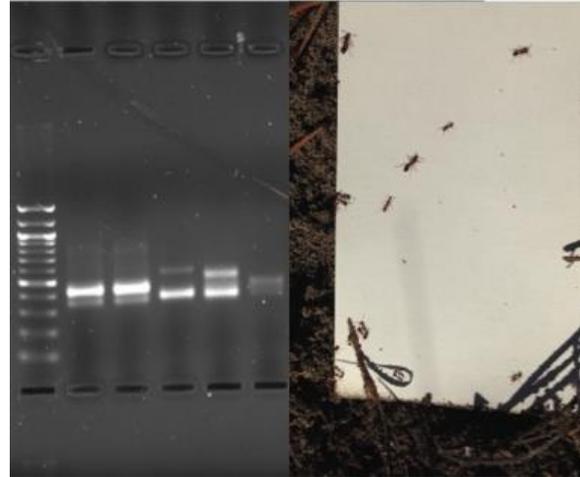


**BSC 2930 Special Topics**  
**ANTS AND MICROBES**  
**SPRING 2019**

**3 credits, no prerequisites**

**Location:** Biology Department, Room  
105 Rolfs Hall

**Meeting time:** Thursday: 7<sup>th</sup>, 8<sup>th</sup> and 9  
periods (1:55-4:55)



**Teaching team for Spring 2019**

Students will be assigned a member of our teaching team for guidance and questions during the first week of classes, please email your designated instructor and add **Ants and Microbes** in the subject line of the emails. All instructors are available to meet with students by appointment via email request.

**Dr. Marina Ascunce**, Instructor and Principal Investigator, [ascunce@ufl.edu](mailto:ascunce@ufl.edu)  
Office hours TBD and by appointment.

**Dr. Marie de Gracia Coquerel**, Postdoctoral Associate Instructor, [ma.degracia@ufl.edu](mailto:ma.degracia@ufl.edu)

**Mr. Stanley Ta**, Undergraduate Teaching Assistant, [stanleyta@ufl.edu](mailto:stanleyta@ufl.edu)

**Mr. Andrew McAuley**, Undergraduate Teaching Assistant, [atmac04@ufl.edu](mailto:atmac04@ufl.edu)

**Ms. Sara Zollota**, Undergraduate Teaching Assistant, [dervishis@ufl.edu](mailto:dervishis@ufl.edu)

**Ms. Jenna Allen**, Undergraduate Teaching Assistant, [jenna.allen@ufl.edu](mailto:jenna.allen@ufl.edu)

**Course Description:** This is a Classroom Undergraduate Research Experience (CURE) course. Microbiome sequencing is an important aspect in all areas of sciences from human health, to agricultural and environment, thus with this course, our goal is to introduce students to this new wealth of information and provide them with tools for utilizing it. In particular, we are using our own research on ants and microbes, as a way for the students to join an ongoing project and all the benefits of being in a research laboratory, including mentoring aspects. Because ants are a non-traditional study group, it will also provide the students the opportunity to think broadly as how these tools could be use and hopefully foster in them an unlimited way of approach scientific questions. As one of the University of Florida statements says: “We see things not as they are, but as they could be.”

Our particular project on ants and microbes is embedded in an Interdisciplinary Research on Invasive Species (IRIS) project, aimed to evaluate the role of microbes on invasive species and how they could be affected native species. Thus, while our focus with this course would be to learn about microbes in ants, we will also explore aspect of invasion biology.

**Course Format:** This CURE course was implemented in a course of 10 students and combines hands-on molecular lab, article discussions and project presentations. For the lab section, we will meet once a week for about 3 hours. Students will be forming team of 2-students, and they will be assigned a senior or junior undergraduate teaching assistants as a mentor. During the labs, students will conduct DNA extractions, PCRs, running gels, and other lab procedures. There will be one or two field trips on campus during the lab time, to show the students how we collect ants and to explore some of the ant community on campus. Students will learn basic tools to analyze sequence data from microbes.

