

SOEST

School of Ocean & Earth Science & Technology

Undergraduate Thesis Policy & Guidelines



SOEST Student Academic Services

HIG 135

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SOEST Undergraduate Thesis Policy & Guidelines

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SYNOPSIS

The senior research thesis project is the culminating experience bridging classroom instruction with the research enterprise, and is typically afforded only through graduate education. Relatively few fields of study require a senior research project and thesis, but those which do provide students with a very important skill that can either be carried into the job market or utilized to advantage in any further academic undertakings (e.g., graduate education/research).

The undertaking of a senior thesis research project requires a significant level of effort on the part of the student. The thesis research is no small task and undertaking of this project should be taken very seriously. Efforts necessary for a successful project include not only carefully planning the project but also having the discipline to carry out the study in a timely fashion.

Global Environmental Science majors and students who are in the UHM Honors Program are **required** to successfully complete a senior thesis and to provide an oral presentation of their research. Majors in Atmospheric Sciences, Geology, and Geology & Geophysics may participate in a senior thesis as **an option** to advance and enhance their educational experience. The UHM Honors Program has additional and extensive thesis requirements that are separate that those from SOEST. All requirements from both SOEST and Honors must be met.

To understand the significance and commitment of a senior thesis, please view the Guide for Students. Approval to begin a research project toward a senior thesis requires at least two years of advanced planning. View the SOEST Approval Forms for details.

COURSES

SOEST Students may register for ATMO/GG/OCN 499 after the Pre-Approval Form has been submitted and accepted by the SOEST Student Academic Services Office.

ATMO/GG/OCN 499 can be repeated and the number of repeat times depend on the course description. If the course is repeated, any Writing Intensive (WI) designation offered can be counted only once.

ATMO/GG/OCN 499 is for active senior thesis research and writing only. Should an ATMO, Geology or GG student decide not to complete the thesis, the student must immediately withdraw from the course. Depending on when the withdrawal is made, a W-grade may be recorded.

WRITTEN THESIS

Style Guides:

- **ATMO:** <http://www.soest.hawaii.edu/MET/MET495GuidelinesandPolicy.pdf>
- **GES:** http://www.soest.hawaii.edu/oceanography/GES/STYLE_POLICY_MANUAL_2015.
- **GG:** http://www.soest.hawaii.edu/GG/resources/docs/GG_STYLE_POLICY_MANUAL.pdf

Submission Deadline:

SOEST undergraduates must **submit their final thesis by 4:00pm on the last day of instruction** of the semester to be considered for graduation in the same semester. If the thesis is not submitted by 4:00pm of the deadline, then the student must re-enroll for the following semester. Undergraduate senior theses are to be submitted to each degree program office for archiving.

Students who have applied for graduation may request up to four weeks from the last day of classes (not exam date or date of graduation) to complete their written thesis and to have their grades changed by their instructors. Request for Extensions are to be made in advance to the Director of SOEST Student Services and must be accompanied by a memo from the mentor with additional supporting documentation when applicable. If the thesis remains incomplete after the deadline, then the student must complete the thesis, re-apply for graduation and graduate in subsequent semester(s).

Submission Deadline for SOEST Students in UHM Honors Program

Student must request the following memos from Honors Program to Director of SOEST Student Academic Services Office:

- By the Friday after the Last Day of Instruction: Confirmation of Work in Progress (via Honors Mentor form).
- By the Monday after Graduation: Confirmation of Work Completed (via Honors Submitted Thesis form).

PRESENTATION

All SOEST students must present their research findings at a public forum on the UHM campus. Presentations may be hosted by a campus- or department-sponsored venue.

Presentation Deadlines:

- **GES Majors:** After the last day of classes. Check with GES program office.
- **ATMO Majors:** Before final exam week. Check with ATMO program advisor.
- **Geology & GG Majors:** Before final exam week. Check with GG program advisor.

SUMMARY

- Work on research project outline with mentor.
- Submit Pre-Approval Form.
- Begin research.
- Register for ATMO/GG/OCN 499 as part of research.
- Complete research.
- Register for ATMO/GG/OCN 499 (WI) as part of thesis writing.
- Complete thesis.
- Work on presentation outline with mentor.
- Schedule presentation.
- Submit Approval Form.

