

# **BIO276/276: Social Insect Biology**

## **Spring 2021 Tentative Syllabus**

### **Course Time: M 2:50-5:50**

**Instructor:** Kate Mathis (KMathis@clarku.edu)

**Room:** Lasry 237

**Office Hours:** (Kate) Tuesday 12-1pm or by appointment, in Biology 234

## **I. Course description:**

**Course description:** This course explores the biology of social insects including ants, bees, wasps and termites. Through a mixture of lectures, activities and discussions, we will examine the ecology, evolution and behavior of social insects. Examples of topics include social insect taxonomy; the evolution of sociality; nest architecture; mutualisms and commensalisms involving social insects; territoriality; and how social insects provide ecosystem services. This course will include paper discussions of relevant recent literature, exposure to methods used to study social insects, and a final presentation on a research topic of the student's choice.

### **LEEP Learning Outcomes**

This course will provide the students with a broad conceptual background in the Biology of Social Insects, seen in the following learning outcomes of this course:

- Explore the breadth of social insect taxa
- Become familiar with the evolution of sociality in insects and social insect phylogenies
- Demonstrate the ability to describe major themes in the ecology, evolution and behavior of social insects
- Become familiar with the history of this field and its future directions for research

This course will provide students with technical and analytical skills used in modern biological research, seen in the following learning outcome of this course:

- Demonstrate the ability to identify insects and use taxonomic keys
- Become familiar with methods for conducting experiments using social insects

This course will provide students with the ability to effectively communicate the findings of biological research and incorporate these findings into the existing body of knowledge in biology, seen in the following learning outcomes of this course:

- Learn how to read and critically interpret primary literature
- Demonstrate the ability to communicate biological research in three oral presentations over the course of the semester

## II. Assignments and grading

1. **Grading overview:** You will be able to earn a total of 960 points, which will come from the following activities:

Activity	Points possible	Percentage of total points
Activities	120 (40 each)	12.5% (~4% each)
Discussion Questions	160 (40 each)	17% (~4% each)
Short Presentation	150	15.5%
Mid-semester Presentation	150	15.5%
Final Presentation	300	31%
Participation	80	8.3%
Total	960	100%

**Final Grade:**

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

2. **Activities:** Students are responsible for participating in 3 activities throughout the semester. Homework related to these activities will be due the following week. Each activity is worth 40 points (160 points total).
3. **Discussion:** There are 4 discussion sessions during the semester where we will discuss research papers in the current scientific literature relevant to the lecture topics. At the beginning of the semester students will sign up to provide a short summary of the paper to be discussed. All students will need to write submit questions and/or comments about the readings prior to the discussion section each week. Participation in all discussion sections is required.
4. **Presentations:** One of the requirements of this course is the completion of three presentations (one individual, two in groups) during the semester. You'll receive a great deal more information on the presentations as the semester progresses.
5. **Attendance and participation:** You are expected to arrive to class on time and actively participate each class period. Complete attendance is mandatory during all student presentations; otherwise presentation points will be forfeited. If for whatever reason you need to miss a class, please email me beforehand. Attendance in the labs is required and will be taken. If you miss a lab, you will receive a zero for your lab activities for that lab. Only two excused absences from lecture are permitted, for every additional absence you will lose a full letter grade.
5. **Graduate Level Students:** Graduate students will be responsible for leading one class discussion during the course in addition to the other course assignments. Graduate student 'group' project and final projects involve the graduate student working alone.

### III. Policies

**You will need access to a computer.** If you do not have one, you can arrange to check out one of the department laptops in Lasry (they must be kept within the building). The computer you use in lab should have wireless access to the web.

**Make-up and Late Work Policy:** In general, make-ups and late work are not accepted. Likewise, assignments are due at the beginning of class unless otherwise noted, and no make-ups or late work are accepted unless otherwise stated (see grading rubrics). However, most work may be turned in early when you know you have to miss a class. I suggest emailing your work to me early enough to receive a confirmation email from me.

**Rebuttal System:** If you think you were graded unfairly (or erroneously) on an assignment, please turn in a written explanation (rebuttal) with your graded assignment to me within one week of getting your graded assignment back from me. I will write a response and return it to you. We can set up an appointment if you disagree with my response.

