

These are hyperlinks that will allow you to navigate quickly the syllabus

# Welcome to Biol 336: Parasitology

Your instructor is Dr. Isaure de Buron: [deburoni@cofc.edu](mailto:deburoni@cofc.edu)

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## How will we communicate?

I will use [OAKS](#) to post announcements, reminders, etc. and I will have **virtual office hours set up via zoom each Tuesday 11:00 am-12:00 pm. Just come in!**

For course related questions, post your question on the **discussion board on OAKS** so that other students may answer if they wish; my philosophy is that you are in class to learn and that we all learn best by asking questions. The discussion board is a great way for me to detect potential general misconceptions and, if need be, I can clarify something for all. This being said, we also learn best by resolving questions ourselves and I am asking you to make an effort to seek the answer before you ask a question.

If you want to discuss private matters or review exams, **email** me ([deburoni@cofc.edu](mailto:deburoni@cofc.edu)) and we will schedule a **live zoom appointment**. Please sign with your full name and indicate Parasitology course in the subject of your message. Typically, I will respond to your email within 24 hours (unless it is a real emergency, I do not respond to emails after 7:00 pm and on weekends). If you do not receive a reply within 48 hours, please re-send your message.

**Course objectives:** In this course, you will learn about parasitism, the most common mode of living on the planet. The emphasis of the lectures is placed on what parasites are, how they are maintained, how they interact with their hosts, how they impact ecosystems, how we try to control them, and why they are an essential component of biodiversity. As part of the lecture, you will also give a synthetic PowerPoint presentation and develop a Public Awareness poster about a parasite not covered in class and will include factors important to consider in parasitology. The online laboratory focuses on morphology, pathology, and life history of major parasites of medical and veterinary importance.

**Learning outcomes:** Upon completion of this Parasitology course, successful students will demonstrate:

- an understanding of the fundamental principles of parasitism;
- an ability to outline the general life cycles of the major parasites of medical and veterinary importance;
- an understanding of the ecology of parasites, and of the importance of parasites in ecosystems;
- an understanding of the methods of control of parasites and their limitations; and
- an understanding of the concept of zoonoses and emerging or re-emerging diseases.

## Course organization

This is a 4 credit course (lecture + lab). Lecture and labs are equally important, as one (lecture) encompasses parasitism and the other (lab) encompasses parasites. Expect to commit to the course approximately 8-10 hrs a week. **All quizzes are with notes but tests are without notes.**

The course is online and will be conducted asynchronously via OAKS, meaning there is no specific time you must be logged into the course, except for tests. **However, it is not self-paced.**

The lecture material will be **organized into 7 modules** that must be completed in sequence. You will be able to start accessing **the 1<sup>st</sup> module only after you pass the syllabus quiz** and only after I release them in accordance with the course schedule. Note that the quiz syllabus is just to make sure you understand the course organization, what is expected from you, where you can find information, and what you can expect from me; you can take this quiz as many times as you need to in order to reach the minimum passing score of 70%.

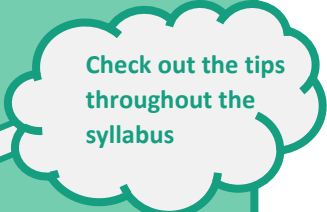
The laboratory material is organized into **10 topics** that also must be completed in sequence. **You will be able to start the 1st lab module after you watch the movie “Infested with parasites” and take the quiz associated with this movie.** Each topic will open at 8:00 am on Wednesday of each week. See Lab schedule.

Each lecture and lab module has pre-recorded mini-lectures. Some also have movies for you to watch as well as seminal papers associated with that lecture or lab topic, which I strongly encourage you to read.

**In lecture, you will have 4 quizzes (1 lowest grade dropped), 2 tests, and a presentation and a public awareness poster in lieu of final exam. In lab, you will have 6 quizzes (2 lowest grades dropped), 5 assignments (1 lowest grade dropped), and 3 tests.**

I encourage you to set a weekly schedule to work through the material in order to stay organized and on track. Below, and in both lecture and lab contents on OAKS, you will find a quick reference calendar that you may want to keep available as a handy guide throughout the term.

