

Fall 2026
BIOL4590 Project Lab

Instructor: Vinayak Agarwal
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Office hours: by appointment

Course overview

This integrated lecture-laboratory course is designed to offer theoretical and hands-on instruction in contemporary biological and chemical 'omics' techniques, particularly as they relate to genomics. Students will work with genomes of marine bacteria to determine their natural product biosynthetic potential, phylogenetic relationships, and genes and enzymes involved in primary metabolic pathways.

Each week, research papers and/or review articles will be assigned for critical reading. Assigned papers/reviews will be discussed during the lecture period (see 'Meeting times' below) and are expected to aid in the preparation of the oral reports (see 'Evaluation' below). Students' reading is expected not to be constrained to assigned material only, but should extend to other available literature which may be available as referenced citations in assigned papers/reviews. We do not intend to provide and test on standardized materials for learning, instead, we intend to make you curious and appreciative of the natural world.

Meeting times

Laboratory	Monday	12:30 pm - 3:15 pm
Laboratory	Wednesday	12:30 pm - 3:15 pm
Lecture**	Monday	3:30 pm - 4:20 pm

Please bring laptops to all lecture labs and classes, there are several computational tools and software packages that we will use.

Email

Email is the preferred route for communication with the instructor, teaching assistant, and the laboratory manager outside of scheduled meeting times.

If you do not receive a reply within 48 h, email again.

Attendance policy

Because this is a lab-based course, attendance and active participation is encouraged. However, there is no penalty for missed labs and lecture periods.

Lab safety

This is a dry-lab course, as in, we will not be using any chemicals and not dealing with live biological materials. However, we will be meeting in a lab room where chemicals and live biological materials are stored and manipulated. Hence, we will adhere to policies that ensure our safety and compliance in a lab environment.

Georgia Tech has a strict policy regarding appropriate clothing in laboratories where chemicals and organisms are used or manipulated. Students are expected to follow all safety instructions at all times without exception. In the laboratory, students must wear:

1. Long pants.
2. Closed-toed shoes that cover the sides and top of the foot.

If in doubt regarding any procedures, please approach the instructor, the teaching assistant, and/or the laboratory manager with questions. We welcome your questions.

Students must adhere to all verbal and written safety instructions. Non-compliance with safety rules and instructions will result in dismissal from the laboratory.

Ethics policy

Please refer to Georgia Tech's academic honor code: www.honor.gatech.edu which you are required to uphold. While students will collaborate in performing the experiments and collecting the data, each student is expected to write his or her own notebooks and manuscripts, including creating his or her own tables and figures. Plagiarism includes reprinting the words or ideas of others without citation. Please ask your instructor and/or TA for help as needed.

Non compliance with the ethics policy can be penalized on a case-to-case discretionary basis.

Assessment

Oral presentations 3×33.33 = 100 points

Oral presentations:

There will be three oral presentations during the semester; refer to the schedule below. Each presentation will be ~10 min, followed by ~5 min for questions. Students are expected to cover the following topics:

1. Motivation of efforts and expected results
2. Experimental procedures

3. Results

4. Pitfalls

5. Future work

Oral presentations should use and address the assigned reading material.