It is expected that the students meet outside the class time to prepare paper discussions and project presentations at least once a week.

Students should come to class having done any required reading or preparation, and ready to engage on active learning activities.

### **Course goals:**

#### **Lesson Learning Goals:**

Students will:

- Develop an understanding of the scientific process.
- Practice critical thinking skills, to assess the relevance and importance of scientific findings.
- Learn how to obtain and analyze microbial high-throughput amplicon sequences

#### **Lesson Learning Objectives:**

The successful student will complete this course with a variety of new knowledge and skills. By the end of the course, students will be able to:

- List and perform the steps to obtain sequences for taxonomic inference
- Interpret microbial community diversity using high-throughput amplicon sequences and databases
- Compare microbial diversity within and between samples or treatments
- Be able to work together in a team
- Actively engage in classroom discussions, activities, and laboratory investigations

**Prerequisites:** This course requires no previous experience in biological research. Basic population genetics concepts will be introduced, but not derived in this course. Students are expected to have a basic understanding of genetics and microbiology. The emphasis of this course is on practical aspects of data collection and analysis.

**Readings:** Reading materials and media will be available on E-learning or freely available on the internet.

#### **Grading (out of 100 pts):**

30 Participation and team-work

10 Quizzes (2 pts each, there will be short quizzes to cover lab protocols)

10 Leading Paper Discussion

25 Research Presentation

25 Project Proposal Presentation

### **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

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

**Participation:** Participation points are earned by: 1) your presence at each class meeting (laboratories, discussions and presentations), 2) your engagement in small group discussions during class. Class attendance is required and included in your grade as participation. To receive full credit, you will need to come to class on time and well prepared (having done any required reading or assignment), actively participate throughout the discussion/activity, and follow any instructions specific to the activity.

**Presentations:** Presentations are an opportunity for students to deeply explore a particular topic and present the material to the class, gaining public speaking skills. Students will work in pairs. There are going to be three (3) types of presentations. The first one is a Research Presentation; this presentation will reflect what the students did during the CURE course, including results and analysis of data (the data will be provide). The second presentation is a project proposals, where the students will present a potential project that they would be interested in developing using the tools that they learn in this CURE, it could be on any question, organisms, environment, etc. The project proposal will give students an opportunity to show how they can apply the course concepts and tools to an area of particular interest to them. The third presentation (for extra credit) is a short (3 minutes) elevator speech type, with the idea that each student will create an end of the course-Take home message after the Ants and Microbes course, what they would tell to their friends and family about the course (youtube video for extra credit).

Each participant will lead or co-lead a journal article discussion for the group.

### ***Extra credit (no more than 5%)***

You can discuss extra credit opportunities with your assigned member of our teaching team. Extra Credit Opportunities will be available throughout the semester and may include: Attending UF Conferences and Symposiums (e.g. Emerging Pathogens Symposium), Presentation of current topic in class and posting it to Wiki, Wiki postings, contribution to discussion board. There are four extra credit opportunities that we encourage all of the students to participate. These activities are:

1) Attending and presenting\* at the UF Undergraduate Research Symposium.

\*presenting: We are working on developing a single poster or multiple posters tackling different aspects for all our CURE Ants and Microbes 2019. More TBD.

2) Participate in our outreach Days activities as part of “*The ImportANTS of Ants*” educational program at the UF Ordway-Swisher Biological Station (OSBS) during school visits. “*The ImportANTS of Ants*” educational program is led by a team of UF undergraduate students: Sara Zollota, Jenna Allen, and Patricia Perez and funded by Thompson Institute for Earth Systems (TIES). This current project is targeted to kids attending 5<sup>th</sup> Grade at the local Public Elementary School at Melrose, closed by to the UF Ordway-Swisher Biological Station (OSBS) where our research is being conducted. In summary, our project proposes: 1) to bring the

elementary students to the OSBS, and 2) to use of hands-on activities and dialogue to explain the role invasive and native ant species have in the ecosystem. By using active learning approaches and bring the kids to an ecosystem where there are a great diversity of ants, we can engage kids in learning how these ants live, their interactions with other species, explain the difference between invasive and native species, and why native ants are beneficial to the environment. Students will go to the OSBS during school visits to help out carrying the program.