*Tip: As a rule of thumb, I recommend you spend your Wednesday or Thursday afternoon each week studying the lab material as if you were in the teaching lab; also I recommend that you complete your assignment before you take the quiz. It will help you study and assess your knowledge*



Check out the tips throughout the syllabus

## **What are the assignments and the tests?**

**Syllabus quiz:** This quiz will have ~15-20 multiple choice and T/F type questions. It is **open notes** but you are not allowed to consult other individuals. It will not count towards your final grade. You will be allowed unlimited attempts (~ 20 min each) because you will need a minimum score of 70% to unlock the 1<sup>st</sup> module. This quiz will be due Tuesday, Sept. 1 by midnight.

*Tip: I recommend you take this quiz as soon as class starts so that you can get started with the 1<sup>st</sup> lecture module as soon as possible. The Sept. 1 deadline is only to allow students who add on the very last day of the add/drop deadline to be able to catch up with the material.*

**Lecture and lab quizzes** will allow you to assess your knowledge before you take the test related to particular topics. Each quiz will open at the same time or shortly after the module or lab is made available (last lecture/lab when multiple lectures/labs make up a module/topic). **Quizzes will be open notes (but not open web and are to be taken individually)** and will typically be ~ 10-15 Multiple Choice, Check All that Apply, and True or False questions. **These quizzes will be timed** (~ 10 min). Except for the syllabus quiz, you will see which questions you answered incorrectly by 10:00 am the day after quizzes are due, but I will not provide the correct answers. You will need to find the correct answers in your notes or your book, as this is an effective way for you to learn. Of course, if material is still unclear after you make an effort to understand mistakes, then contact me and we'll chat via zoom.

*Tip 1: The goal of such quizzes is to prepare you for the tests, which are not open notes. We have plenty of time between quizzes and tests to address potential gaps in your knowledge, misunderstandings, or misconceptions. Remember, the quizzes are open notes but timed. You may have time to verify an answer but not search for the answer while you take the quiz. Study your notes before you take the quiz!*

**Module lab assignments:** Lab assignments will consist of **a combination of figures to label and life cycles to sketch** based on information that I either will provide during the lab lectures or that I will ask you to search for in your book or on the web. Information pertinent to individual assignments will be posted on OAKS.

*Tip 1: I strongly recommend that when you study life cycles you draw them as well as the various life cycle stages. This will allow you to visualize the life history of each parasite we study and to understand how parasites complete their life cycles, one stage at a time. This is a much more effective way to remember those life cycles rather than counting strictly on wrought memory, which by the end of the semester might only lead you to mix up numerous parasites and cycles.*

*Tip 2: As I mentioned above, I recommend you study the lab material as if you were in the teaching lab and take care of the assignments before you take the quizzes. I staggered the lecture and lab quizzes and tests so that you can focus on them one at a time but do not wait for the last minute and do not cram or you'll run the risk of mixing them all up!*



**Tests** will be a combination of multiple choice, short answers, matching, and True or False types of questions. They may also include micrographs for you to identify specific parasites, life stages, mode of infection, pathologies, etc. During the lectures, I will use examples of parasites that you may study in lab and in these cases, you will need to bring over your lab knowledge into the lecture test.

Lecture test 1 will cover modules 1-3 and test 2 will cover modules 4-7; lab test 1 will cover the protists (# 1-3), lab test 2, the flatworms (# 4-7) and lab test 3, the roundworms and myxozoans (# 8-10). Expect about 30-40 questions for each test. These tests will be timed (~40 min). Once you begin, you will not be able to pause, so plan accordingly. **Tests will open on the day scheduled from 11:00 am - noon and you will not be able to access the test outside of this window.** Feedback will be given individually via zoom session. It will be your responsibility to schedule such a session.

- **Final test:** No final comprehensive tests this semester! In lieu of a traditional lecture test, you will submit a self-narrated original Powerpoint presentation on a topic or parasite you will select from a variety of papers I will post on the drive, and build a public awareness virtual poster (as a Powerpoint slide) on that topic or parasite (see below). These will be due Dec. 10 by 11:30 pm (the date scheduled for the class final exam).

