

# PCB4402 and 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 for PCB4402:** A grade of B or better in Genetics (PCB3063 or equivalent) and Ecology (PCB3044 or equivalent), or the instructor's consent.

**Prerequisites for PCB5447:** Instructor's consent or graduate standing.

**Class Time:** TH: 1:30-2:50 room Bio 212.

**Lecture Password:** deei2021

**Instructor:** Dr. Ken Fedorka  
BL 401B / BL 412  
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**I. SCOPE:** All organisms are under the constant threat of parasites (e.g. humans, crops, livestock, and all other types of wildlife). In this course we examine how host-parasite-environment interactions dramatically influence host physiology, host populations dynamics, and host ecosystem dynamics. Topics include understanding how parasites are transmitted and spread through natural populations, their impact on host trait evolution, and their impact on food webs and community structure. In the end, we aim to provide a synthetic understanding of how parasites fundamentally shaped all life on earth.

### 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 not mandatory. However, a significant portion of the grade will be based on student participation. If you are absent, you cannot participate.

**V. OFFICE HOURS:** By appointment

### VI. ASSESSMENT and GRADES:

#### A. Assignments:

1. **Exams:** There are two 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 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. **Paper Reading:** 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 22 readings worth 5 points each will be assigned.
3. **Paper Discussion Participation:** During each paper discussion, students can earn up to 2 points in participation (2 points = significant contributions, 1 point = contribution, 0 points = no contribution). Education is driven largely by discourse amongst colleagues. Therefore, participation is essential to learning and understanding. Accordingly, 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. **Paper 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 questions about the reading assignment.
5. **Student Proposal (Graduate Students Only):** You will be required to write a grant pre-proposal around a disease ecology or eco-immunology framework. The pre-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 pre-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 4 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 3 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 embed 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. **Peer review (Graduate Students Only):** 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
Exam II:	150pts
Reading assignments:	110pts
Participation:	44pts
Discussion lead:	25pts

Total: 479pts

A = 479-431 pts
B = 430-383 pts
C = 382-335 pts
D = 334-287 pts
F = 286 pts and below

### Graduate:

Exam I:	150pts
Exam II:	150pts
Reading assignments:	110pts
Participation:	44pts
Discussion lead:	25pts
Proposal:	150pts
Peer review:	60pts

Total: 689pts

A = 790-710 pts
B = 709-631 pts
C* = 630-552 pts
D = 551-473 pts
F = 472 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 or via webcourses. Remember, this syllabus is **NOT** a contract between the professor and student.

## ***TENATIVE LECTURE SCHEDULE***

Week	DATE	Cat	Topic	Assignment
1	22-Aug		Orientation -What is Disease Ecology? What is Science?	
	24-Aug	Within-host dynamics	Parasites I	R1 - Methot
2	29-Aug		Parasite II	R2 - Als
	31-Aug		<b>No class - Football game</b>	
3	5-Sep		<i>R1 &amp; R2 Paper Discussion</i>	
	7-Sep		Host immunity	R3 - Smith
4	12-Sep		<i>R3 Paper Discussion</i>	
	14-Sep		Immune Evasion & host Manipulation	R4 - Reiber, R5 - Warren
5	19-Sep		<i>R4 and R5 Paper Discussion</i>	
	21-Sep		Evolution of Virulence	R6 - Messenger, R7 - Ebert
6	26-Sep		<i>R6 &amp; R7 Paper Discussion</i>	
	28-Sep	Eco-immunology	R8 - Jaenike, R9 - Bekker	
7	3-Oct		<i>R8 &amp; R9 Paper Discussion</i>	<i>Grads- proposal ideas due</i>
	5-Oct		<b>Midterm Exam</b>	
8	10-Oct	Population Dynamics	Sex and Parasites	R10 - Duneau, R11 - Nunn
	12-Oct		<i>R10 &amp; R11 Paper Discussion</i>	
9	17-Oct		<b>Exam Review</b>	
	19-Oct		Epidemiology and SIR models	R12 - Loyd-Smith
10	24-Oct		<i>R12 Paper Discussion</i>	<i>Grads - 1st draft due for peer review</i>
	26-Oct		Parasites and Host Population Dynamics	R-13 - Richner, R14 - Donnelly
11	31-Oct		<i>R13 &amp; R14 Paper Discussion</i>	
	2-Nov	Ecosystem Dynamics	Parasites and Community Ecology	R15 - Wood, R16 - Holdo
12	7-Nov		<i>R15 &amp; R16 Paper Discussion</i>	<i>Grads - 1st draft returned</i>
	9-Nov		Parasites and Biological Invasion	R17 - Michell, R18- Khalil
13	14-Nov		<i>R17 &amp; R18 Paper Discussion</i>	
	16-Nov		Parasites and Conservation Biology	R19 - Alitzer, R20 - Daszak
14	21-Nov		<b>No class</b>	
	23-Nov		<b>No class - Thanksgiving</b>	
15	28-Nov		<i>R19 &amp; R20 Paper discussion (conservation)</i>	R21 - Mina, R22 - Levey
	30-Nov	<i>R21 &amp; R22 Paper discussion (parasite control)</i>		
	5-Dec		Final exam 1-3:50	Proposals due - Graduate Students