

# PCB4402 / 5447: Disease Ecology & Eco-immunology

## Course Syllabus, Information, and Policies

**Description:** (3,0) Examination of how hosts, parasites and environment interact to shape organisms, populations and communities.

**Prerequisites:** A grade of B or better in Genetics (PCB3063 or equivalent) and Ecology (PCB3044 or equivalent), or the instructor's consent.

**Class Time:** TH: 3:00-4:15

**Instructor: Ken Fedorka**

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**I. SCOPE:** All organisms are under the constant threat of parasites. This simple fact has fundamentally shaped the physiology, behavior and ecology of all multicellular organisms. But not all individuals (or populations or species) exhibit that same susceptibility to parasites. The forces that shape and maintain this variation are just beginning to be studied. Clearly, spatial and temporal heterogeneity in the environment contribute to variation in parasite distribution and abundance. However, host variation in the ability to acquire resources, and differences in how these resources are allocated, also play an integral role in susceptibility. In this course we examine how host-parasite-environment interactions dramatically influence host ecology (e.g. species range and population dynamics) and physiology (e.g. immune function). In the end, we aim to provide a synthetic understanding of how parasites shape organisms, populations and communities.

**II. Course website:**

See webcourses

**III. SUPPLEMENTAL MATERIAL:** There will be weekly reading assignments from the primary literature. These will be posted on webcourses

**IV. ATTENDANCE:** Attendance is mandatory. A significant portion of the grade will be based on student participation. If you're absent, you can't participate.

**V. OFFICE HOURS:** Friday by appointment

**VI. ASSESSMENT and GRADES:**

**A. Assignments:**

1. **Exams:** exams will be short answer and designed to test your ability to synthesize course material in new ways, not always to regurgitate facts. No exam will be dropped.
  - a. **Missed Exam Policy:** Make-up exams for exams will be provided for the following reasons: (1) *Official university business*. If your presence was required for an official university event (e.g. a university-sponsored team event) a make-up

exam will be provided. Hard-copy documentation must be provided 48 hours in advance from the appropriate university body. (2) **Unforeseen emergencies.** You must contact me as soon as reasonably possible and provide hard-copy documentation (a signed document from a doctor, police officer, judge etc. - not by e-mail). The absence must have been caused by a valid emergency as defined by UCF and/or the professor, including but not limited to: major illness, serious family emergency, jury duty, military obligation, etc. If approved, a make-up exam will be administered. Please note, if more than one exam is missed for a valid reason, the student risks receiving an incomplete.

2. **Reading Assignments:** Once each week, students will be assigned readings from the primary literature. Students must submit a formal summary of this required reading (the template for the summary is available on the course website). Approximately 20 readings worth 5 points each will be assigned.
3. **Participation:** Education is driven largely by discourse amongst colleagues. Therefore, participation is mandatory. Students are expected to attend each class and actively discuss the assigned readings. **NOTE:** Active discussion is defined in this class as numerous and continued comments of an insightful nature that acts to clarify issues or present alternative views (“I didn’t understand X” does not qualify as active discussion).
4. **Discussion lead:** Each student will be assigned to “lead” the discussion for at least one paper. This entails summarizing the reading assignment to the class and opening discussion on the assignment. When discussion wanes, the student is expected to reinvigorate discussion with perspectives or question about the reading assignment.

#### **GRADUATE STUDENTS ONLY:**

5. **Student Proposal:** You will be required to write a grant proposal around a disease ecology or eco-immunology framework. The proposal could be a modification of current research (e.g. examining pathogen impact on an endangered turtle species that you currently study) or a de novo creation on a subject of interest (e.g. building matched phylogenetic trees of primate and parasite co-evolution). The proposal should assume a National Science Foundation’s pre proposal format (solicitation NSF11-573) or the NSF Doctoral Dissertation Improvement Grant format (DDIG – solicitation # 08-564). The grant in its entirety should be no more than 5 single spaced pages (12 point font; not including references). Your first page should be the summary sheet that discusses the ‘intellectual merit’ and ‘broader impacts’ of your proposed work. The next 4 pages should be your project description. The description should include the following sections (if relevant): Introduction, Objectives, Background Information, Experimental Design, Project Timeline, Summary / Conclusions, and Broader Impacts. ***These sections are not written in stone and are modifiable.*** However, please make sure there is a logical flow to your proposal. Feel free to imbed any figures directly into the text. Just make sure not to exceed the 4 pages allotted to your project description. I have placed a mock proposal on the website for your review.
6. **Student Oral Presentations:** You are required to present a summary of your proposal to the class at the end of the semester. The presentation will take standard science conference format of 12 minutes for presentation and 3 minutes for questions. Make sure to practice your talk so that it is timed appropriately. Talks that end early (< 10 minutes) or late (>15 minutes) will be assessed a 20% penalty.