**Presentation and Public Awareness Poster:** You will select a paper among those posted in the google drive folder “papers for presentation/poster” that I share with the class. Papers will be sorted by topic. Paper choice is on a first-come-first-served basis and papers will be available by October 15. **You will need to sign up for the paper you select in the excel sheet by November 16.** Late selections past this deadline will result in an automatic 10% reduction in your presentation and poster grades.

-The presentation will be 8-12 min long and will include 1 or 2 slides for each of the following: title slide with your name and the reference of the paper discussed, background information (you may need to look at other related papers to complete this part), hypothesis/question tested, methods, results, discussion/conclusion. The poster will be 1 slide (11” x 16” either in portrait or landscape) and its goal is to present an original awareness message to the lay public regarding the parasite(s) focused on in the paper. Cutting and pasting or copying sentences from the paper is not acceptable in either the presentation or the poster. You will **submit your poster and record your presentation via Zoom and post the access information, including password, in the dedicated dropbox folders by 11:30 pm on December 10.** Presentations and posters will be graded on the accuracy of the information presented, your ability to present briefly and clearly a research study, and your ability to follow instructions regarding format. More detailed information will be provided on OAKS for each of these 2 assessments.

**All assignments and quizzes must be YOUR work only. You cannot request help from friends or family members. Your quizzes are open book and notes but not open web!**

**For tests, you are NOT allowed access to your notes, the atlas, the web, your phone, etc. - only your brain! You cannot share questions. Please respect and abide by the College Honor Code.**



## ***Make-up quizzes and Exam policy***

I will drop 1 lecture and 2 lab quiz grades as well as the lowest lab assignments (zeros included). However, no late assignments or quizzes will be accepted and these will receive a grade of zero.

**Technical difficulties are not valid reasons for missing an assignment, a quiz, or a test.**

Make-up tests will be given only in cases of illness or emergency. If you are experiencing an issue, please talk to me prior to the test if possible so we can determine what, if any, steps can and need to be taken.

*Tip: Do not leave your assignments until the last minute.*

## ***What material do I need to study?***

Lectures and labs are pre-recorded via Voice Thread or Zoom – All will be posted in OAKS content. Students need to purchase the textbook: “Foundations of Parasitology” by L.S. Roberts, J. Janovy Jr., and S. Nadler, McGraw Hill. 9<sup>th</sup> ed. You will need to use and refer to the textbook throughout the labs.

For the lab assignments, you will need to sketch life cycles and download figures I will post for you to complete or label using either pencil on paper or drawn on a tablet/computer. Your completed sketches and figures will be uploaded via the OAKS dropbox (pdf, ppt, or docx file).



You are not granted the right to download or record any lectures, labs, quizzes, or tests - Please take notes while listening to the lectures and keep using your textbook and your notes to study.

## ***Technology***

We will primarily use OAKS and Zoom for this course. I will post all lectures, announcements, extra resources, assignments etc., on OAKS, which can be accessed through MyCharleston. If you experience technical difficulties, please contact [CofCHelpdesk](#). If you experience trouble accessing course content, please email me as soon as possible. Please note that computer/internet failure and/or unavailability does not constitute an excuse for failure to complete an assignment on time. If you experience recurrent technical problems that prohibit you from completing multiple assignments, you may be asked to withdraw from the course. Student Support Resources, including workshops and tutorials, may be found at: [Student Instructional Technology Services](#) and [the Student Instructional Technology Service](#).



