

Community Science for Ecologists (WIS4934/WIS6934/ZOO4926/ZOO6927)

Instructors

- Dr. Robert Guralnick — Office: Dickinson Hall Room 358, Florida Museum of Natural History, University of Florida. Phone: (352) 273-1980. Email: rguralnick@flmnh.ufl.edu.
- Dr. Scott Robinson — Office: Dickinson Hall Room 305, Florida Museum of Natural History, University of Florida. Phone: (352) 273-1965. Email: srobinson@flmnh.ufl.edu.
- Dr. Corey T. Callaghan — Office: 376 Newins-Ziegler Hall, University of Florida. Email: c.callaghan@ufl.edu. Phone: (954) 577-6314.

Office hours

By appointment, available after the class period each day.

Course description

In recent decades, public participation in ecological research—often termed “community science” or “citizen science”—has become an essential component of data collection, especially in biodiversity and ecology. This course provides a comprehensive exploration of community science from its historical roots to its modern applications and future potential in addressing ecological questions. The course is divided into two main components to balance theoretical grounding with hands-on experience. The first component introduces students to the diverse landscape of community science initiatives, covering various project models and the key principles that contribute to successful, scalable public science initiatives. Emphasis is placed on understanding participation dynamics, data quality challenges, and how community science can both complement and expand traditional ecological research. The course will have an emphasis on field-based community science, delving into the use of widely adopted platforms like eBird and iNaturalist, and discussing methods to ensure data accuracy, minimize bias, and maximize research applicability. Students will participate in a field data collection exercise, gaining practical experience with the tools and methods commonly used in large-scale participatory platforms. Throughout the week, students will work towards a small group project, where the project will use community science data to investigate real-world ecological patterns, addressing questions on biodiversity, species distributions, or ecological change. This course is offered as a week-long intensive during Spring Break, providing an immersive, hands-on experience that allows students to deeply engage with community science concepts, platforms, and field-based data collection without the competing demands of a regular semester.

Course objectives

This course is meant to provide a broad overview of citizen science for ecology and conservation. The course provides you with a deep understanding of these topics through a mix of reading and hands-on-work. Citizen science involves a three-way relationship between developers of citizen science projects, public participants who are engaged to take part in those

projects, and analysts who are using the data generated. Because of this, we focus on all three groups, and a key learning objective is to gather a pragmatic understanding of how those groups operate, how each group is enabled to do their tasks and the value propositions for each group and for science more generally. Our key objective is for each student to be enabled to work in any one of these three groups successfully and we are particularly focused on hands on experiences.

Course schedule

DAY 1 — Foundations of Community Science & First Field Activity

Morning: Course Launch & Core Concepts

- Introductions, course structure, course expectations
- History and evolution of community science
- Overview of modern platforms: iNaturalist, eBird, Zooniverse
- Individual assignment – experience with CS
- Class discussion: Why involve the public in science?

Mid-day: Field activity

- Campus biodiversity walk using iNaturalist and eBird
- Discussion of observer behavior, early reflections on bias, and data quality

Afternoon: Group Assignment & Group Project introduction

- Mini-Assignment: *Design a community science project.*
- Introduction to the Class Project

DAY 2 — Participation, Motivation & Project Design

Morning: Participation Dynamics

- Who contributes to community science and why?
- Motivation, demographics, and the Theory of Planned Behavior
- How participant heterogeneity drives bias
- Continue CS project design assignment
- Group work and presentation for assignment presentation

Mid-day: Design assignment presentation

- Guest lecture
- Rapid case-study discussion interpreting participation patterns from real CS data
- Student lightning presentations of CS project design assignment

Afternoon: Class Project Development

- Groups work to refine their project questions, data needs, and engagement approach
- Instructor consultations

- Group feedback on the feasibility and scope of CS-based ecological questions

DAY 3 — Data Quality, Bias, and Analytical Foundations

Morning: What Can We Trust?

- Forms of bias: spatial, temporal, taxonomic, observer-driven
- Structured vs semi-structured vs unstructured data and relation to bias
- Algorithms, expert verification, and community review processes
- Ethical considerations: privacy, inclusivity, accessibility
- Individual assignment – data trust thoughts

Mid-day: Hands-on data exploration

- Students explore sample datasets (eBird/iNat)
- Identify potential biases and discuss implications for analyses

Afternoon: Class Project Development

- Groups outline methods, expected data sources, and potential limitations
- Peer-to-peer troubleshooting session
- Instructor feedback on structure and analytical direction

DAY 4 — Field Trip: Applying Methods in a Natural Area

Morning: Off-Campus Field Trip

- Visit to a nearby natural area
- Hands-on biodiversity documentation using iNaturalist and eBird
- Demonstration of how sampling protocols influence outcomes
- Compare “observer-driven” vs “protocol-driven” data collection

Mid-day: Field-Based Mini-Workshop

- Discussion on variability in detectability, identification, and spatial accuracy
- Students may record observations for use in their class project if they choose

Afternoon: Class Project Development

- Field debrief + integration of field insights into group project
- Groups work on preliminary analyses or data exploration

