

iCons 4: How to Prepare, and What to Expect

iCons 4 combines two experiences:

- 3 Credits of Advanced Scholarly Work per semester, providing a culminating experience for your undergraduate career, and
- 1 Credit of iCons Seminar, focusing on integration and reflection on your Advanced Scholarly Work as well as the constellation of other experiences that have brought you to where you are as a young leader in science and engineering.

For a successful senior year in iCons 4, make sure you understand your responsibilities, and get organized ahead of time so you can meet them.

- I. Focus your interests
- II. Identify Opportunities
- III. Agree on a project
- IV. Make it official
- V. Enroll in courses

I. Focus your interests

The first step toward a successful thesis project is finding the right topic. Think about the intersections between your iCons concentration, your major, and your personal interests - don't hesitate to draw a conceptual map. Consider these questions:

- What topics related to Renewable Energy or Biomedicine/Biosystems do you find most interesting?
- What kinds of problems are you driven to work on?
- What methods or techniques of research, project design, communication, etc. do you feel particularly strong using?
- What knowledge or tools that are needed to successfully solve these problems do not yet exist? What of these lie within your ability to create them?

Your answers should point you in the right direction.

II. Identify Opportunities

Take stock of

1. the kinds of individually mentored original research taking place on campus,
2. the thesis seminar courses (see below) offered both in related departments and in seemingly unrelated fields where your particular expertise and interest might complement those represented in the class,
3. the aligned interests of other iCons or other students who may want to collaborate with you toward a common goal, and
4. the senior design opportunities in engineering (ECE and CEE specifically) departments.

Thesis seminar courses are directed honors thesis opportunities where students work together to develop honors thesis level work, mentored by a faculty member, on a topic selected by the class or instructor. The mission of a thesis seminar course can be different from the mission of individually mentored original research, and can encompass goals such as invention, entrepreneurship, and team-based innovation. An example of a thesis seminar course is PoliSci 499C/D. For more information, see <https://www.honors.umass.edu/capstone-experience-course>

If you will be pursuing individual research in a mentored laboratory setting and *are not already working* in a research lab or *wish to change the direction of your work by joining a new research group*, contact (email) professors who you believe are likely to have research interests that overlap strongly with yours.

- When introducing yourself, state your major and your iCons Concentration, and explain how the program has prepared you for the demands of working in a lab through the development of specific research skills, the focus on real-world problems, training in communication skills, and your experience collaborating with your peers on complex issues.
- Articulate why you are interested in their research. Why is their work important to you? How do the questions they seek to answer inspire you? How does your iCons concentration area inform your understanding of broader context of their work and appreciate the impact of their research findings? Express your desire to begin working in a lab soon.
- Ask if they are planning to take in any undergraduate students, and if they would be willing to meet with you to discuss their work.
- If they invite you to come in for a meeting, prepare! Read one or two of their recent papers, and come up with several thoughtful questions, and perhaps even ideas for future work.

If you are interested in joining a thesis seminar course (in your department or other), contact the instructor of the course and determine:

- The focus and scope of the thesis seminar course
- The match between the course scope and your interests as an iCons student
- How the activities and products of the seminar course can be used to address a societal problem that inspires you and connects to your iCons concentration area
- What permission / prerequisites you need in order to enroll in the course
- What activities or research you should pursue to best prepare for the course

If you are an engineering student participating in a senior design course in either ECE or CEE, contact the instructor of the course and any other iCons students who will be co-enrolled, and determine:

- What societal problems are you interested in solving in your senior design course
- How those problems might be addressed within the context of the senior design course
- How you and the instructor will focus the activities and products of your senior

design work to address the societal problem you want to solve

If none of the above options seems to fit your hopes, dreams, and aspirations as a senior iCons student, we are happy to work with you to design other ways of fulfilling the advanced study component of iCons 4 based on your ideas. Please contact the faculty member who will be running the iCons 4 (NatSci 489FH) seminar about your ideas to work toward a unique student-proposed project.

III. Agree on a project

Once you have negotiated with a professor and confirmed their mentorship of your iCons 4 work, whether in a thesis course, independent lab, or senior design course, you must agree on the scope and focus of your project. What societal problem will you be addressing? How will the activities and products of your work address the problem? How will your work be evaluated? What are the timeline and expectations for your deliverables? What resources will you need to access in order to succeed? If you are a Commonwealth Honors College student, you will be required to submit a written proposal addressing these (and other) questions prior to enrolling.

In the end, the most important thing to consider as you plan your advanced scholarly work is **that you should be able to connect the dots easily between the project and your iCons area** -- articulating this will be part of the work you do in the iCons 4 fall seminar.

IV. Make it official

If you will pursue the 499Y/T pathway, you should identify the Honors Program Director for your major or department, and introduce yourself if you have not already done so. Email is fine. Let them know you will be submitting a 499Y Contract/Plan. This should happen near the mid-semester date for the semester before you intend to enroll in 499Y.

Concurrently, you should work with your faculty mentor to prepare a 499Y Contract/Semester Plan. This document should include these four components:

1. Research Mentor's commitment and approval of project scope
2. Thesis statement and key objectives.
3. Foundational readings to get you started.
4. Specialized training you might need to complete your research.
5. Proposed timeline of assignments, meetings, and progress reports that are integral to the research.

If, however, you will pursue a course based iCons 4 (ECE or CEE Senior design, Dept 499C/D or E/F), you should prepare a similar proposal, detailing the agreement between

you and the course instructor as to how your work in the course will apply to your iCons concentration area. This can be an informal contract, but should make it clear that all parties understand the commitment you are making to work toward a product that addresses a societal problem inspired by your iCons area. Please email this to the iCons Program Manager by August 1st.

V. Enroll in courses

Fall iCons 4 Courses:

You must register for ONE of:

Dept 499 Y (3 credits)“Dept” stands for the Department of your primary major. “Y” stands for “year long grading”, meaning that you will receive a grade in the Spring of your senior year for both the Fall and Spring semesters. You may take this course regardless of whether or not you are a student in Commonwealth Honors College. To enroll in this, you will submit your completed 499Y Proposal and Contract to the honors college.

ECE or CEE Senior Design (3 credits):These two departments require a senior design course. This year-long experience is part of the core curriculum and required for engineering certification. Your role as an iCons student is to align the work you do with the societal problem context of your iCons concentration area. To enroll in this, you will register in SPIRE as for your other classes in your major.

Dept 499 E or C (3 credits)If you will meet the advanced scholarly work through a thesis seminar course, you will register for that course as part of your normal academic schedule. This may require an override from the department running the thesis seminar course, which you should arrange with the chief academic advisor in that department or with the course instructor.

Dept Independent Study (3 credits): for Non-CHC students as a crediting mechanism for the advanced study work.

Everyone must submit your proposal to the iCons Program Manager by August 1st.

You must also register for:

NatSci 489FH (1 credit):This class encompasses the extra iCons objectives: working in peer support teams to help you maintain interdisciplinary perspective (i.e. avoid jargon), and creating advanced communication products about your research to maximize impact. Register for this course through SPIRE.