FORMS

Pre-Approval

Approval

Submit completed form to SOEST Student Academic Services (HIG 135)

COMPLETION FORM

Atmospheric Sciences

Geology & Geophysics

Global Environmental Sciences

COMPLETION OF PRESENTATION

STUDENT NAME: _____

PRESENTATION DATE: _____

PASS/FAIL: _____ If re-presenting, date; pass/fail: _____

COMPLETION OF THESIS

THESIS TITLE: _____

*We certify that this thesis, in our opinion, is satisfactory in scope and quality as a thesis for the
Bachelor of Arts/Science*
(select one)

in Atmospheric Sciences/Geology/Geology & Geophysics/Global Environmental Science.
(select one)

NAME & SIGNATURE OF MENTOR

DATE

NAME & SIGNATURE OF DEPARTMENT CHAIR

DATE

Original: Department's student file
Copy: Mentor
Copy: Student
Copy: SOEST Student Academic Services

For SOEST Student Academic Services Only:
Degree granted: _____ (semester/year)

GUIDE FOR STUDENTS

A Short Guide to Help SOEST Students Prepare for a Senior Research Project and Subsequent Writing of the Thesis

This short informational guide is designed to help students in SOEST to better understand and prepare for their senior research project and the subsequent writing of a thesis. In this document, we provide some concepts/guidelines that we hope will prove useful to students in understanding the basis for the senior research project requirement and what is necessary to carry out successfully such a project.

The senior research thesis project is the culminating experience bridging classroom instruction with the research enterprise, and is typically afforded only through graduate education. Relatively few fields of study require a senior research project and thesis, but those which do provide students with a very important skill that can either be carried into the job market or utilized to advantage in any further academic undertakings (e.g., graduate education/research).

The undertaking of a senior thesis research project requires a significant level of effort on the part of the student. The thesis research is no small task and undertaking of this project should be taken very seriously. Efforts necessary for a successful project include not only carefully planning the project but also having the discipline to carry out the study in a timely fashion.

Some important steps/questions/factors that will help students determine what and how to undertake a senior thesis research project include:

- When should you begin thinking about the senior thesis research project?
- How much time should you allocate to the execution of the project?
- How to pick an appropriate mentor?
- Availability of existing projects suitable for research.
- Identification of a problem of interest to you and evaluation of its relevance/importance to science (pragmatically, this will also include a determination of the suitability of the proposed project with respect to what you can reasonably expect to accomplish in the course of a “senior thesis” project).
- Evaluating the risk/reward ratio of the proposed research.
- Identifying sources of funding and applying for funding for the project.
- Scheduling of the time needed to design and carry out the project.

We cannot emphasize enough how important it is to begin to plan **EARLY** for this culminating experience in the degree program of study. It is strongly suggested that students begin thinking seriously about their senior thesis research project **EARLY in their junior year**. Because most students face substantial time constraints well into their senior year, we believe that the best approach to doing the senior thesis research is to plan on beginning the project during the summer between your junior and senior years. Those already in their senior year are, to some extent, already at a disadvantage in that much will need to be accomplished in a relatively short period of time. In order to meet the objectives of the senior thesis research, i.e., learn how to develop a research project that answers specific questions and test hypotheses (derived from either preliminary observations or from a literature search on a given topic), a series of (logical) steps should be followed.

These include:

- Determining who, among the faculty, is involved in research of interest to the student and who might be willing to serve as a mentor.
- Choosing a general area of interest that will eventually lead to a suitable project.
- Actually selecting the mentor (this is very important as, ideally, this person will not only serve as a mentor, but should also become a colleague).
- Developing an original project idea (with guidance and input from the mentor).
- Making preliminary (field) observations and/or running laboratory experiments that will provide data that can be used to define/refine the problem at hand.
- Preparing a short (1-2 page) prospectus describing the proposed research project (this must be approved by the mentor and department chair before undertaking the project).
- Developing a primary hypothesis statement (and possibly secondary hypotheses) based on the preliminary data available.
- Developing a null hypothesis (this is the hypothesis of equality)..
- Designing (laboratory, field, or theoretical) experiments that will allow testing of the hypothesis.
- Conducting experiments or making field observations (i.e., acquiring data).
- Evaluation of data (including determining their reliability, reproducibility, and how representative the data are of the system/problem at hand).
- Interpreting results.
- Writing the thesis.
- Presenting the thesis results in a public forum.
- Some other useful hints and possibilities that will help GES students optimize their schedules and maximize the benefits of their chosen research topic.
- Try to obtain a student research assistant position (job) in a laboratory or private company where you are interested in carrying out your senior thesis research.
- Try to do an “internship” with a City and County, State or Federal agency and select a “topic” of internship that is suitable for the senior research thesis project.
- Apply for financial assistance from the GES program to help defray the costs of the senior thesis research project if the research is not already funded (i.e., by grants to the mentor) and will otherwise cost you money in addition to time.