### ***What other resources can I use to study?***

There are several websites that you may find useful - Please note that this is not an exhaustive list of sites. Be selective and critical when you navigate the web - most of the sites below also have sub-sites related to Neglected Tropical Diseases (NTDs), many of which are parasites:

The Center for Disease Control and Prevention: [cdc.gov/parasites](http://cdc.gov/parasites) & [cdc.gov/dpdx](http://cdc.gov/dpdx)

World Health Organization: [who.int](http://who.int)

The National Institute of Allergy and Infectious Diseases: [niaid.nih.gov](http://niaid.nih.gov)

Foundation web sites: [cartercenter.org](http://cartercenter.org); [gatesfoundation.org](http://gatesfoundation.org)



### **Grading:**

**Syllabus quiz: 0%**  
**Lecture quizzes (1 lowest dropped): 15%**  
**Lecture tests: 40%**  
**Presentation: 10%**  
**Poster: 5%**

**Lab quizzes (2 lowest dropped): 5%**  
**Lab assignments (1 lowest dropped): 5%**  
**Lab tests: 20%**

**A-: 90-93 %    A: 94 -100 %**  
**B-: 80- 83 %    B: 84-86 %    B+: 87-89 %**  
**C-: 70-73 %    C: 74-76 %    C+: 77-79 %**  
**D-: 60-63 %    D: 64-66 %    D+: 67-69 %**  
**F: < 60 %**



### ***What should I do to learn parasitology well and to succeed in this course?***

- While lecture and labs are separate, always integrate the information from each as much as possible. For instance, it's only if you know its life cycle (Lab) that you can control (Lecture) a parasite and knowing its habitat (Lab) in its host will allow you to remember the type of pathology (Lect.) that can be associated with the infection.
- Associate taxonomic groups with patterns of life cycles. For instance, most monogeneans have a very similar cycle and most digeneans have a series of life stages that develop in the same type of hosts.
- Learning the general morphology of parasites will help you remember to which taxonomic groups they belong.
- Stay on top of the material and be organized. Check the calendar for quizzes and assignments often and don't wait until the last minute. Study to *understand* and try to synthesize the information.
- Consider parasites as part of biodiversity and not always as pathogens. This allows fundamental questions to open: How do they survive? Can they impact ecosystems if they disappear or, on the opposite, show up at a new place? Any question you'd be asking about a slug or a lion can be asked for parasites.
- Do not hesitate asking questions! Parasitology is a vast and fast moving field. If I don't know the answer, I'll look into it for you. I love parasites and am happy to keep learning with you.
- There is no magic – you need to focus on and study the material. No knowledge or understanding comes by only clicking on a button. Facts are the basis, but you need to go a step further and make an effort at synthesizing those facts to understand how it is that parasites are so successful!

***Tip: Whether it is in lecture or lab, try to synthesize the information when you take notes. Draw and label your drawings of life stages; sketch life cycles and always be able to tell how one life cycle stage 'becomes' another one. For instance, always wonder how a host becomes infected and how an infective stage leaves its host. What type of reproduction occurs in each host? Understand the role of reservoir and transport hosts.***

## Course outline and assignments schedule (all hours are EST)

Table 1: Lecture schedule (\* = exceptions)

Module #	Topic	Open on OAKS Tuesdays* 8:00 am	Quiz due date Mondays* 11:30 pm EST
0- Introduction: Why do we study parasites?		Aug 25- Quiz 0 open	Quiz 0: <b>Tuesday</b> Sept. 1
1 - What is a parasite?		Aug 25 (must pass Q0)	Quiz 1: Monday Sept 7
	1-1- Durable interactions	Aug 25	
	1-2- Parasites of animals : an overview	Aug 25	
	1-3 – Components of life cycles	Sept 1- Quiz 1 open	
2- Pathologies		Sept 1	<b>No quiz</b>
3- Parasite Ecology		Sept 8	Quiz 2: Monday Sept 28
	3-1-Specificity	Sept 8	
	3-2- Host switching & emerging diseases	Sept 8	
	3-3- Quantitative factors	Sept 15	
	3-4- Competition	Sept 22- Quiz 2 open	
<b>Thursday Oct 1 - Test 1- Modules 1-3</b>			
4- Adaptations		<b>*Thursday:</b> Oct 1	<b>No quiz</b>
5- Arms race		Oct 6	Quiz 3: Monday Oct 19
	5-1- Genes to encounter: Favorization	Oct 6	
	5-2- Genes to avoid or kill: Host defense	Oct 6	
	5-3- Genes to survive: Parasite evasion	Oct 13 – Quiz 3 open	
6- Control and associated challenges		Oct 20	<b>No Quiz</b>
	6-1- Therapeutics & vaccines	Oct 20	
	6-2- Control of life cycles	Oct 27	
7 –Conservation of parasites		Nov 3	Quiz 4: <b>*Friday</b> Nov 20
	7-1- Some parasites can help health	Nov 3	
	7-2- Parasites as tags	Nov 10	
	7-3-Ecosystem health	Nov 10- Quiz 4 open	
<b>Nov 16: deadline for selecting a paper for your presentation and poster</b>			
<b>Tuesday Nov 24- Test 2 – Modules 4-7</b>			
<b>Presentations and Public awareness poster due Dec 10</b>			



