# Honors in Earth Systems

The Earth Systems honors program provides students with an opportunity to pursue individual interdisciplinary research. It consists of a year-long research project that is mentored by one or more Earth Systems-affiliated faculty members, and culminates in a written thesis.

To qualify for the honors program, students must have and maintain a minimum overall GPA of 3.4. Potential honors students are encouraged to complete the *EARTHSYS 111 Biology and Global Change* and *EARTHSYS 112 Human Society and Environmental Change* sequence by the end of the junior year. Qualified students can apply in Spring Quarter of the junior year, or the fourth quarter before graduation (check with program for specific application deadlines) by submitting a detailed research proposal and a brief statement of support from a faculty research adviser. Students who elect to do an honors thesis should begin planning no later than Winter Quarter of the junior year.

During your Senior year, enroll in 1-9 units of Earth Systems 199: Honors Program in Earth Systems with your thesis advisor's section (please contact Earth Systems if your advisor is not listed). These units can be split among quarters. Those 9 units may not substitute for any other required parts of the Earth Systems Curriculum.

All theses are evaluated for acceptance by the thesis faculty adviser and one additional faculty member, who is the second reader. Both the adviser and second reader must be members of the Academic Council. Acceptance into the Honors program is not a guarantee of graduating with the honors designation. The thesis must be accepted and approved by both readers and the Director of Earth Systems, and a minimum overall GPA of 3.4 must be maintained.

Honors students are required to present their research, preferably through the School of Earth, Energy, and Environmental Sciences' Annual Thesis Symposium. This symposium highlights undergraduate and graduate research in the school. Faculty advisers are encouraged to sponsor presentation of student research results at professional society meetings.

Further Questions? Contact:

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# A Guide for Honors in Earth Systems

Completing an honors project is an opportunity to deepen your learning by working closely with a faculty member to conduct independent research and write up that research into an honors thesis. Making the decision to take on an honors project is an important one, and you should carefully consider what you hope to learn in this process and whether or not you will be able to put in the time and dedication required for the project to be successful.

This is a guide developed to help you plan a successful honors project and stay on track to completing that project in a timely fashion. Please don't hesitate to seek help from your advisor and/or Earth Systems staff if you have questions, concerns, or run into any problems in the course of your research and writing.

**Winter Quarter, Junior Year:** Begin thinking about what kind of project you would like to conduct.
*Ask yourself*: What aspects of my education do I want to delve into more deeply? What kinds of questions do I want to answer? What kinds of data do I want to work with? What skills do I need to learn to effectively analyze that data? Do I want to do lab work? Do I want to travel and collect data in the field or would I prefer working closer to home?

Begin researching faculty interests and secure a faculty advisor for your project. This advisor should be someone who has research interests that align with yours and someone who will have the available time to meet with you regularly to discuss your work and read and provide comments on your thesis drafts. You should also work with your advisor to identify a second reader – this is a faculty member who will ultimately read and be tasked with approving your honors thesis. Stanford requires all honors theses to be read and approved by a second reader in addition to the advisor and the Department. Your second reader must be an Academic Council member and must be approved by your faculty advisor. The second reader's interests should be related to your thesis work, and you should also meet with this person regularly for advice and input on your work. It will be in your best interest to have your second reader provide comments and suggestions on a draft of your thesis before you submit the final version to them for approval.

Consider taking EARTH 100, Research Preparation for Undergraduates, offered in the Spring Quarter. This course is for undergraduates planning to conduct research during the summer with faculty in the School of Earth, Energy & Environmental Sciences.

**Spring Quarter, Junior Year:** Honors applications are due! Meet with your advisor to discuss your project and plan out your timeline for your application. Prepare your personal statement and obtain a letter of recommendation from your advisor. These letters of recommendation are very important in the application process – make sure your advisor will write a strong letter about your ability to complete the

project successfully, and express their support for mentoring you through the process.

Consider applying for financial support for your research through the School of Earth, Energy & Environmental Sciences, UAR, or other sources.

**Summer:** Begin background research for your project and start putting together your literature review. Begin data collection for your project and start preliminary analysis. Stay in contact with your advisor during this time.

*** Kevin Arrigo will meet with the honors cohort quarterly during Senior year, to review progress on theses.**

At the outset of your Senior year honors work, you should arrange to meet with your advisor regularly throughout the year (every 2 weeks or so) to discuss your project and review your timeline and progress. Keep these appointments! In your meetings, seek critical feedback on your methods, analysis questions, prior relevant research for your literature review, writing style, etc. You should honestly discuss any difficulties you are facing and seek advice for resolving them.

**Fall Quarter, Senior Year:** Enroll in 1-9 units of EARTHSYS 199: Honors Program in earth Systems with your thesis advisor's section during Senior year (please contact Earth Systems if your advisor is not listed). These units can be split among quarters.

Meet with your advisor early in the quarter to talk about your progress thus far and map out a plan for your work for the rest of the quarter. Begin data analysis and wrap up data collection.

Complete your literature review. You should now be able to write a draft of your introduction chapter, and start work on your methods chapter. Look at past honors theses (these are on file in Deana Fabbro-Johnston's office) and discuss with your advisor the format for your thesis. At the end of the quarter, give your advisor your draft introduction and methods chapters for review.

*Note*: You may also apply for the Earth Systems Honors Program during the Fall quarter of your senior year, but if you apply at this deadline you must have already started on a project and begun data collection and analysis over the summer.

**Winter Quarter, Senior Year:** At this point you should be well into analysis on your project with data collection complete and you should be starting to write up your results/data chapters. You should be meeting with your advisor regularly to discuss your progress. Incorporate advisor comments into your drafts and update as needed. At the end of the quarter, give your advisor your draft data chapters for review.

Make sure your second reader is available to read your draft thesis to provide comments and to approve your final thesis submission.

**Spring Quarter, Senior Year:** You should be in full writing/revising mode at this point with all of your analysis complete. Write your conclusions chapter. You should be iterating on drafts of your thesis chapters with your advisor, and you should send a final draft to your second reader for comments in the first half of the quarter. Turn in final copies of your thesis to your advisor and 2nd reader for acceptance and signatures, allowing time for formatting and printing.

**Thesis Deadlines: turn copies in to Anahid Babekian, anahids@stanford.edu: DUE FRIDAY, MAY 4, 2018**: Your honors/MS thesis is due to Kevin Arrigo for review on Friday, May 4, 2018- this is your final version, but not the bound/signed version. Your thesis advisor and second reader should have reviewed this before you submit it to Kevin.

**FINAL VERSION DUE FRIDAY, MAY 11, 2018:** The deadline for submitting your **final thesis to Earth Systems, printed/bound copy** which includes your advisor's and second reader's approval signatures. Kevin will sign off on your thesis after this final review.

Make enough thesis copies for Earth Systems, your advisor, 2nd reader, yourself, and any other collaborators.

Please note that if you do not meet these deadlines, it is possible that your thesis may not be approved in time for graduation.

*Please note: Receiving the Honors designation at graduation is dependent on you successfully completing your proposed research project and on your Honors thesis being approved by your faculty advisor, your second reader, and the Earth Systems Honors Committee. You must also maintain a minimum overall GPA of 3.4.*