

Undergraduate Research

Credit

Specific language on this page comes from the [Doss-Gollin Lab](#).

There are three main ways to do research in our group as an undergraduate:

1. For academic credit;
2. As a senior thesis;
3. For pay.

Internships

We do not hire uncompensated interns. When funds are available, undergraduate researchers will be paid; otherwise, they will be given academic credit.

Specifically advertised positions for pay will be publicized on the research group's "[Join Us](#)" page. However, you may always contact Vivek if you have a specific idea.

If you are doing research in the lab group, you will be [expected](#) to participate in lab meetings and be available on Slack.

Research for Credit

Undergraduate research will be almost exclusively done for academic credit through BEE 4970 (individual study) or 4990 (undergraduate research). A maximum of 15 credit-hours of undergraduate research or individual study can be applied to your CALS degree, though other restrictions may apply for individual programs. You and Vivek will need to fill out a [Special Studies form](#).

The typical conversion from credit-hours to work-hours is 3 hours of work each week for every 1 hour of credit. Vivek will not expect you to work more than this on average, though you may work more in a given week to make up for a week in which you did less research (such as during a heavy prelim period). Make sure to let him and other relevant group members know if you find yourself working more than this on average. You will also be expected to attend group meetings and meet with Vivek once a week to discuss your progress (it's ok if you haven't made any in a given week, but it's still useful to chat).

At the beginning of the semester, Vivek will sit down with you to agree on the scope of your project. The nature of research is that you may not complete the expected project in a semester, or you may complete the discussed scope relatively early.

- If you cannot complete the project while sticking to the 3:1 work:credit hour conversion, don't worry! If you'd like to do more research the next semester, you can pick up where you left off, and add more credit hours if desired and if they would fit into your academic plan.
- If you complete the discussed project early, you are still expected to work for the remainder of the semester, as you're receiving academic credit. Vivek and any other relevant group members will meet with you to discuss how to expand your project.

How To Apply

Send Vivek an [email](#) from your Cornell University account:

1. Make the subject line of the email BEE 4970 or 4990, whichever you'd like to enroll in.
2. Attach your CV or resume as a .pdf file. It's ok if this isn't long or if it mainly contains the courses you've completed, but it helps Vivek get a sense of your aims and background.
3. Attach a 1-2 page [project proposal](#) as a .pdf file. The more detailed, the better. This proposal isn't binding, but it will give Vivek a sense of your interests and communication skills.
4. Suggest some times when you might be available to talk over the next week in the body of the email.

Honors Thesis supervision

If you'd like Vivek to supervise your honors thesis through BEE 4993, he recommends that you do research in his lab previously, as it may take some time to learn the relevant research skills, such as scientific programming and statistics. This is not a strict requirement, so feel free to reach out. If you want to do research in Vivek's group during your sophomore or junior year in anticipation of continuing on to do an honors thesis, mention that in your application email.

At the end of the semester, a written report or thesis must be submitted to Vivek. Vivek will also likely ask you to present your results and reflect on your experience during a research group meeting.

How To Apply

Follow the same steps as applying for research credit, but put "Honors Thesis Supervision" as the email subject.

Research for Pay

If you want to work in the lab and earn money instead of academic credit, there are two options. When funds are available from a grant, the lab can pay you as a research assistant. These positions will typically be advertised on the group's ["Join Us!"](#) page.

Alternatively, we can explore undergraduate research fellowships, or funding may be available from other sources. If there are no actively advertised positions, please do reach out! We'll try to be creative.

Volunteer Research

Uncompensated internships give an unfair advantage to those who can afford to volunteer their time. They contribute to unfair representation in the field. We do not take uncompensated volunteers as research assistants: if you are not paid, your research will be for academic credit or will contribute to your honors thesis.

How to Write a Project Proposal

The project proposal is the first draft of your semester research plan. This document will lay out research questions and goals, milestones and timelines, the tools you will need, and the mentoring and guidance you anticipate requiring. The proposal is not intended to be a binding contract, and will likely change upon further discussion. The main goal of the project proposal is to convince Vivek of the following:

- You've thought about the research you'd like to do;
- This research serves your broader intellectual or career goals;
- You have *enough* of the skills required to complete the research;
- Vivek is an appropriate mentor to supervise the research and work with you to develop the additional required skills.

Questions that you should think about while developing and writing your proposal (and which Vivek will look for when reading it) include:

- Is the research feasible? Do you have enough of the needed skills so that you can learn the others and complete the work in the desired number of credit-hours?
- Is this research interesting? Why are you interested in this topic? What are the broader social or technical implications?
- Do you have a sense of previous work in this area? You aren't expected to conduct a thorough literature review at this stage, but it would be useful to get a sense of your understanding of the area, as science proceeds by standing on the shoulders of those who have done research before you.
- Is Vivek the right mentor for this work? Does he have the expertise to help provide you with the mentoring needed for you to complete this work and develop the skills you hope to gain from pursuing it?¹
- How does it align with Vivek's research goals and interests?²

It must be stressed that this proposal is a first draft, not a contract. You are not expected to do a complete literature review or to have thought through every detail of the plan. The purpose of requiring the proposal is to ensure that you've thought about what you'd generally like to research, why you're interested in the project, that it's feasible, and that Vivek is the appropriate mentor to supervise it. Don't stress out over it — that's not the goal!

FAQ

If you ask me a question, in person or in email, that seems extremely relevant for others to know, I may ask your permission to post that question (anonymously) and answer in this section to help future prospective students.

1. Vivek will also ask himself if he has the resources necessary to help you complete the research. You will likely not know this! If this is the only drawback he finds with your proposal, he will likely work with you to alter the plan so that he can provide you with the needed resources. ■
2. You may not know what these goals are. That's fine! Try to learn what you can from a course you've taken with Vivek (if any), his website, and this lab manual. If your proposal is generally aligned with projects he's working on or have worked on, or if you've discussed this topic with him earlier, it will likely qualify. ■

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