BIOLOGY OF PROTISTS
CBIO (PBIO) 4600/6600, Spring 2022

Course Description: This course explores the organismal and cell biology of a tremendously diverse, interesting, often beautiful but sometimes dangerous assemblage of organisms called protists, most of which are classically known as protozoa and/or algae. Using case studies (stories / discussions), student presentations and online videos, we will examine the roles of nutrition, endosymbiosis and parasitism in shaping the protists and their descendants, the more complex eukaryotes in Earth's biosphere. We will consider the origins of eukaryotes and their organelles, the origins of multicellularity, how modern phylogenetic methods can be used to develop testable hypotheses about the evolutionary history of protistan diversity, the role(s) protists play in the ecology of the planet, and interesting adaptations that protists have evolved to deal with environmental challenges. Including, in some cases, the challenge of becoming deadly parasites of humans. *This course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.*

Course Format: The course will be a hybrid of asynchronous (i.e. fully online) lectures and synchronous class sessions. In other words there will be recorded lectures that you must watch on your own and we will use class time for case studies, student presentations, etc. Since the classroom is small and the number enrolled is large we will be asking **all students to wear a face covering when in class** as per CDC guidelines. We will be using eLearning Commons eLC extensively https://uga.view.usg.edu/d2l/home and it will be very important for you to check your UGA email address often. If you wish to respond to an email received from eLC do not use the 'reply' function as eLC is not set up for this. Instead email me directly at mfarmer@uga.edu

If conditions surrounding the COVID pandemic make it untenable to meet in person class sessions will migrate to synchronous ZOOM meetings.

Instructor:

Mark Farmer, Office hours by appointment. E-mail: mfarmer@uga.edu

Location and Time:

Class will meet on Mondays, Wednesdays & Fridays*, 12:40-1:30 PM EST in room 216 Biological Sciences. Attendance, either in person or via Zoom (with prior permission) is expected.

*Fridays will be for students to present their Protist of the Week (PoW) PowerPoints. Because all 20 students cannot present on the same day, these presentations will be spread out over several different Fridays. You will not be told which Friday you will be presenting your PoW, so you must be prepared to present each and every Friday. Copies of the PoW Powerpoints will be made available via eLC but you are expected to participate in class, even if you are not presenting that day. To accommodate students who are either ill or need to quarantine, all PoW presentations will be carried out via ZOOM so you should do not need to come to room 216 on Fridays. All Zoom sessions will be recorded and made available to you via the Zoom link.

Attendance Policy:

In person attendance is expected and because we will be in a small classroom you are also expected to wear a facemask at all times when in the classroom. If you are feeling poorly or have been exposed to someone with COVID please **DO NOT COME TO CLASS.** All classes will be recorded via Zoom and will be made available to all students.

Required Course Materials:
There is no textbook for this course but recorded lectures, videos, and readings will be uploaded to appropriate folders on eLC. In the folder ***"Handbook of the Protists"*** you will find .pdf chapters on every major group of protists. Use these chapters as a reference source to supplement the lecture material as well as a starting place for the Protist of the Week (PoW) assignments. Once you know the major group to which your organism belongs you should read the Handbook chapter about that group.

Zoom participation: A laptop (or some sort of personal device for accessing the internet) will be required for online participation as will reliable internet access. The personal device must be equipped with microphone and speakers. A video camera is helpful, but is not required. If you are having difficulty in having adequate access to the internet please contact the instructor immediately.
Join Zoom Meeting
https://zoom.us/j/95795105652

eLC: This course will be using eLC. Get help at http://www.ctl.uga.edu/student
There will be daily materials uploaded to eLC. You should download all PowerPoint presentations to your personal device as they will often have embedded audio as well as additional important information in the notes section that are not accessible if the PowerPoints are viewed through eLC. To hear the audio you simply open the PowerPoint and go to "Present" the lecture should then start playing.

Graduate Students:
Students enrolled in CBIO/PBIO 6600 will develop (with instructor mentoring) and lead a case study in one of the class periods.

This Course Is Different!
In a typical course, you generally sit passively listening to a lecture and taking notes. In that typical course, most learning takes place after class and often just before an exam. Homework assignments are also done after class. In that typical course, you might write to enhance learning, but you don't usually get a chance to revise your writing, to think more critically about your writing and how you might improve it.

This course is different. Learning will take place 1) before class as you do the assigned homework and recorded lectures, 2) in class as you, your classmates and the instructor work together to investigate in detail a topic introduced in the homework, and 3) after class as you

synthesize what you have learned and prepare for an exam. The essays in this course will be writing as a process, not an event.

