



Impact Network Analysis Workshop 2021

PLP 4932

A CURE (Course-based Undergraduate Research Experience) course

Fall Semester 2021

3 credit hours

Class meetings

- Tuesday and Thursday, Period 5 (11:45-12:35), 2564 Fifield Hall
- Additional workshop meetings at times to be determined based on participants' schedules

Assistantship: The six participants in the workshop will be selected through an application process and will each receive a \$2000 workshop assistantship for the semester. Participants are expected to contribute to the workshop projects during at least 10 hr/week additional work in the lab as a responsibility associated with the assistantship.

Prerequisites: An accepted application through the process described below. Junior or Senior status. Course work and/or experience in at least one of the following areas: biology/agriculture, economics/social science, coding/modeling

Application process: Review of applications will begin August 12, 2021. Please complete applications by August 12 to ensure full consideration. Very strong applications received after August 12 may still be considered. A subset of applicants will be contacted for brief interviews shortly thereafter. All applicants who submitted a

complete application will learn the outcome of their application before August 20, 2021. More information about the application process is available at <https://www.garrettlab.com/ina-workshop-fall-2021/>

Instructors

Dr. Karen A. Garrett (garrettlab.com)
Plant Pathology, Food Systems Institute, Emerging Pathogens Institute
Office: 2411 Fifield Hall
Email: karengarrett@ufl.edu

Berea A. Etherton, Graduate Research Assistant

Aaron I. Plex Sulá, Research Assistant

Yanru Xing (yanruxing@ufl.edu), Research Associate

Course materials access: invitation to Teams will be provided to participants

Office hours: To be arranged based on participants' schedules

Course overview

As a team, students will develop two research manuscripts for submission to peer-reviewed journals. Based on students' experience and interests, they may take the roles of biologists/agriculturalists, economists/social scientists, and/or coders/modelers in contributing to these manuscripts. Students will gain experience using the R programming environment for scenario analysis using the impact network analysis (INA) framework and R package. Students will collaborate with more experienced researchers in the Garrett Lab.

The two projects will be developed in collaboration with (a) scientists in the CGIAR (<https://www.cgiar.org/>) working on improving seed systems (<https://tools4seedsystems.org/>) in Tanzania, Uganda, Ethiopia, and/or Haiti, and (b) scientists in APHIS (<https://www.aphis.usda.gov/aphis/home/>) working on protecting food production in Florida from new pathogens and insect pests. In the workshop we will analyze data collected by these groups.

The course will apply and build on tools in this framework:
Garrett, K. A. 2021. Impact network analysis and the INA R package: Decision support for regional management interventions. *Methods in Ecology and Evolution*. [[open access link](#)]

Course learning objectives

Participants who have completed this course will be able to ...

- **Prepare a scientific manuscript for submission to a peer-reviewed journal**
- Prepare annotated bibliographies as part of the process of developing scientific manuscripts
- Use the R programming environment for general network analyses, as well as application of the INA R package
- Provide feedback on the development of scientific manuscripts to collaborators
- Work in an interdisciplinary team

Course outline (as of 3 August 2021 – subject to minor changes)

Course assignments to be turned in or presented by students are indicated in bold

Note that this course meets simultaneously with PLP 6701 during the first 2/3 of the semester (Tuesday and Thursday, Period 5), **but has different assignments**

<https://www.garrettlab.com/wp-content/uploads/2021/08/PLP-6701-Impact-through-Networks-2021-syllabus-v1.pdf>

	Course meetings with PLP 6701	PLP 4932 workshop activities
Aug 24, 26	Introduction to networks and Introduction to R, Part 1	Introduction to the workshop
Aug 31, Sept 2	Introduction to networks and Introduction to R, Part 2	Weekly reports
Sept 7, 9	Epidemic networks, Describing nodes in R	Weekly reports
Sept 14, 16	Microbiome networks, Visualizing and describing networks in R	Weekly reports
Sept 21, 23	Networks of association in R, Visualizing and describing networks in R	Weekly reports
Sept 28, 30	Multilayer networks	Weekly reports
Oct 5, 7	Gene networks, Bayesian networks	Weekly reports
Oct 12, 14	Mathematical models of networks in R, Exponential random graph models in R	Weekly reports
Oct 19, 21	Survey of other network types ('omics, economics, ecology, communication, etc.), and more mathematical models of networks	Weekly reports
Oct 26, 28	Social networks, Networks and meta-populations in landscapes	Weekly reports

