**Insect research &**

**Scientific Engagement**

Course number ENY 4905

3 credits, no prerequisites

**Location:** Entomology and Nematology Department, Steinmetz Hall 1027

**Meeting time:** *Monday and Wednesdays 10:40 am to 12:35 pm*

**Instructors for Spring 2017 are available to meet by appointment:**

**Lauren Cirino,** Ph.D. Student, [lacirino@ufl.edu](mailto:lacirino@ufl.edu)

Office hours: Immediately after class on Mondays in your classroom

**Paul Joseph,** Ph.D. Student, [pjoseph14@ufl.edu](mailto:pjoseph14@ufl.edu)

Office hours: By appointment

**Dr. Christine Miller**, Principle Investigator, [cwmiller@ufl.edu](mailto:cwmiller@ufl.edu),

Office hours: 10:30 – 11am Tues and Thurs, 2101 Steinmetz Hall

**Dr. Michael Forthman,** Postdoctoral Associate, [mforthman@ufl.edu](mailto:mforthman@ufl.edu)

**Course description**

This is a Classroom Undergraduate Research Experience (CURE) course. Students become part of a research team, collecting publishable data on evolutionary biology, ecology, and systematics using insects. This course bridges the divide between the classroom and the science laboratory. This course will prepare students for advanced opportunities in science.

This course mimics a laboratory research experience in several ways: 1) students gather data that will be used in scientific studies and published in the primary scientific literature, 2) our class meetings resemble lab meetings where researchers come together to discuss important topics in science, 3) your instructors (including graduate students and a postdoctoral researcher) will also serve as your research mentors, with the mentoring structure resembling that of a research laboratory.

While this course has elements that resemble laboratory research experiences, it finds its home in the classroom. As such, we will incorporate some of the more positive elements of classroom learning. For example, the learning experience will have greater structure than is commonly provided in laboratories, and students will collect data almost immediately (in many laboratories, beginning assistants do not collect data for a semester or longer!). Additionally, this course will include a larger community of beginning researchers than is typically found in a laboratory. You will have many opportunities to exchange ideas with your cohort and become part of a learning community. Committed and hard-working students leave this course prepared to join research teams at UF and beyond.

**Course learning objectives:**

By the end of the course, dedicated students will:

* Be able to explain in depth how scientists engage in research
* Identify how their work as part of this course will contribute to the scientific body of knowledge
* Develop enhanced critical thinking skills to assess the relevance and importance of scientific findings
* Design a simple experiment
* Recognize of the major challenges for conveying scientific findings to the general public and be able to explain how to overcome these challenges
* Demonstrate competency in at least one method of data collection using insects
* Explain three major concerns in the field of science ethics
* Be able to identify several other research opportunities on campus

**Materials:**

* **Required:** Access to a laptop or desktop computer for data entry. A computer in a computer lab on campus should be fine for this purpose.
* **Required:** Oreskes, Naomi, and Erik M. Conway. *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. Bloomsbury Publishing USA, 2011.
* All other reading materials and media will be available on Canvas or freely available on the internet.

**Evaluation of learning/research accomplishment:**

|  |  |  |
| --- | --- | --- |
| Source of points | Points possible | Due dates |
| “What is Science?” essay # 1 | 10 | Jan. 8th 11:55pm |
| Canvas weekly quizzes (7 quizzes, 10pts/each) | 70 | Sundays, 11:55pm |
| Data collection accuracy | 75 | Throughout |
| Participation (27 meetings at 5pts/meeting) | 135 | M & W |
| C.R.E.A.T.E. Assignments (8 assignments, 10pts/each) | 80 | See schedule |
| Presentation of primary literature (including mandatory meeting with instructor prior to presentation) | 50 | Sign up |
| Successful completion of lab work (25 points/each) | 50 | April 19th |
| “What is Science?” essay # 2 | 20 | Thursday, April 27th, 11:55pm |
| Total | **490** |  |

**Grade and associated percent ranges %**

**A 93-100 A- 90-92 B+ 88-89**

**B 83-87 B- 80-82 C+ 78-79**

**C 73-77 C- 70-72 D+ 68-69**

**D 63-67 D- 60-62 E <60**

**Explanation of course activities and grading:**

Evaluation of performance is based on fifteen assessments and participation in the course. This course does not have exams.

**Participation** is important, and this is reflected in your course grade! Excused absences are consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation. Participation points are earned by your presence at each class meeting (discussions/presentations and the laboratory portion of the class). Please note that we will expect all students to participate in discussions and will design activities to facilitate this process. This is a “flipped classroom” course.

