

Engineering Sciences 91r Project Application Form

INSTRUCTIONS: Fill in all information in the Student section of this form and attach a detailed project description (minimum 250 words). Then, have your project adviser complete and sign the Faculty Instructor section of the form. Request instructor permission to enroll in ES91r through my.harvard, and submit the signed form via the Proposal Assignment in Canvas. If you are intending to use this course for concentration credit, the ADUS/DUS for your engineering area must approve the engineering content of your project. Instructor permission to enroll can only be granted after this completed application, including all required signatures, has been received by the ADUS/DUS on Canvas. This completed application form is due by the Course Registration Deadline of the semester you are enrolling. Late Adds will not be considered after the end of the first week of class.

SEMESTER (circle one): FALL SPRING YEAR: 20_____

STUDENT'S NAME: _____

STUDENT'S EMAIL: _____ PHONE: _____

CONCENTRATION/AREA OF ENGINEERING DEPTH: _____

PREVIOUSLY ENROLLED IN 91r? _____ DEPARTMENT/SEMESTER(S) _____

FACULTY INSTRUCTOR'S NAME: _____

FACULTY INSTRUCTOR'S EMAIL: _____ PHONE: _____

Additional information to be completed by the Student:

1. Attach a project proposal. On a separate sheet, attach a detailed description (minimum 250 words) of the nature of your project for this course. Additionally, provide an outline of the major milestones of the project and your intended weekly schedule for when you will work on the project for the course. These materials should be submitted via the proposal assignment on Canvas. **An ES91r project must possess engineering content at a level similar to other technical engineering courses at SEAS and include many, but not necessarily all, of the following elements: modeling, simulation, design, measurement, and data analysis. Additionally, you must provide the summative written deliverable described in #2 below.** This project proposal will be used to determine if the proposed scope of work is appropriate for academic credit. Please note: Significant deviation from the project elements listed above may result in forfeiture of concentration credit.

2. Summative written deliverable. As part of this course, you must submit a summative written work appropriate to the project via Canvas by the last day of Reading Period. Briefly describe, within your project proposal, the written deliverable you will submit for the course (e.g., a detailed report, a slide deck for a group meeting presentation, a draft of a journal article, a conference poster, etc...). The intended audience for this deliverable is the project advisor and research group. Discuss with your advisor the form of deliverable that will be most useful in their assessment of the project for the course. Your submission will be used to determine if the scope of work that was proposed is similar to the scope of work performed, and that the completed scope of work performed warrants engineering concentration credit.

3. Specify any additional required facilities/resources. If you will require additional facilities/resources that will be provided by anyone other than the Faculty Instructor, state the nature of the resource and obtain the consent of the person providing it in the space below or on an attached sheet. For example, if you are planning on using resources in the SEAS Teaching Labs, you must discuss this with the Assistant Dean for Teaching and Learning, Anas Chalah, and get his signature.

STUDENT'S SIGNATURE: _____ DATE: _____

This section to be completed by the Faculty Instructor.

An engineering student should have a SEAS ladder faculty member as the faculty instructor. If the faculty instructor is not a SEAS ladder faculty member, then a SEAS ladder faculty co-advisor is required, with exceptions granted by the DUS. A non-engineering student (including pre-concentrators) may only enroll with a SEAS ladder faculty member as the faculty instructor.

Your signature below certifies that you agree to advise the student on the described project and you will provide a grade for the course (see page 3), consistent with the attached project proposal and summative written deliverable described on page 1, to the Office of Academic Programs by the required deadline.

Your signature also certifies that you understand that the student is seeking credit for the scope of work detailed in the attached proposal. **To be eligible for academic credit, an ES91r project must possess engineering content at a level similar to other technical engineering courses at SEAS and include many, but not necessarily all, of the following elements: modeling, simulation, design, measurement, and data analysis.** Please note: Significant deviation from the project elements listed above may result in forfeiture of concentration credit. Please contact an Assistant Director or Director of Undergraduate Studies with any questions on this requirement. **Additionally, the student must provide a summative written deliverable** (e.g., a detailed report, a slide deck for a group meeting, a draft of a journal manuscript, a conference poster, etc...) by the end of Reading Period.

