

## **SIE 493 Internship Guidelines**

### **Systems & Industrial Engineering Department**

Juniors and seniors who intern with private or public employers outside the University to work on substantially technical projects related to their academic work are eligible for internship credits through SIE 493 (Internship). A maximum of 3 units of SIE 493 may be applied toward 1) technical elective requirements in curricula leading to a Bachelor of Science (BS) in Industrial Engineering, 2) thematic minor requirements in curricula leading to a BS in Systems Engineering, or 3) thematic minor requirements in curricula leading to a BS in Engineering Management. Academic credit will only be awarded for SIE 493 if students submit a formal application, per the guidelines outlined below, prior to the start of the internship.

#### **Requirements:**

- 1) The student must prepare a formal internship proposal that identifies the engineering problem to be solved, SIE course material/techniques to be used, and role on a project team (These are the learning objectives that must be achieved).
- 2) The period of internship must coincide with the semester in which SIE 493 is taken for credit. UA policy prohibits the award of internship credit retroactively (i.e. for work performed in the past). If the internship is performed in the summer, students must enroll in the course in the summer and pay all registration costs and associated fees.
- 3) The student must identify an SIE Faculty member to serve as the SIE faculty advisor and get the faculty's permission: A student needs to get permission by email from the faculty saying that he or she (the faculty) is willing to be the student's SIE 493 advisor before the student registers SIE 493 under that faculty's name.
- 4) Each unit of internship credit requires a **minimum of 45 hours of work** during the semester in which the student receives credit.
- 5) An official letter (on company letterhead) is required from a company representative (preferably the supervisor of the intern) confirming the hiring of the student as an intern. If the letter is not from the supervisor of the intern, it must name the supervisor. Specifically, the letter must state:
  1. The period of internship (begin and end dates, the interval of which must coincide or overlap with the semester in which the intern will enroll in the course);
  2. The number of hours the intern will work (total or per week; 45 hrs of work required per semester for each unit);

3. A brief summary of the projects on which the intern will work (a few sentences will suffice). The projects must be technical in nature and must produce work that can be documented in a technical report.

The student needs to select an SIE faculty advisor, and the letter needs to be sent to the SIE faculty advisor. The student will be enrolled in SIE 493 by SIE staff upon approval of the proposed internship by the SIE faculty advisor and SIE undergraduate committee. A sample letter is provided below.

6) Monthly status reports documenting the student's progress shall be provided to the SIE faculty advisor.

7) A professional technical report (approximately 10 pages but can be longer depending on the materials submitted) is required at the end of each internship. The report must include evidence of the student's work during his/her internship. Consequently, the student must keep materials that provide this evidence (e.g. drawings, charts, sketches, spreadsheets, code, photographs, calculations, screenshots, etc.) Students may want their employers or supervisors to screen these materials before they put them in their report to avoid the disclosure of any proprietary or ITAR information. The report must also address how the academic training of the student helped him/her in his/her internship (including mention of specific courses that were particularly useful) and how the student perceives the internship enhancing his/her academic training. The report must be submitted to the faculty advisor before then end of the semester (period) when grades are required to be submitted.

8) At the end of the internship the student's supervisor shall provide a letter or an email to the SIE faculty advisor evaluating student performance. **All of these material (The professional technical report AND the company letter as described above should be submitted to the faculty advisor at least one week before the end of the semester.** For example, if a student takes the internship course in a summer semester, then he or she has to submit all of required material mentioned above at least one week before the end of the summer semester.

9) Students can receive up to 3 units of technical elective, if approved, through the internship, but can't receive technical elective credit for SIE 493 and SIE 498A/B (Senior Design – Internship). The use of SIE 498A/B in place of ENGR 498A/B must be approved by the undergraduate committee before a student will be allowed to register.

### **Learning Outcomes:**

There are three primary learning outcomes for SIE 493. The students should demonstrate the following over the course of the internship:

1. ability to identify, formulate, and solve engineering problems
2. ability to use techniques, skills, and modern engineering tools necessary for engineering practice
3. ability to function on multidisciplinary teams

The grades assigned for this course are S (superior), P (pass), and F (Fail) which do not count toward the student's GPA. The grade will be assigned by the faculty advisor upon receiving a satisfactory report. The report may be returned for improvements and revisions. An incomplete grade will be assigned until a satisfactory report is submitted. The rubric for the course is shown below.