3) Collaborate in the developing of outreach material to use during “*The ImportANTS of Ants*” educational program. Students will meet with the team to develop and construct the educational material to be used during school visits.

4) Short (3 minutes) elevator speech type presentation via video (e.g. youtube). Each student will create an end of the course-Take home message after the Ants and Microbes course, what they would tell to their friends and family about the course. More TBD.

**Course outline (as of December 14, 2018) this is an outline and it is subject to change; changes will be posted on the course Canvas site.**

Weeks	Dates	Thurs: Laboratory work, field trips, presentations
1	January 10	Introduction to CURE and research project Laboratory safety training, practice pipetting
2	January 17	DNA extractions / Basics on microbes
3	January 24	DNA quantifications / Basics on microbiome methods
4	January 31	PCRs_16S / Ants and microbes
5	February 7	Running PCR products / Invasive species
6	February 14	<b>Field trip on campus / Invasive and native ants in Florida</b>
7	February 21	PCRs ITS and microsporidia / Biological metadata
8	February 28	Running PCR products / Prepare topics for discussion and presentations
9	March 7	<b>SPRING BREAK</b>
10	March 14	Qiime analysis
11	March 21	<i>Paper presentation and discussion</i>
12	March 28	<i>Paper presentation and discussion</i>
13	April 4	International guest – via skype * tentative
14	April 11	Research Presentations
15	April 18	Project Proposal Presentations

### **Laboratory Safety**

To comply with the University of Florida requirements closed toed shoes are mandatory in the laboratory. For more information about the regulations go to:

<http://www.ehs.ufl.edu/Lab/EHSintro.htm>

### **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>. We also will ask students to please complete pre-course and post-course surveys.

### **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>.

### **Accommodations 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 should first register with the Disability Resource Center at 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/) and provide appropriate documentation.

### **UF Policy on 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.

### **Campus helping resources: U Matter, We Care**

At UF Every Gator Counts. U Matter, We Care serves as UF’s umbrella program for UF’s caring culture and provides students in distress with support and coordination of the wide variety of appropriate resources. Families, faculty, and students can contact [umatter@ufl.edu](mailto:umatter@ufl.edu) seven days a week for assistance for students in distress.

# EVERY *Gator* COUNTS



UMATTER@UFL.EDU | UMATTER.UFL.EDU | 352-294-CARE (2273) | @UMATTERWECARE

The university's counseling resources are available for students experiencing personal problems that interfere with their general well-being and/or academic performance. The Counseling & Wellness Center provides confidential counseling services at no cost for students that are currently enrolled with the university.

- 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
  - Training Programs
  - Community Provider Database
- Career Resource Center, First Floor JWRU, 352-392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

## Student complaints

If there is an issue in the course, please bring it to the instructor's attention. UF policies about more serious complaints are described in these documents.

- Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>

## UF Diversity Statement

The University of Florida is committed to creating a community that reflects the rich racial, cultural, and ethnic diversity of the state and nation. No challenge that exists in higher education has greater importance than the challenge of enrolling students and hiring faculty and staff who are members of our country's diverse groups. This pluralism enriches the university community, offers robust academic dialogues, and contributes to better teaching and research. The University benefits from the richness of a multicultural student body, faculty, and staff who can learn from and support one another. Diversity and inclusion empower and inspire respect and understanding among us. Importantly, the University does not tolerate the actions of anyone who violates the rights of another person.

Through policy and practice, the university strives to embody a diverse and inclusive community, creating a university that truly reflects the greatness of our state and nation.

"Together we can accomplish academic excellence within our community, reflective of the rich culture and diversity of our state and nation." President Fuchs