**Classroom Etiquette:** I expect you to treat other students with courtesy and respect at all times. This includes treating your fellow students' viewpoints with respect, refraining from talking or causing distractions during a lecture or while another student is talking, and doing your share in all group activities. Please also refrain from filming or taking photos in class.

**Time/Workload:** It is expected that you will spend at least 180 hours working on this course. Only 42 hours of this time will be spent in class and lab, therefore the majority of the work you will be doing will be when we are not together. This will involve spending additional time working on your final project, spree day poster, completing labs, reading primary literature as well as reviewing the material learned in class.

Activity	Hours/Week	Total Hours
In class time	3	42
Reading Primary Literature and Reviewing Lectures	5	70
Preparing discussion questions and responses	1 (4 discussions)	5
Completion of Activities	5 (4 activities)	20
Preparing Presentations	15 (3 presentations)	45
<b>Total</b>		<b>182</b>

**Academic Dishonesty:** Any effort to circumvent the evaluation procedures of the course to improve the grade for yourself or other students (aka "cheating") is considered academic dishonesty. This includes, but is not limited to, misrepresentation of the cause for an absence during a class or laboratory, submitting the work of another (partially or entirely) as one's own, altering a problem set or lab answer to be submitted for regrading. You are encouraged to report academic dishonesty and anonymity will be protected if requested. If we believe that academic dishonesty has occurred and we have supporting evidence, we will report the case to the College Board immediately after informing the student that we are doing so, and why. Please read Clark's academic dishonesty policy at CUWeb (<http://www2.clarku.edu/offices/aac/integrity.cfm>). If you are uncertain about these guidelines, please consult with us.

**Student/Accessibility:** Students with learning differences or in need of accommodations of any sort should consult with Student Accessibility Services, [accessibilityservices@clarku.edu](mailto:accessibilityservices@clarku.edu) or (508)-798-4368.

**Commitment to diversity, equity and inclusion:** Diversity is important in academia for the same reasons it's important in ecosystems: it boosts productivity, adaptability and resilience. I would like to create a learning environment for my

students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) With these goals in mind, I will use preferred pronouns, highlight the work of scientists from underrepresented groups in STEM, and encourage others in the class to do the same. If you feel like your performance in the class is being impacted by your experiences outside of the class or if you have any feedback on how we can make the class more inclusive, please do not hesitate to speak to me or the TA.

**Notice to students: Faculty Members are “Responsible Employees”:** This notice is to inform you that the Faculty member(s) and Teaching Assistant(s) associated with this course are considered “Responsible Employees” by Clark University. As such, they are required to report all alleged sexual offenses to the University’s Title IX Coordinator, Lynn Levey, llevey@clarku.edu The only exceptions to this reporting responsibility are the community members who have been designated and/or trained as “Confidential” Sources. This includes the professional staff in Clark’s Center for Counseling and Personal Growth and the medical providers at the Health Center, as well as other individuals listed at <http://bit.ly/2eUOGGx>

**Disclaimer:** The instructor reserves the right to make changes to any information contained in this syllabus at any time during the semester. Changes will be announced, and an updated version of the syllabus will be posted on Moodle and/or distributed to students.

## Tentative Schedule

Week	Day	Date	Lectures	Assignment Due
1	M	2/22 O	Intro to Social Insects	
2	M	3/1 O	Social Insect Taxonomy Activity 1: Insect Identification	
3	M	3/8 O	Social Insect Body Systems Review Taxonomy	Activity 1
4	M	3/15	Caste Determination Paper Discussion 1	Discussion Questions 1
5	M	3/22	Evolution of Sociality Short Presentations	Short Presentation
6	M	3/29	Kin Selection, Group Selection, Controversies and Future Directions Paper Discussion 2	Discussion Questions 2
7	M	4/06	Decision Making + Memory Activity 3: Designing a behavioral experiment	
	M	4/12		Activity 3 + Discussion Questions 3

8			Foraging +Mating Paper Discussion 3	
9	M	4/19	No Class	
10	M	4/26	Mid Semester Presentations	Presentation
11	M	5/3	Competition + Territoriality Paper Discussion 4	Discussion Questions 4
12	M	5/10	Mutualisms + Commensalisms Activity 3: Observing Pollinators	
13	M	5/17	Social Parasitism and other Antagonisms Activity 4: Interaction webs	Activity 3
14	M	5/24	Final Presentations	Presentation + Activity 4