## **SIE 493 Internship Syllabus**

Instructor: Faculty advisor approval

Office: TBA

Phone: Depends on faculty

Email: See sie.arizona.edu

Office Hours: TBD

### **COURSE DESCRIPTION**

Juniors and seniors who intern with private or public employers outside the University to work on substantially technical projects related to their academic work are eligible for internship credits through SIE 493 (Internship). A maximum of 3 units of SIE 493 may be applied toward 10) technical elective requirements in curricula leading to a Bachelor of Science (BS) in Industrial Engineering, 2) thematic minor requirements in curricula leading to a BS in Systems Engineering, or 3) thematic minor requirements in curricula leading to a BS in Engineering Management.

### **INSTRUCTIONAL OBJECTIVES**

There are three primary learning outcomes for SIE 493. The students should demonstrate the following over the course of the internship:

1. ability to identify, formulate, and solve engineering problems
2. ability to use techniques, skills, and modern engineering tools necessary for engineering practice
3. ability to function on multidisciplinary teams.

### **TEXTBOOK**

There is not a required textbook for this course. The primary reference is:

International Council on Systems Engineering (2015). *Systems Engineering Handbook 4<sup>th</sup> Ed.*  
Hoboken, NJ: John Wiley & Sons Inc.

ISBN: 9781118999400

### **PREREQUISITES**

Advanced Standing

Faculty Advisor approval

## **COURSE REQUIREMENTS**

A professional technical report (approximately 10 pages but can be longer depending on the materials submitted) and a formal presentation are required at the end of each internship. The report must include evidence of the student's work during the internship. Consequently, the student must keep materials that provide this evidence (e.g. drawings, charts, sketches, spreadsheets, code, photographs, calculations, screenshots, etc.) Students may want their employers or supervisors to screen these materials before they put them in their report to avoid the disclosure of any proprietary information. The report must also address how the academic training of the student helped in the internship (including mention of specific courses that were particularly useful) and how the student perceives the internship enhancing their academic preparation.

## **COURSE EVALUATION**

The grades assigned for this course are S (superior), P (pass), and F (Fail) which do not count toward the student's GPA. The grade will be assigned by the faculty advisor upon receiving a satisfactory report. The report may be returned for improvements and revisions. An incomplete grade will be assigned until a satisfactory report is submitted.

## **COURSE ACTIVITIES SCHEDULE**

Usually the student's faculty advisor is the instructor of record for SIE 493, Systems Engineering Internship for Academic Credit. At the beginning of the semester/internship, students should meet with their instructor of record to establish clear guidance on deliverables, expectations, and time lines.

## **ABSENCE AND CLASS PARTICIPATION POLICY**

Students work towards course deliverables on time lines developed in consultation with the faculty advisor, and internship provider.

Required University Policy Statements are below:

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/2015-16/policies/classatten.htm>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <http://uhap.web.arizona.edu/policy/appointed-personnel/7.04.02>

## **CLASSROOM BEHAVIOR POLICY**

Systems Engineering Internship for Academic Credit is intended to allow students to experience the professional engineering work environment in an academic context; as such, behavior and personal conduct commensurate with expectations in the professional engineering work environment are expected of students at all times.

Required University Policy Statement below:

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (i.e. texting, chatting, reading a newspaper, making phone calls, web surfing, etc.). Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

## **THREATENING BEHAVIOR POLICY**

Systems Engineering Internship for Academic Credit is intended to allow students to experience the professional engineering work environment in an academic context; as such, behavior and personal conduct commensurate with expectations in the professional engineering work environment are expected of students at all times.

Required University Policy Statement below:

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to one's self. See:

<http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

## **ACCESSIBILITY AND ACCOMMODATIONS**

Our goal in this course is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations. For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu/>.

If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

### **CODE OF ACADEMIC INTEGRITY**

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See:

<http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

### **UA NONDISCRIMINATION AND ANTI-HARASSMENT POLICY**

The University is committed to creating and maintaining an environment free of discrimination, <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

### **ELECTIVE NAME AND PRONOUN USAGE**

This course supports elective gender pronoun use and self-identification. As the course includes group work and discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect.

### **SUBJECT TO CHANGE STATEMENT**

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.