**Table 2: Laboratory schedule**

Lab #	Lab. topic	Open on OAKS Wednesdays 8:00 am	Due date quiz(Q#) & assignment (A lab#) Mondays 11:30 pm EST
0	Movie: Infested with parasites!	Aug 26 Quiz open	Q1: Tuesday Sept 1 (quiz only)
1	Protists: Amoebae, Diplomonads	Sept 2	Q2+ A1-2 - Sept 14
2	Protists: Flagellates, Kinetoplastids	Sept 9 Quiz & Assign. open	
3	Protists: Apicomplexans	Sept 16 Quiz & Assign. open	Q3 + A3 - Sept 21
<b>Thursday Sept 24- 11:00am -noon- Test 1- labs 1-3</b>			
4	Digeneans : liver & lung flukes	Sept 30	Q4 + A4-5 -Oct 12
5	Digeneans: intestinal & blood flukes	Oct 7 Quiz & Assign. open	
6	Monogeneans	Oct 14	<b>none</b>
7	Cestodes	Oct 21 Quiz & Assign. open	Q5 + A7 -Nov 2
<b>Thursday Nov 5- 11:00am -noon- Test 2- labs 4-7</b>			
8	Nematodes: intestinal	Nov 11 Quiz & Assign. open	Q6+A8- Nov 16
9	Nematodes: histozoic	Nov 18	<b>none</b>
10	Myxozoans	*Nov 24	<b>none</b>
<b>Thursday Dec 3- 11:00am -noon- Test 3 –labs 8-10</b>			

**Table 3: Quick reference schedule - Quizzes (Q) and assignments (A) are due by 11:30 pm on due dates – Tests are open from 11 am-noon. Office hours via Zoom each Tuesday 11:00am-noon.**

	September						October			November				December		
Due Date	T 1	M 7	M 14	M 21	R 24	M 28	R 1	M 12	M 19	M 2	R 5	M 16	F 20	T 24	R 3	R 10
Lecture	Q 0 syl	Q1				Q2	T1		Q3			Last day to Select paper	Q 4	T2		Presentation & poster
Lab	Q 1 mov		Q2 + A 1-2	Q3 + A 3	T1			Q4 + A 4-5		Q5 + A 7	T2	Q6+ A 8			T3	

*The course schedule is subject to change and I will notify you if changes to the schedule are necessary.*



**Honor Code and Academic Integrity:**

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at <http://deanofstudents.cofc.edu/honor-system/studenthandbook/index.php>

**Disability/Access Statements:**

Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged.

**Mental & Physical Wellbeing:**

At the college, we take every students' mental and physical wellbeing seriously. If you find yourself experiencing physical illnesses, please reach out to student health services (843.953.5520). And if you find yourself experiencing any mental health challenges (for example, anxiety, depression, stressful life events, sleep deprivation, and/or loneliness/homesickness) please consider contacting either the Counseling Center (professional counselors at <http://counseling.cofc.edu> or 843.953.5640) or the Students 4 Support (certified volunteers through texting "4support" to 839863 or visit <http://counseling.cofc.edu/cct/index.php>). You can also visit both on campus on the 3rd floor of Robert Scott Small. These services are there for you to help you cope with difficulties you may be experiencing and to maintain optimal physical and mental health.

**Center for Student Learning:**

The Center for Student Learning's (CSL) academic support services provide assistance in study strategies, speaking & writing skills, and course content. Services include tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at <http://csl.cofc.edu> or call (843) 953-5635.

