Biology 499R, Research for Credit
Spring 2023

Student: Please read all details carefully. You are responsible for making sure that all steps of the registration process are completed.

WHAT IS BIOL 499R?

Biology 499R is the Emory Biology Department's research for credit program. It is intended to provide students structured support as they develop, conduct and present biology-related research. Students in the program work with researchers at and beyond Emory. Their research mentors often play a pivotal role in helping them gain scientific skills and self-efficacy.

WHO CAN SIGN UP FOR BIOL 499R?

- Biology majors
- Those who intend to declare a biology major within the next year.
- QSS – Biology track majors
- Cancer Biology 4+1 students
- Students who cannot receive credit to conduct research within their own major.

WHAT TYPE OF PROJECT SHOULD I BE WORKING ON?

Biol 499R is designed to support students as they gain authentic research experience. Students may work on independent or collaborative research projects. Projects may involve wet lab research, clinical research, bioinformatics, modeling or metanalyses. Some projects may be more qualitative than others. In all cases, the work should be driven by a question or set of questions related to the biological sciences. **You cannot, for example, be learning techniques without the goal of applying those to a defined project later, nor can you write a literature review.** As research can be slow, it is fine if you do not get to the point of finishing the project within the semester. In all cases, you will be required to write a research report (fall) or present your work (spring). If you do not have finished results, you can discuss methods, planned methods and hypotheses instead.

WHAT ARE THE COMMITMENTS?

1. You must commit to working on your project 12-16 hours per week. This includes time both in and out of the lab.
2. You must commit to the increased responsibility that comes from your need to structure the research interactions, set and meet deadlines, and follow all requirements.
3. You must commit to completing regular assignments that will help you complete a final research report in the fall or a final presentation in the spring.
4. You must commit to clearly communicating with your mentor(s).

WHAT DO I NEED TO DO TO COUNT BIO 499R TOWARDS THE BIOLOGY MAJOR?

You must take Biol499R for a minimum of two semesters for 4 credits each semester in order to receive credit toward the major. If acceptable to your research mentor, the two semesters do not have to be consecutive.

HOW DO I SIGN UP?

1. **Find a research mentor.**
    - Most mentors are affiliated with Emory, but some undergraduates have had mentors at the Marcus Autism Center, CDC, Georgia Tech and other locations in Atlanta. See advice provided in *Getting Started in Undergraduate Research in Biology* about finding a research mentor, http://www.biology.emory.edu/research-opportunities. You must find a research mentor who conducts research within the broad field of the biological sciences. Biophysics research conducted in a physics department, for example, is research related to the biological sciences. Projects can involve lab work, data analysis, bioinformatics or other approaches. Clinical shadowing, while valuable, is not a research experience.

2. **Register for Biology 499R by completing the following EACH semester.**
    1. **Complete the Online Registration Form by the end of the first week of the semester** for which you are registering. The form is at: https://forms.gle/Mu7aLXZQfK3qTsHQA
    2. Upon completion of this form, where you will indicate contact information for your faculty mentor, the Biol 499R course director will contact your faculty mentor. Your faculty mentor will be required to agree to mentor you.
    3. Once you have completed the registration form and your faculty mentor has agreed, via email, to mentor you, you will receive a permission number via email. This may take several weeks.
    4. **To enroll in the class**, add the class to your shopping cart in OPUS. Then, in your shopping cart, click on the class name and it will take you to a screen where you can enter the permission number.

THEN WHAT DO I DO?

1. **With your mentor, establish:**
    - the **scope of your project** and other expectations. Science is collaborative, but you should have increasing ownership of your intellectual research question, experimental design, and data analysis as the semesters progress. Some things that you might be expected to do besides lab work include going to lab meetings, presenting at research meetings or meeting regularly to present your lab notebook to your faculty or lab mentor. By setting expectations in advance, you will avoid many problems.
    - your **research schedule**. It is expected that you work for 12-16 hours per week. This includes time in the lab and outside the lab reading and writing on the topic.
    - a schedule for **regular meetings** with your faculty mentor and, if applicable, your direct mentor
2. **Look over the materials provided on the Biol 499R Canvas site carefully.**
3. **Course meetings and assignments**
    - Attend any workshops required for the course. There is typically one at the beginning of each semester and sometimes an additional one later in the semester.
    - Write a final report (Fall) or present a poster (Spring). Failure to complete these assignments on time will result in an F in the course.

- In addition to your final report (Fall) or poster (Spring), you will have several mid-semester course assignments concerning your research project each semester. Late submissions will affect your grade for the course. Assignment will be submitted via canvas. A complete schedule will be available at the beginning of the semester.

4. **Arrange for your faculty mentor to submit a grade by the last day of classes each semester.**
    - Your faculty mentor's evaluation of the quality of your research and report/poster will be reviewed by the course director to determine your final grade.

Other Frequently Asked Questions

CAN I TAKE BIOL 499R FOR MORE THAN TWO SEMESTERS?
Yes. Many students do so.

IF I TAKE BIOL 499R FOR ONE SEMESTER AND THEN START HONORS RESEARCH, WILL I GET CREDIT TOWARDS THE BIOLOGY MAJOR?
Yes. If you take one semester Biol 499R and one semester of Biol 495R (honors), this will count as the upper-level lab requirement AND an elective towards the major. More broadly, you can get the upper-level lab and elective credit for any two semesters of Biol 499 or Biol 495.

CAN I TAKE BIOL 499R IN THE SUMMER?
No, this course is not offered in the summer.

CAN I DO BIOL 499R FOR CREDIT AS A QSS-BIOLOGY TRACK MAJOR?
Yes, we encourage participation of QSS Biology track majors. To receive elective credit towards the QSS Bio major, you will need to get approval from one of the QSS Biology advisors (see here). Please send them a brief explanation of the research you are doing for credit through Biol 499R, focusing on how it relates to the quantitative sciences and statistics? If approved, you will receive credit towards fulfilling one Biology elective if you complete TWO semesters of Biol 499R.

CAN I TAKE BIOL 499R FOR LESS THAN FOUR CREDIT HOURS?
No, at this time Biol 499R is only offered for 4 credit hours. This reflects the time that required to fully engage in a research project. Should you be a graduating senior who plans to pay for the semester by credit hour, such that 4 credit hours causes a financial burden, please contact Dr. Gerardo.