7. **Peer review:** A rough draft of each proposal will be anonymously peer-reviewed prior to its final submission. For review, each student will create 3 proposal copies identified by the last three numbers of their PID. These copies will be randomly distributed to your peers for anonymous review. Reviewers will also list the last three numbers of their PID. Reviews should be constructive and not destructive. *Please review others as you would want to be reviewed.*

## B. Grades

### Undergraduate:

Exam I:	150pts	A = 450 pts
Exam II:	150pts	B = 400 pts
Reading assignments:	100pts	C = 350 pts
Participation:	75pts	D = 300 pts
Discussion lead:	25pts	F = 279 pts and below
Total: 500pts		

### Graduate:

Proposal:	125pts	A = 720 pts
Presentation:	125pts	B = 640 pts
Peer review:	50pts	C* = 560 pts
Total: 800pts		D = 480 pts
		F = 479 pts and below

\*C = fail in grad school

**Rounding Policy:** If your course grade is  $\leq 0.5\%$  below a higher grade (e.g., your total score = 89.5%), your grade will be rounded up to the higher grade (e.g., 90.0%). Only the final, total course score will be rounded – each grade component during the semester will not be rounded. There will be no exceptions to this policy and no other adjustments will be made.

**VI. CLASSROOM CONDUCT:** By enrolling at UCF, all students have agreed to abide by the Golden Rule. Please become familiar with this document at: <http://www.goldenrule.sdes.ucf.edu/>. Please also use common courtesy in class by arriving and departing on time, refraining from sleeping / talking during class, and **turning off** cell phones, music devices, etc. Students are responsible for all announcements made or assignments given during class. Students who fail to abide by the above may be asked to leave the class.

**VII. DISABILITY ACCESS STATEMENT:** The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need accommodations in this course must contact the instructor at the beginning of the semester to discuss needed accommodations. No accommodations will be provided until the student has met with the instructor to request accommodations. Students who need accommodations must be registered with Student Disability Services, Student Resource Center Room 132, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before requesting accommodations from the instructor.

**Final Note:** The professor reserves the right to change the syllabus and management of the class at any time during the semester. These changes will be announced in lecture. Remember, this syllabus is **NOT** a contract between the professor and student.

## *TENATIVE LECTURE SCHEDULE*

Week	DATE	Topics	Assignment
1	25-Aug	Orientation - what is science	
	27-Aug	Parasites I	
2	1-Sep	Parasite II	
	3-Sep	<i>Discussion</i>	
3	8-Sep	Host immunity	
	10-Sep	<i>Discussion</i>	
4	15-Sep	Immune Evasion & host Manipulation	
	17-Sep	<i>Discussion</i>	
5	22-Sep	Evolution of Virulence	
	24-Sep	<i>Discussion</i>	
6	29-Sep	Variation in Disease Susceptibility	Proposal ideas due
	1-Oct	<i>Discussion</i>	
7	6-Oct	Sex and Parasites	
	8-Oct	<i>Discussion</i>	
8	13-Oct	<b>EXAM I</b>	
	15-Oct	Community Ecology Meets Epidemiology	
9	20-Oct	<i>Discussion</i>	
	22-Oct	Parasites and Host Population Dynamics	Rough draft due
10	27-Oct	<i>Discussion</i>	
	29-Oct	<b>No Class</b>	
11	3-Nov	Parasites and Community Ecology	
	5-Nov	<i>Discussion</i>	Rough draft returned
12	10-Nov	Parasites and Biological Invasion	
	12-Nov	<i>Discussion</i>	
13	17-Nov	Parasites and Conservation	
	19-Nov	<i>Discussion</i>	
14	24-Nov	<b>No Class</b>	
	26-Nov	<b>No Class</b>	
15	1-Dec	Presentations	
	3-Dec	Presentations	
	10-Dec	<b>Final Exam @ 1pm</b>	papers due