

Independent Study/Directed Research Courses

College of Science

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Suggestions from the Academic Advisory Committee in the College of Science, with additional comments from faculty and staff on CoS undergraduate curriculum committees.

Independent Study courses: 199, 299, 399, and 499 (S/P, C, D, E type grading)

Honors Independent Study courses: (must be an honor student to take this course)

199H, 299H, 399H, and 499H (A, B, C, D, E type grading)

Directed Research: 392, and 492 (A, B, C, D, E type grading)

1) Independent Study Form

The CoS Independent Study Proposal Form must be filled out and signed by the student, faculty advisor for the project, and the academic advisor in the student's major. This last signature forces the student to communicate with his or her academic advisor about the number of units that will count in the major requirements. The academic, major advisor should keep a copy of this form in the student's file.

The Independent Study Proposal Form should be submitted to the department administering the course credit. The faculty member may or may not be a member of that department and can still serve as an independent study project director, at the discretion of the department awarding credit.

2) Grading Standards and Grading Rubric

A grading rubric should be developed by departments or by individual faculty members so that students and faculty understand the course expectations.

- Grade might be based on: effort and performance in the lab/on the project, two written summaries of the work (2-5 pages; one several days before the last day to drop the course and one at the end of the semester), and perhaps written summaries each week (one paragraph on what was done last week and what work is planned for the coming week). The weekly summaries might be turned in at the time of the lab meeting, if the faculty member has weekly meetings with the members of his/her lab.
- A grading rubric should indicate expectations to earn particular grades. For example, at the start of the semester the faculty member might tell the student that average performance in independent study/directed research will earn a "C". To earn a "B", the student has to put in more effort, more intellectual input to the project, do more analysis of the results, etc. To earn an "A", students would need to have outstanding performance. Details or examples might be given to be clear. Grades of "D" and "E" should also be defined. The student should to be given regular feedback on what grade they are earning throughout the semester, but certainly a midterm grade with written comments should be given to the student.
- Written reports should be encouraged and graded to give students more experience with writing in the major. The professor could encourage submission

of a draft report for the final paper and allow students to revise this draft to learn to improve their writing.

3) Instructional use of independent study course numbers (399/499; 399H/499H) and directed research course numbers (392 and 492)

- Departments in the College of Science use these house numbered courses for various types of instruction, in addition to independent research with a faculty member. Some departments use the 399/499 courses for independent literature study as well as independent research. Other departments use 392/492 for small group projects as well as for individual research projects. As long as the spirit of the course descriptions are followed, the College of Science will not provide strict course descriptions or course guidelines on how these house numbered courses are used by the departments.

4) Units of credit

- Although independent study and directed research are both available for a variable number of units (1-5), most independent study courses should be 3 units of credit and students should be expected to spend at least 9 hours per week in the lab (3 hours for each unit of credit). Perhaps a student who wants to sign up for more than 3 units of credit per semester of independent study should justify the request with the academic advisor in his/her major.
- Many students in the College of Science have a difficult time obtaining all the required upper division credits. For this reason, undergraduates taking independent study credit or directed research credit should be advised to use only 300 and 400 numbered courses (399, 499, 399H, 499h, 392, and 492). These courses can be repeated multiple times during the course of undergraduate training. The 199 and 299 independent study courses can be used by high school students who register for the course at the University and who do independent research while they are in high school.
- The number of units of independent study/directed research (399 or 499, 399H or 499H, and 392 or 492) that count toward the major requirements should be limited. Departments should decide the number of units of independent study and directed research that will count in the major degree requirements. Extra units should be allowed to count as electives outside the major. This information must be placed in the official APER for the major and added to the bottom of the independent study/directed research proposal forms.
- Students should **not** be discouraged from doing up to 4 years of independent study, but the number of units of graded independent study should be limited in the major course work requirements.

5) Other house numbered courses

- Departments should discuss whether other house numbered courses should be limited for credit in the major. This includes internship (493), preceptorship (491), practicum (494), small group discussion (496), tutoring workshop (297 and 497), senior capstone (498) and honors thesis (498H). Decisions about including/excluding these courses in the major and the number of units that might

be included need to be entered in the APER and in information on undergraduate requirements in the major.

6) University credit plus pay for independent study/directed research

- To receive University credit, the student must be involved in an independent research project; he/she must not be given credit for simply washing glassware or making solutions. However, there are no University guidelines that indicate that a student cannot receive salary or a stipend and also receive credit for the same independent study/directed research project. Some students receive scholarships/fellowships that require them to do research and other students will receive wages for the same experience. While giving students wages or scholarships and university credit seems like the student might be “double-dipping”, if the student does not receive University credit, the faculty member gets no teaching credit for having the student in the lab. The department or individual faculty members may set their own guidelines on this issue.