Homework you will be doing before class:

The assigned homework and due dates can be found on the course eLC home page. The video homework consists of online PowerPoint presentations narrated by the instructor. They typically contain the basic content (the facts and concepts) of the course that you would normally receive in a lecture. Each is typically about 20-30 minutes in length; the PPT is available to print out and take notes on as you listen to the video. The reading homework will typically introduce and/or provide background information on the topic to be discussed in the next class period. Finally .pdf files of reference papers and selected videos will often be there to inform, serve as reference material and sometimes just to entertain.

Essays – see below.

Protist of the Week – Three times (3) during the semester each student will be randomly assigned the name of a protist. A deadline* will be set and by that deadline you must upload to eLC a short PowerPoint presentation on that organism. The PowerPoint must be authoritative, be referenced with reliable sources, and have images (with appropriate attribution). Class periods will be used for student presentations on their organism to the class in a presentation that is to last no more than seven (7) minutes. Think of this as Protistan Speed-Dating. PoW presentations will be posted on eLC after they have been presented during class and all students will be responsible for knowing the material from all of the PoW presentations for exams and quizzes.

Each PoW presentation should contain the following components:
A) Scientific name of the organism (learn how to pronounce your organism)
B) Taxonomic position (supergroup, major clade, and minor clades if applicable)
C) Life cycle (asexual and sexual if known)
D) Interesting facts (these can include evolutionary history, ability to cause disease, unusual features, etc.)

An example presentation can be found on eLC. (Example *Caulerpa taxifolia* PoW.ppt)

*Late submissions of more than one hour will receive an automatic 10% deduction.

Quizzes: There will be brief weekly quizzes (administered via eLC) based on reading homework assignments, assigned videos, recorded PowerPoints and PoW presentations that week. All of these materials will be available on eLC.

> Suggestions for learning as you view the videos, read the assignments and learn about the protists of the week. Before viewing a video, eliminate distractions (e.g. iPods, phones, TV) from your learning environment. Make the most efficient use of your time by

employing *active learning techniques*. (Just listening to the video as you typically listen to a lecture is *passive learning* and is the *least* effective way to learn.) You may print out the PPT available on eLC and use it to take notes that promote your *personal* understanding of the material or you may annotate a digital version of the presentation for your own use. Write down questions to ask in class. Periodically summarize, in your own written words, what you just have learned. A major advantage of the videos and narrated PowerPoints is the flexibility that allows you to learn on your own time and at your own pace – make frequent use of the pause and rewind features (and even fast forward when you have mastered that section). You control the remote! Use the same active learning techniques as you complete the reading homework assignments and learn about the protist-of-the-week.

What <u>we</u> will be doing in class:

ZOOM meetings will be used for all *Protist of the Week* (PoW) student presentations. In addition to student presentations we will be exploring and extending knowledge you have gained in the homework assignments and giving you the opportunity to ask questions.

Online assignments will also include the use of case studies which are stories with an educational message. Everyone loves stories. Humans have used stories to as a teaching technique as long as humans have used language. You will be actively engaged in telling the stories because you will be prepared with background knowledge learned in the homework assignments. You will be analyzing, evaluating and incorporating new data into the unfolding story. While each of these case studies can be independently completed I would encourage you to find a time to get together with one or more of your classmates and work through the case study together. This will improve your learning of the material plus it will be more fun. You can make connections with others in the class using the 'chat' function of eLC. Your instructors' role in class will be that of a tutor or guide to help you in <u>your</u> learning as you interact with your classmates and the subject matter. In this class the instructor is here to assist you but you are responsible for your own learning.

Homework <u>you</u> will be doing outside of class:
Your job outside of the class is to ask yourself these questions.

Have I mastered the basic content and concepts I was expected to learn?
How do I know I have learned them?
Have I improved my critical thinking ability in applying, analyzing, evaluating, and creating with respect to the biology of protists?
What are specific examples of critical thinking and problem solving I was able to accomplish before, during, and after class?

Have I learned it? How will you know – before the exam – if you have learned the material? Start by answering the above questions. With respect to content knowledge, ask yourself: ***"Can I explain this concept on paper and/or out loud to someone else, in my own words, from memory?"*** If the answer is "yes", DO IT! Again, forming a study group of two or more classmates will really help as they can give feedback as to how well you explained the

concept. Just thinking about the correct answer is not enough! It has to come out of your head – spoken out loud or written on paper! Your correct answer is evidence that you have learned the concept. Try again several days later to see if you still know the answer. Studying with a partner or two is often a useful approach and I recommend setting up ZOOM meetings for that purpose.

