



CE334 Structural Design in Steel

C E Room: 201, Tu Th 8:00 - 9:15 AM

Spring 2018

Description of Course

(3 units) Design of steel members, connections and simple structures, introduction to load and resistance factor design concept, including tension members, laterally supported and unsupported beams, columns, bolted and welded connections.

Course Prerequisites or Co-requisites

C E 333, Advanced Standing.

Instructor and Contact Information

Instructor: Achintya Haldar

Office: 220E, CE Bldg.

Phone: 621-2142

Email: haldar@u.arizona.edu

Office Hours/ "Open Door Policy"

Instructor home page – haldar.faculty.arizona.edu

Course Format and Teaching Methods

Lecture only, in-class discussions with handouts.

Course Objectives and Expected Learning Outcomes

Course Objectives: As a technical elective in both the structural and general civil engineering mini-options, the overall objective of this course is meant to introduce the design concepts using structural steel. Specific objective includes the ability to design simple steel structural elements.

ABET outcomes:

An ABET Course Classification Form is attached. For further information see

http://assessment.arizona.edu/academic_degree_programs)

Load and Resistance Factor Design concept

Tension member design

Welded connections

Bolted connections

Built-up members

Compression member design

Euler equations

Design equations

Effective length factors

Built-up members

Lacing system design

Beams

Laterally supported beams

Bending, shear, and deflection

Compactness criteria

Design equations

Lateral torsional buckling

Beam-Column design

Preliminary discussion

Design of connections

Bolted

Welded

Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

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: <https://deanofstudents.arizona.edu/absences>

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Students who miss class due to illness or emergency are required to bring documentation from their health-care provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

Course Communications

Students will be communicated by emails in most cases.

Required Texts or Readings

Textbook: (1) Manual of Steel Construction, AISC, LRFD (15th Ed.) (**Required**) (Please follow the attached instructions. You will receive the manual from AISC in about 5 business days). It will cost you \$135 and not \$400, if you follow the instructions. You must bring the manual in class every day.

(2) Steel Structures Design and Behavior by Salmon and Johnson (4th Ed.) (**Optional**)

Required or Special Materials

Must bring the Manual every day.

Required Extracurricular Activities (if any)

None.

Assignments and Examinations: Schedule/Due Dates

Weekly homework	10%
2- One Hour Exams	45%
1- Final Exam	40%
Attendance	5%

100%

Final Examination or Project

The date and time of the final exam or project, along with links to the Final Exam Regulations, <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule, <http://www.registrar.arizona.edu/schedules/finals.htm>

May 10, 2018 (Thursday) 8:00 to 10:00 am

Grading Scale and Policies

University policy regarding grades and grading systems is available at <http://catalog.arizona.edu/policy/grades-and-grading-system>

Late HWs without proper justification will not be accepted.

Composite grades will be calculated using the weight factors mentioned earlier. Students will then be grouped in to several sub-groups for the overall grading purpose.

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively.

Dispute of Grade Policy: Contact me immediately if you have any question or comment on the grade you receive following an exam.

Scheduled Topics/Activities

HWs will be due in one week period. Two Hour Exam dates will be announced at least 2 weeks in advanced.

Classroom Behavior Policy

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 (e.g., 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.

Some learning styles are best served by using personal electronics, such as laptops and iPads. These devices can be distracting to other learners. Therefore, students who prefer to use electronic devices for note-taking during lecture should use one side of the classroom.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

Our goal in this classroom 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 the Disability Resource Center (520-

621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center 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>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://www.library.arizona.edu/help/tutorials/plagiarism/index.html>.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-harassment Policy

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

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Additional Resources for Students

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

Student Assistance and Advocacy information is available at

<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

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.

ABET 2016 Criteria Course Classification Form

Course Number CE 334 Course Name Structural Design in Steel
 Required? Circle: YES / NO Semester/Instructor Spring 2018/Haldar
 Homework Frequency? weekly Exam Frequency? Two (2) midterms & one (1) final
 Course Project? Circle: YES / NO Labs or Case Studies? Circle: YES / NO

For each of the following ABET outcome criteria, please list the level (**High, Medium, Low**, or blank if not applicable) contained in this course. The criteria descriptions that will be used by the College in the ABET evaluation are attached. Please describe the relevant course activities that you can use to justify why you think your course meets the criteria. **No course is expected to address all of these criteria and it would be rare to have more than 2 or 3 criteria at a high level (except a capstone course)** Be conservative in your judgment. For the ABET evaluation, we will assess student performance for criteria that are judged High. If you judge your course as High in a criteria, then the course should include a large percentage of effort (class time, homework, projects) devoted to the criteria. Note that 2 extra table entries are available for departments to specify their own criteria.

Outcome criteria	Level H M L	Relevant Activities
A. Apply mathematics, science and engineering principles	L	Structural analysis knowledge obtained in CE 333 is used to design simple structural elements.
B. Ability to design and conduct experiments and interpret data		
C. Ability to design a system, component, or process to meet desired needs	H	Design of simple structural elements and connections using AISC's LRFD design manual
D. Ability to function on multidisciplinary teams		No teamwork is necessary.
E. Ability to identify, formulate, and solve engineering problems	H	Actual structural engineering problems are formulated and designed.
F. Understanding of professional and ethical responsibility		
G. Ability to communicate effectively		
H. The broad education necessary to understand the impact of engineering solutions in a global context		
I. Recognition of the need for and an ability to engage in life-long learning		
J. Knowledge of contemporary issues		
K. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice		
L. Pass the FE exam as the first step towards professional registration.	H	The course contents relate directly to the design of steel structures that is covered in the afternoon section of the FE exam
M. Be proficient in the major areas of civil engineering	H	Analysis and design of steel structural elements