Preparation for in-class discussions. **Online quizzes** must be completed the night prior to weekly discussions. These will involve answering a set of questions based on the reading(s) and providing thoughtful discussion points or questions that you plan to bring up in the next class. These assignments are designed to help students focus on the material that will be addressed during the class discussions and prepare students to participate fully in the discussions. These assignments will be posted by Friday evening and must be completed the night before class (or you will lose 5 points/day).

**Presentations** are an opportunity for students to deeply analyze a peer-reviewed scientific paper and present the material to the class, gaining public speaking skills and critical thinking skills. Students will work in pairs, and each pair must choose a topic from the provided list by early in the semester. An instructor will work with the students to prepare presentations.

**Data collection accuracy** is graded to ensure that we actually can use these data to make scientific conclusions. It is easy to get sloppy in data collection if there is no accountability. You will receive a lot of guidance in how to collect data accurately. You are expected to make an appointment with the designated instructor if you are having any problems. Each week you will be assigned work to do. We will check a subset of your work for accuracy. If your recorded data is considered accurate or very close, you will receive accuracy points. As an additional means of ensuring data accuracy, many insects will be measured by multiple students in the course. Each weekly set of measurements is due on Sunday night. *You should plan to allocate approximately 5 hours to data collection weekly* ***outside*** *of class time.*

**Due dates are firm**, unless you have a valid excuse (again, see UF policy, <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>). If you know you have a conflict with something, inform us right away! We follow a **5pt/day** deduction late work policy.

**Class/Research Schedule. Monday meetings are guided classroom discussions on a topic, Wednesdays are for data collection and presentations.**

This is the schedule for this semester as we have planned; however, we reserve the right to make modifications and changes where we see fit as constraints or opportunities arise. It is the students’ responsibility to visit Canvas weekly to get updates and the plan for the week.

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Day | Topic | Reading in book (see Canvas for other readings and videos) |
| Week 1 |  |  |  |
| Jan4 | Wednesday | Welcome to the course, introductions and a discussion on the nature of science  Asking a question when science does not know the answer |  |
| Week 2 | Monday | Research this semester: background and interpretation  Introduction to our research (insect evolution, ecology, and systematics) |  |
|  | Wednesday | Begin data collection (through Week 12) |  |
| Week 3 | Monday | Interpretation and analysis of scientific manuscripts  (CREATE) |  |
|  | Wednesday | Data collection: practice and troubleshooting |  |
| Week 4 | Monday | Objectivity and evaluation in science | Ch.1 – due week 4 |
|  | Wednesday | Data collection: show your stuff |  |
| Week 5 | Monday | Science and the media | Ch. 2 – due week 5 |
|  | Wednesday | Data collection & lab work |  |
| Week 6 | Monday | Whom will this study inform? | Ch. 3 – due week 6 |
|  | Wednesday | Data collection & lab work |  |
| Week 7 | Monday | Science communication to a broad audience | Ch. 4 – due week 7 |
|  | Wednesday | Data collection & lab work |  |
| Week 8 | Monday | Science ethics | Ch. 5 – due week 8 |
|  | Wednesday | Data collection & lab work |  |
| Week 9 | Monday | Climate change: what is the discussion? | Ch. 6 – due week 9 |
|  | Wednesday | Presentations of scientific manuscripts begin today (through Week 14)  Data collection & lab work; presentations |  |
| Week 10 | Monday | Public trust & distrust of science | Ch. 7 – due week 10 |
|  | Wednesday | Data collection & lab work; presentations |  |
| Week 11 | Monday | Guest speakers: Undergraduate researchers |  |
|  | Wednesday | Data collection is done!!  Exploring data: Graphing and Data analysis; lab work; presentations |  |
| Week 12 | Monday | Guest speakers: Advanced researchers |  |
|  | Wednesday | Presentations & lab work |  |
| Week 13 | Monday | Research this semester: what have we found? Let’s look at your data. |  |
|  | Wednesday | Presentations & lab work |  |
| Week 14 | Monday | Your future research: discussion of opportunities, concerns, and applications (Dr. Donnelly) |  |
|  | Wednesday | Presentations & lab work |  |
| Week 15 | Monday | Focus Groups |  |
|  | Wednesday | Focus Groups |  |

**Grades and Grade Points**

For information on current UF policies for assigning grade points, see

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

**Attendance and Make-Up Work**

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

**Online Course Evaluation Process**

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

**Academic Honesty**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

**Software Use:** All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

**Services for Students with Disabilities:** The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

**Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general wellbeing are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

• University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/) Counseling Services Groups and Workshops Outreach and Consultation Self-Help Library Wellness Coaching

• U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/)

• Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

**Student Complaints**: <https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf>