

Undergraduate Research Capstone
ESS 498 & ESS 499
Course Guidelines

Catalog Description:

The undergraduate capstone research project must be conducted over two semesters during the senior year.

Students select a capstone research advisor from the ATS – ESS faculty or other approved researchers and seek departmental approval prior to enrollment.

ESS 498

During this first of two semesters, students will identify an Earth system science problem and formulate their capstone research proposal under the direct supervision of their research advisor.

- 1 credit hour, graded S/U; must be followed by ESS 499 to complete the capstone research project.
- Taken in senior year and with departmental approval.

ESS 499

During this second of two semesters, students will undertake individual investigations into Earth system science problems under the direct supervision of their capstone advisor. Research is conducted and a thesis-style paper is written and orally presented. This course follows ESS 498 during which the research proposal is formulated.

- 2 credit hours, graded A-F.
- Pre requisite: Grade of S in ESS 498; proposal developed in ESS 498 must guide the research done in ESS 499; taken in senior year and with departmental approval.

Goals and Guidelines:

The Capstone course is meant to challenge the student to integrate his/her total ESS and university experience. Thus, it should include both written and oral presentations. To achieve the integration goal it is typically taken by seniors but also depends on research opportunities. It should essentially be a mini-thesis consisting of the following:

- a) During the first of the two semesters, the student formulates a well-defined topic into a written proposal with a statement of the problem, proposed method of attacking the problem, and key references. This proposal must be 8-10 pages in length double spaced with 1 inch margins and 12 pitch Times Roman Font (excluding figures, tables, references and appendix). This proposal must be approved by the supervising faculty member. In this proposal, the student is expected to

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have completed most of the literature survey and other pertinent information that could be included in the final paper. See website for example proposal. <http://nsstc.uah.edu/ess/docs/sample-ESS%20Capstone%20Proposal.pdf>

A PDF file of the proposal must be emailed to the advisor and the chair of the department two weeks before the start of final exams. (Email to chair@nsstc.uah.edu)

b) During the second of the two semesters, research is conducted and a “thesis-like” paper is developed. It should include the usual sections (Title, Author, Acknowledgements, Abstract, Introduction, Literature Survey, Data, Methods, Results, Discussion and Analysis, Conclusion, Future Work and References). The paper must be double spaced with 1 inch margins, 12 pitch Times Roman Font, and the total number of pages (including all aspects of paper) must not exceed 40. You can use the guidelines from the UAHuntsville graduate studies as a guide - <http://uah.edu/graduate/resources/thesis-manual>. A PDF file of the paper must be emailed to the advisor and the chair of the department two weeks prior to the oral presentation. (Email to chair@nsstc.uah.edu)

c) An oral presentation (defense) of the work should be presented to the public at least one week before the end of the semester in fall and spring. During summer semesters, the student must coordinate seminar with the advisor. The advisor should coordinate and promote the seminar through the ATS/NASA Brown Bag schedule as a special seminar. The advisor-approved title and a half page abstract must be provided to the Staff Assistant for announcement through the seminar email distribution list one week prior to the defense. The presentation should be 30 minutes with about 10 minutes for questions and discussion.

Other guidelines:

- 1) Advisors can use this opportunity to train graduate students in their group to mentor the undergraduate students who are conducting the capstone project.
- 2) The advisor must meet with the student on a bi-weekly basis to advise, mentor and guide the project.