State your expectations for the project, including the support to be provided by you and your research group (e.g., expectations for the final written deliverable, frequency of meetings with student, participation in regular group meetings, limitations on availability of lab access, additional people directly supporting the project, etc.):

FACULTY INSTRUCTOR'S SIGNATURE: _____ DATE: _____

(If required) SEAS LADDER FACULTY CO-ADVISOR NAME: _____

(If required) SEAS LADDER FACULTY CO-ADVISOR SIGNATURE: _____

This section to be completed by the ADUS or DUS

Certification of Engineering Content for an ABET-accredited degree program (circle one):

The scope of work described in the **project proposal** for this course does / does not meet the ABET definition of an engineering topic, and will include an appropriate level of study in engineering sciences and/or engineering design to count as an engineering course for the concentration.

ADUS/DUS' SIGNATURE: _____ DATE: _____

This section to be completed by the ADUS or DUS (upon submission of the summative report)

In order to count for concentration credit, the scope of work described in the **summative report** must meet the ABET definition of an engineering topic and include an appropriate level of study in engineering sciences and/or engineering design. Based on the scope of completed work described in the summative report, this course will / will not count as an engineering course for the concentration.

ADUS/DUS' SIGNATURE: _____ DATE: _____

SEAS Grading Guidelines for ES 91r Supervised Reading and Research

The faculty instructor is required to evaluate the student's work and submit a grade to the SEAS Office of Academic Programs (OAP) at the end of the semester. The OAP will email each faculty instructor to request the ES91r grade and a brief justification be submitted by the grading due date (which is typically near the beginning of finals period). This document is intended to help establish shared expectations for the grading decision.

The standard of work expected for a 91r project is equivalent to that of any other upper-level undergraduate engineering course at Harvard. This means that the student is typically expected to work on academic activities related to the project (e.g., reading, preparation, time in the lab, etc.) for 10-12 hours per week during the scheduled teaching weeks of the semester. The 91r project must possess content at a level similar to other technical engineering courses in SEAS and include many, but not necessarily all, of the following elements: modeling, simulation, design, measurement, and data analysis. Because this project is a semester-long experience, it is expected that the student will go beyond what is typically expected in a final project or term paper (which generally represents only a portion of the overall content in a course). At the same time, it is important to recognize that this may be a student's first experience with research or engineering design, and they should not be expected to show the same level of productivity as a graduate student researcher would over the same time period (i.e., unlike research toward a doctoral dissertation, this project has not been evaluated and revised multiple times, nor was it executed on an open-ended time scale). Thus, the final result of the project is not as important as the intellectual process undertaken, knowledge acquired, and skills applied by the student.

All students must submit a final report (which can also be in the form of a draft journal manuscript, conference poster, or presentation slide deck) by the last day of Reading Period, and the faculty instructor is encouraged to take advantage of this document in the grading assessment. For the final assignment of a grade in the course, the faculty instructor should follow the grading system established by FAS for the evaluation of undergraduate student work, as noted below (from <https://handbook.college.harvard.edu/>):

Letter Grades:

- **A, A-** Earned by work whose excellent quality indicates a full mastery of the subject and, in the case of the grade of A, is of extraordinary distinction.
- **B+, B, B-** Earned by work that indicates a good comprehension of the course material, a good command of the skills needed to work with the course material, and the student's full engagement with the course requirements and activities.
- **C+, C, C-** Earned by work that indicates an adequate and satisfactory comprehension of the course material and the skills needed to work with the course material and that indicates the student has met the basic requirements for completing assigned work and participating in class activities.
- **D+, D, D-** Earned by work that is unsatisfactory but that indicates some minimal command of the course materials and some minimal participation in class activities that is worthy of course credit toward the degree.
- **E** Earned by work which is unsatisfactory and unworthy of course credit towards the degree.

Non-Letter Grades:

- **PA/FL** The grade of Pass represents letter grades of A to D-; the grade of Fail represents the letter grade of E.