Nov 2, 4	Evaluating impact in networks Value of information	**First draft of manuscripts presented, with feedback
Nov 9, 11	<i>Veterans Day: no classes Nov 11</i>	Weekly reports about updates to manuscript
Nov 16, 18		Weekly reports about updates to manuscript
Nov 23, 25	<i>Thanksgiving vacation: no classes Nov 24-26</i>	Weekly reports about updates to manuscript
Nov 30, Dec 2		Weekly reports about updates to manuscript
Dec 7, 9	<i>Reading days: no classes Dec 8-10</i>	Weekly reports about updates to manuscript
Finals week		**Final version of manuscripts presented

Workshop team structure: The 2 teams will consist of 2 students focusing on biology/agriculture, 2 students focusing on economics/social sciences, and 2 students focusing on coding/modeling. Each student will be the lead for their subject area in one team and the assistant for their area in the other team.

Authorship: The workshop is designed to give students experience in being an author on a scientific paper. Students will not automatically be granted authorship; authorship criteria will be discussed in the class. The order of authorship will be determined based on the level of contributions of the authors, including their contributions through finalizing the manuscript for submission to a journal and through the revisions of the manuscript after the workshop is over.

Grading

- 10% Workshop discussions
- 30% Weekly reports
- 20% Contributions to first draft of primary project
- 10% Contributions to first draft of secondary project
- 20% Contributions to final version of primary project
- 10% Contributions to final version of secondary project

Workshop discussions. When discussing the workshop projects, all participants are expected to contribute questions and ideas, and feedback for others' ideas. Discussions are evaluated based on a course rubric for contributing to discussions.

Weekly reports. Participants will prepare a weekly report to the group based on their progress developing project ideas and syntheses. This will include the development of an annotated bibliography and coding notebook, graded based on a course rubric. The weekly reports are designed to be early versions of the material that will be in the first complete draft of the projects.

Contributions to first draft of primary and secondary projects. Each participant will have a primary and secondary project. Depending on participants' roles in the project, they will prepare portions of the journal article text and analyses. Participants will make major contributions to their primary project and minor contributions to their secondary project. At the first draft stage, a draft of all the article components should be present.

Contributions to final version of primary and secondary projects. Participants will revise the sections of the journal article for which they are responsible, based on feedback from the group. At this stage, all the article components should be in final shape.

If the grade on an assignment appears incorrect, the process for requesting reconsideration of the grade is to prepare a written statement describing where the error lies, to be turned into the instructor within one week of receiving the grade.

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>

Grading scale: 94-100 A; 90-93.99 A-; 87-89.99 B+; 84-86.99 B; 80-83.99 B-; 77-79.99 C+; 74-76.99 C; 70-73.99 C-; 67-69.99 D+; 64-66.99 D; 60-63.99 D-; 0-59.99 E

Required course materials

There is no required textbook for this course. Materials for discussion will be provided to the class.

Attendance and make-up policies

This is a synchronous course, to make the most of interactions among participants. Discussion among course participants is an important part of the learning experience, so attendance is required. Three course meetings can be missed without explanation (with the exception of dates when the participant has a particular responsibility, such as leading discussions or presenting). Please alert the instructor if there is a serious health problem or other emergency.

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>.

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/ and provide appropriate documentation.

Recorded class sessions

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

On-line course evaluation

For this course, we will also ask students to anonymously provide some more specific recommendations for making the course as useful and interesting as possible, in both a mid-term survey and a final survey. This will be in addition to the general UF course assessment.

UF Policy: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>

Materials and supplies fees

None

UF Policy on 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>.

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

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/
 - 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/

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
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>