DAY 5 — From Data to Insight + Final Presentations

Morning: Using CS Data for Ecological Questions

- Framing realistic ecological questions for community science

- Examples of successful analyses
- Guest lecture
- Intro to simple analytical workflows (descriptive patterns, distributions, phenology)

Mid-day:

- Groups finalize their findings or preliminary results
- Focus on interpretation, bias awareness, and clear communication of limitations

Afternoon: Mini-Presentations & Wrap-Up

- Group Presentations (10 minutes each), including research questions, data used, preliminary insights, limitations, and next steps
- Course reflection: what community science uniquely enables in ecology
- Final Q&A + closing discussion

Reference material and reading

All needed readings (mostly papers) will be posted on Canvas before the course begins. You may want to look into the small number of available books covering citizen science broadly as a topic or for ecology in particular, including “Citizen Science: How Ordinary People are Changing the Face of Discovery” by Caren Cooper and “Handbook of Citizen Science in Ecology and Conservation” by Christopher A. Lepczyk.

Assessment

Class assignments: 20%

Class participation: 50%

Final Class Project: 30%

Materials & supplies fees

There are no additional materials or supplies fees for this course.

Expected behavior and honor code

We expect each class member to behave as is befitting a professional situation like attending a class. The simple rules are: attend class, participate, and know campus policy about expected classroom behavior. We will treat each member with all respect as long as we feel that is reciprocated. UF students are bound by The Honor Pledge, which states, “ *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code.*” On all work submitted for credit by students 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.*” The Student Honor Code and Student Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructors in this class.

The Student Honor Code and Student Conduct Code states that:

A Student must not represent as the Student's own work all or any portion of the work of another. Plagiarism includes but is not limited to:

- Stealing, misquoting, insufficiently paraphrasing, or patch-writing.
- Self-plagiarism, which is the reuse of the Student's own submitted work, or the simultaneous submission of the Student's own work, without the full and clear acknowledgment and permission of the Faculty to whom it is submitted.
- Submitting materials from any source without proper attribution.
- Submitting a document, assignment, or material that, in whole or in part, is identical or substantially identical to a document or assignment the Student did not author.

Policy regarding religious observance

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, the instructors will discuss accommodations on a case by case basis. Reasonable requests will almost always be granted.

Policy regarding sexual harassment

The University of Florida policy on Discrimination and Harassment (<http://hr.ufl.edu/manager-resources/policies-2/sexual-harassment/>) will be adhered to strictly. Any student who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status can make a formal complaint report to the Institutional Equity and Diversity officer and/or to the Dean of Students Office/Student Conduct and Conflict Resolution (DSO/SCCR). Resources and reporting options can be found online at <https://www.dso.ufl.edu/sccr/resources/victims>.

Policy regarding inclusion and diversity

Students from all diverse backgrounds and perspectives are welcomed and expression of diversity encouraged, especially in a course that covers so much diversity itself. The diversity that students bring to this class is viewed as a resource, strength and benefit.

U Matter, We Care

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to

the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Policy on course feedback

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online. Students can complete evaluations in three ways:

1. The email they receive from GatorEvals
2. Their Canvas course menu under GatorEvals
3. The central portal at <https://my-ufl.bluera.com>

Guidance on how to provide constructive feedback is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

UF academic policies and campus resources

For further resources and information about academic policies and campus resources, please visit this link: <https://go.ufl.edu/syllabuspolicies>.

Other details

Course format

This course is delivered as a week-long, immersive learning experience over Spring Break. Rather than meeting once per week across the semester, we spend five consecutive days combining classroom discussions, field-based activities, collaborative workshops, and rapid project development. This intensive structure enables deeper focus, continuous skill-building, and immediate application of concepts—without the competing demands of a regular semester schedule. Students should be prepared for active participation, extended learning blocks, and daily hands-on activities both indoors and outdoors. The week will include a balance of individual work, small-group collaboration, and whole-class activities; we recognize the pace is intensive, so the schedule is designed with regular breaks, varied learning formats, and time for reflection. While rigorous, the course is also meant to be enjoyable, engaging, and community-building, with a focus on exploration, creativity, and fun.

Minimum Technical Skills

To complete tasks in this course, you will need a basic understanding of operating a computer and using standard software such as word processors, spreadsheets, and web browsers.

Getting Help

Because this is an intensive, week-long course, we will use Canvas extensively to organize readings, daily schedules, assignment submissions, and project materials. If you encounter technical difficulties or need academic support, the following UF resources are available to help:

- **UF Computing Help Desk** — Assistance with Canvas, GatorLink access, and other technical issues
 - <http://helpdesk.ufl.edu>
 - 352-392-HELP (4357)
 - Walk-in: HUB 132
- **Career Connections Center** — Career advising and counseling
 - <https://career.ufl.edu> | 352-392-1601
- **Library Support** — Ask-A-Librarian services and research guidance
- **UF Teaching Center** — Tutoring and study skills support
 - <https://teachingcenter.ufl.edu> | 352-392-2010
- **UF Writing Studio** — Writing help from brainstorming to revision
 - <https://writing.ufl.edu/writing-studio/> | 352-846-1138