeks, so do not get behind. The two most essential pieces of advice for success are:

1) Maintain a commitment to weekly participation with a schedule for completing tasks.
2) Ask questions any time. Email is the most reliable way to get in touch.

All class content is offered online through Moodle, accessed using your UM netID. If you are unfamiliar with Moodle, please read the UMOnline Moodle tutorial soon.

Your Moodle page for this class includes:
- All course documents
- Discussion forums (Monday-Thursday)
- Links to class Zoom meetings
- Copies of weekly lecture slides
- Weekly exams
- Course grades

Grading (separate from lecture 170 grade)**:**

Lab practical exams (5 @ 25 pts ea.)	125
Lab notebook (10 entries at 5 pts ea.)	50
Discussion forum participation	25
Total	200

*Note: this course is scheduled to conclude after 5 weeks instead of the scheduled 6 because the fall semester begins early this year.

Learning Outcomes:
This course complements the exploration of diversity of life offered in Biology 170. The primary objective is to provide investigative experiences to meet the following core learning goals:

1. Understand the purpose and use of a compound light microscope
2. Distinguish major groups of life by key morphological and physiological features
3. Deepen appreciation for science as a process of investigation
4. Cultivate quality record-keeping practices essential to scientific exploration

For general education natural science requirements, upon completion of this course, a student 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

Course policies:
Group work is a valuable learning tool, and is encouraged during lab exercises through use of the Moodle discussion forum. Students will be expected to complete lab exams individually. University policies on drops, adds, changes of grade option, or change to audit status will be observed in this course. Students should specifically note that after week 2 such changes are not automatically approved. A petition to do so must be accompanied by documentation of extreme circumstances.

Students registered with DSS will be accommodated appropriately during exams, dependent upon completed and shared documentation. Please contact me one week before each exam if you require any service through DSS.

Overview of Class Responsibilities (listed in Moodle as well**):**

Your lab manual is both a guide for your lab investigations and a framework for weekly assignments. **You must have a copy of the lab manual before class begins on July 7.** Visit the UM bookstore online to purchase your lab manual.

You will maintain a record of your progress through the lab with notes and sketches in your own lab notebook to be turned in at the end of each week. We might not complete every activity in every lab, so be sure to visit Moodle for a "lab compendium" to guide you through each lab.

Completing the labs will involve following guidelines in the lab manual, answering questions, and making sketches by viewing images available on Moodle. Note that each week has two labs to complete. Completing labs can be done at your own pace any time before the due date, but remember that you are not just working alone. Contact your lab instructor any time with questions through email or the discussion forum. Use the discussion forum to share questions and observations to learn from and help your fellow classmates.

Uploading your Lab Manual pages each week is an essential documentation of your work. You are asked to use the available Moodle assignment link each week to upload scanned or photographed images of your work through the lab manual that week. This is clearly a different kind of task than in a typical lab, so the first thing to do is NOT WORRY about the process. You must document your work through the two labs each week, but you have some flexibility in how you do this. You are welcome to use the lab manual or separate pages to record your work, and you can document the work any way that is easiest for you, such as using a scanner or a camera. The suggested method is as follows:

1) Choose a separate lab notebook to record your lab work.
2) Label the first page of each lab clearly with your name, date, and the title of the lab.
3) Record your answers and sketches in response to all lab activities as guided.
4) Take pictures of each page with a phone or camera.
5) Copy all the images for your 2 labs each week into one file.
6) Save the file as a .pdf
7) Follow the directions on Moodle to upload your assignment on time each week.

Please note that you are NOT evaluated on the quality of your photography or artistic skill! The purpose of these weekly Lab Manual submissions is to document your progress through the lab activities. Weekly completion with honest and thorough lab work can be a straight-forward lift to your lab grade.

The link to upload your work comes with more detailed guidelines for submitting work through Moodle. Please use a .doc or .pdf file for all submitted work. Late Lab Manual submissions must be sent as email attachments too your lab instructor with an accompanying explanation to earn partial credit.

Discussion forums are an important part of this remote lab class. Your participation will be graded based upon sharing meaningful, original posts on time. Don't worry about length, just make sure to add new ideas in your own words and use the forums to help your learning.

The purpose of the discussion forums is to encourage interaction and supportive help between students. Use it to share ideas, suggestions, and questions for each other so the labs go more smoothly. For full credit, you must share a minimum of two responses in each of two lab topics presented by your instructor each week. This means sharing a minimum of four posts per week. The first two posts must be shared by Tuesday and the next two posts by Thursday each week.

To participate, click on the week's discussion forum on Moodle. Select a topic to respond to. Press "reply," add your comments to the textbox, and press "submit." Note the link to "use advanced editor and additional options" just below the textbox for your post. Once this is open, you can click the little arrow beneath the word "message" for more editing tools, including the ability to add images and links to webpages.

Lab Practical Exams will be available on Moodle to complete at any time during the week offered, but must be completed in a half-hour sitting. It is not possible to start, pause, and then continue. Exams are open-resource, but it will be essential to complete the weekly labs and prepare ahead of time given the time limit. Lab exams will close at 11:55pm Friday night.

Lab exams will only cover content from the two labs explored during the week offered.

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

Class Schedule

Every week will follow the same pattern:

Monday:	Weekly content available on Moodle no later than 11:00am
Tuesday:	Complete the first lab of the week
	11:55pm deadline for first 2 discussion forum posts
Wednesday:	Complete lab notebook for first lab of the week, look ahead to the second
Thursday:	Complete the second lab of the week
	11:55pm deadline for second two discussion forum posts
Friday:	**11:55pm deadline for submitting lab notebook entries for two weekly labs**
	11:55pm deadline for weekly lab practical exam
Weekend	Prepare as desired for coming week by reading ahead in lab manual and Moodle

You can complete all tasks within the scheduled week of Tuesday-Thursday. The Friday deadline allows an extra day of work if needed. Consider Friday a "backup" and try to finish weekly tasks by Thursday.

Week One Microscopes & Cells

July 7-10
- Lab 1: Microscopes
- Lab 2: Cells
- Discussion forum posts (first two by Tuesday, next two by Thursday)
- Submit lab manual pages by 11:55pm Friday July 10
- Lab Practical Exam 1 closes 11:55pm Friday July 10

Week Two Prokaryotes & Protists

July 14-17
- Lab 3: Bacteria
- Lab 4: Protists
- Discussion forum posts (first two by Tuesday, next two by Thursday)
- Submit lab manual pages by 11:55pm Friday July 17
- Lab Practical Exam 2 closes 11:55pm Friday July 17

Week Three Fungi & Species Interactions

July 21-24
- Lab 5: Fungi
- Lab 6: Interactions
- Discussion forum posts (first two by Tuesday, next two by Thursday)
- Submit lab manual pages by 11:55pm Friday July 24
- Lab Practical Exam 3 closes 11:55pm Friday July 24

Week Four Plants

July 28-31
- Lab 7: Plants 1
- Lab 8: Plants 2
- Discussion forum posts (first two by Tuesday, next two by Thursday)
- Submit lab manual pages by 11:55pm Friday July 31
- Lab Practical Exam 4 closes 11:55pm Friday July 31

Week Five Animals

August 4-7
- Lab 9: Animals 1
- Lab 10: Animals 2
- Discussion forum posts (first two by Tuesday, next two by Thursday)
- Submit lab manual pages by 11:55pm Friday August 7
- Lab Practical Exam 5 closes 11:55pm Friday August 7