- Seek the advice of students who have gone before you.
- Interact closely and frequently with your mentor. Remember, he/she has been doing this for much longer than you and is experienced. This will include details on describing the research project, its results and their interpretation, as well as the significance and broader impacts of the findings of the project.

Timeline and Important Deadlines for the Senior Research and Thesis:

Initiation of discussions of research project: 1st semester of junior year.

Submission of research proposal to SOEST Student Academic Services:

1st semester of senior year.

Draft copies of thesis to mentor and department office:

At least 21 calendar days prior to last day of instruction.

Oral presentation of research results:

Before final exams by respective department offices.

Final copies of thesis to mentor and department offices:

By the last day of instruction.

GUIDE FOR FACULTY MENTORS

A Short Guide for Faculty serving as Advisors and Mentors to SOEST Students Preparing for a Senior Research Project

This document is designed to help facilitate faculty advising and mentoring of SOEST students preparing to undertake their “Senior Thesis Research.” Below we provide some concepts/guidelines to help understand what is expected in the senior research project and how faculty can facilitate the process and provide a nurturing learning environment for the student.

The senior research thesis project is the culminating experience for GES students and optional for ATMO, Geology and GG students. It bridges classroom instruction with the research enterprise, something often only afforded through graduate education. Relatively few fields of study require a senior research project and thesis, but those that do provide students with important skills they can carry into the job market or utilize to advantage in further academic undertakings (e.g., graduate education/research).

Planning and implementing a senior thesis research project requires a significant level of effort on the part of the student. In their efforts to identify suitable mentors and projects, SOEST students have been asked to follow the steps outlined above. You, as faculty advisors and potential mentors, can facilitate this task.

Many things that are second nature to seasoned researchers are not at all obvious to novice researchers. Please take a few minutes to review the above guide for students.

Although it is by no means a complete roadmap to research, we think it will help students get started. Students are kept VERY busy owing to our rigorous curriculum. Many students wait until late in their undergraduate career before thinking about a senior research project. Thus, if at all possible, we encourage you to begin to talk to your advisees about their senior research probably as early as their sophomore year. Although some students are not prepared academically for research at that time, others are, and, by the time they reach the junior year, most students can carry out significant research. You are encouraged to inform students that work (as a lab or field assistant) during their freshman or sophomore years will give them experience that will help them later in their own endeavors.

Whenever possible, we encourage you to make available opportunities for SOEST students to participate in research in your own program. A good way for faculty to advertise job opportunities and existing projects, from which SOEST senior thesis topics might derive, is to send out an email to all undergraduates and/or list job opportunities. You should describe in simple terms your research interests, list any upcoming cruises or other scheduled fieldwork and any assistance you might need. It is also important for students to know that they can be gainfully employed performing what might later become their research project.

It cannot emphasize enough to students how important it is for them to begin planning **EARLY** for their senior research project. Please advise students to begin thinking seriously about their senior thesis research project **EARLY during their junior year**. Because most students face substantial time constraints well into their senior year, we believe that a good approach is to plan on beginning their project during the summer between the junior and senior years. Students already in their senior year are, to some extent, at a disadvantage, as much needs to be accomplished in the relatively short period of time remaining.

Although all students need to learn eventually how to develop and execute a project on their own, the first step is to help them design a study that answers specific questions and tests hypotheses. However, there are other important steps they must first take. Your assistance can greatly facilitate this potentially daunting task and improve their overall experience.

Students will need to:

- Determine who is doing research of interest to them and is willing to be a mentor.
- Choose a general area of interest that can lead to a suitable project.
- Meet with various faculty individually and then select a mentor.
- Develop a project idea (with guidance from the mentor).
- Make preliminary observations to define the problem at hand, if necessary (this may not be necessary if the prospective mentor has some well-constrained needs of appropriate scope that are already identified).
- Prepare a short (1-2 pages) prospectus describing the proposed research. The prospectus must be approved by the mentor and department chair. After the initial steps have been completed, the rest of the project is no different than what you, as professional researchers, undertake in your own work. Yet, students at this stage are novices and need extra mentoring. Thus ensuring that you allow sufficient time to devote to mentor your student is often critical to their ultimate success. Keep in mind that students will also likely need assistance when they reach the writing stage of their project. This task will also require time from the mentor (discussions, reviews, etc.).