

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.
- 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:
 - a) 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);
 - b) The number of hours the intern will work (total or per week; 45 hrs of work required per semester for each unit);
 - c) 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.This 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.
- 9) Students can receive up to 3 units of technical elective, if approved, through the internship.

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).

Grading Rubric for SIE 493

Criteria	Level 4 Excellent	Level 3 Good	Level 2 Acceptable	Level 1 Not Acceptable
Internship Plan prior to start of semester	Student and Employer develop a plan that addresses all criteria	Student and Employer develop a plan that addresses most criteria	Student and Employer develop a plan that addresses some criteria	Student and Employer develop a plan that addresses few or none of the criteria
Monthly Progress Reports	Student provided monthly progress reports that detail activities per criteria	Student progress reports summarize activities per criteria	Student progress reports indicate involvement, but not engineering activities	Student does not provide progress reports or activities are not engineering related
Engineering Skills Used in Internship Project	Student uses specific skills from several engineering courses	Student uses critical thinking and some engineering course skills	Student uses critical thinking, but no skills acquired in classes	Student not involved in engineering activities and no course skills used
Engineering Ethics Addressed	Student engages in engineering ethics issues and provides documentation	Student describes an engineering ethical issue, but not involved	Student aware of engineering ethical issues in the internship, but no involvement	Student unaware and not involved in any engineering ethics
Team Activities	Student active in an engineering team, perhaps leading meetings or activities	Student is involved in an engineering team	Student participates in engineering team activities, but not involved	No team activities or involvement
Communication Requirements	Student develops presentations, reports, letters, etc.	Student involved in development of formal documentation	Student required to provide some level of documentation, but not formal	No documentation required
Evaluation from Employer	Employer considers student a valuable team member	Employer satisfied with student performance	Employer feels student was acceptable, but desired better performance	Employer not satisfied with student performance
SCORE	24 or more	18 or more	12 or more	Less than 12
GRADE	Superior (S)	Pass (P)		Fail (F)

Example Company Letter

Position Title:	Position
Department:	Name
Business reporting unit	Company Name
Intern Name:	Student Name
Period of performance:	Date - Date
Hours per week:	xx hours (roughly)

Position Description (Example):

Primarily responsible for enhancing engineering classroom studies with real world, xxx engineering and in-field experience.

Position-Related Responsibilities (Example):

- Creates and assists with xxx.
- Performs or aids in testing of modules and systems.
- Works outside in the installation, testing, and repair of systems.
- Assists in the creation of technical specifications for internal and third party use.
- Analyzes data and prepares reports.
- Assists Program Managers and Project Engineers with project reporting.
- Adheres to all health and safety rules and procedures.
- Performs other duties as assigned.

Knowledge, Skills and Abilities Required (Example):

- Pursuing a degree in Engineering.
- Highly motivated with a proven ability to work independently as well as in a team environment.
- Willingness to work outside in a hands-on capacity.
- Desire to learn about xxx technology and the xxx industry.
- Excellent written and oral communication skills a must.
- Intimate with MS Excel and PowerPoint, Matlab and Labview helpful.

All employees are expected and required to adhere to the Company Code of Ethics and Principles of Conduct.

Supervisor: **Sally Manager**
Title
Company Name
Address
Tucson, AZ xxxxx
xxx-xxx-xxxx (Cell)
xxx-xxx-xxxx (Fax)

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 4th 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.