Assessments:

Exams: There will be **five (5)** exams, including one on finals day, but only the top *four scores will count*. In other words you may drop your lowest exam score or skip an exam entirely. All exams will be given through the "Quizzes" function on eLC and will require the use of a browser lockdown function. These exams will contain lower level thinking questions on content and concepts (i.e. short answer questions that involve remembering and understanding, including definitions). The exam will also include higher level thinking questions (applying, analyzing, evaluating, and creating). A typical question might be to evaluate the results of a new or different study related to a case discussed in class, including its significance to that story. You will usually be given a choice of questions. For example: *Answer 5 of the following 6 items* or *Answer one of the following two essay questions*. There will be no late exams given and there will be no make-up exams. Exams will only be available via eLC a single specified day from 9 AM to 10 PM and once an exam is begun it must be completed without interruption, so be certain to allow for enough uninterrupted time to complete the exam. Each exam is designed to be completed within 60 minutes and you will have two hours to complete an exam.

Essays: We are asking you to write an essay in this course because "writing, thinking and learning are inter-related cognitive abilities" (Writing Intensive Program). Stop and think about that last quote for a few minutes and you will see the truth in it. Each of those three activities benefits from the other two. Please read carefully the instructions in the "Essays" folder

For each essay, you will be assuming the role of a science writer (yes, science writing is a career – look up Carl Zimmer, a very successful science writer). Identify a topic related to protistology that you find interesting, search the primary literature for one or more research articles on that topic and write an 1000-1500 word essay in which you tell your audience how that research has added significantly to our understanding of that topic. If you are not sure what topic interests you your professor can help you choose one. See the Essay Guidelines and Examples module on eLC for more information, including a list of potential essay topics.

Quizzes: Once a week, after completing PowerPoint, video and reading homework assignments, you will go to eLC and answer a short quiz for those assignments. Our goals for these quizzes are 1) to encourage you to complete the assignments and to reward you for your effort, 2) to give us feedback as to whether you are recalling the most important aspects of the assigned PowerPoint, video or reading. Do your responses reflect our objective(s) in the assignment? The feedback will also help us identify and correct any misconceptions that appear in your answers.

To find the quizzes on eLC, click "Tools" in the menu at the top of the course home page and then click "Quizzes". Click on the title of the quiz to be answered.

Each quiz will consist of asking some detailed question(s) contained in that week's assignments. For the quizzes we will not be using the lockdown browser and you are free to have materials open on your computer while taking the quiz. The use of these resources will NOT be considered a violation of the academic honesty policy, but you are expected to take the quiz on your own with no outside help. The answers to the questions can be found in the assigned material and thus it should be relatively easy for you to score full points on the weekly quizzes.

Quizzes will account for at about 20% (200 points) of the course grade. Although we will assign a score to each answer the actual point value for each quiz will depend on the total number of quizzes given during the course. For example, if a total of 50 quiz questions are asked and you correctly answer 40 of them, you grade will be [(40/50) * 200] or 160 points.

Current point total?
To see your current points, click "Grades" in the menu at the top of the eLC homepage.

Summary of points:

Four exams (100 pts each)	400
Essay	200
Twelve Quizzes (20 pts. Each)	240
Three Protist of the Week presentations (50 pts. each)	150
Total	990

Assignment of grades

A = 95-100%	B- = 80-82%
A- = 90-94%	C+ = 76-79%
B+ = 86-89%	C = 70-75%
B = 83-85%	D = 60-69%

Text Book: There is no text for this course and nothing for you to purchase. Instead you will be provided with .pdf files of published papers for the appropriate topics. In addition there will be a folder on eLC entitled "Handbook of the Protists" that contains many valuable chapters on organisms covered this semester. These will not be assigned, but they are there for you to use as we make our way through the various groups of protists.

Academic Honesty: All students are responsible to inform themselves about those standards before performing any academic work.
UGA Student Honor Code: *"I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others."* A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at www.uga.edu/ovpi

Accommodations for Disabilities: (e.g., If you plan to request accommodations for a disability) Please let me know by email (mfarmer@uga.edu) and register with the Disability Resource Center. They can be reached by visiting Clark Howell Hall, calling 706-542-8719 (voice) or 706-542-8778 (TTY), or by visiting http://drc.uga.edu)

Mental Health and Wellness Resources:
If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit https://sco.uga.edu/. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.

UGA has several resources for a student seeking mental health services (https://www.uhs.uga.edu/bewelluga/bewelluga) or crisis support (https://www.uhs.uga.edu/info/emergencies).

If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (https://www.uhs.uga.edu/bewelluga/bewelluga) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
Additional resources can be accessed through the UGA App