



Design of steel structures I Spring 2019

COURSE DESCRIPTION:

The course emphasizes a theoretical understanding of fundamental concepts in analysis and design of steel structures. The focus of the course is building structures but other structures in the built environment will be addressed as time permits.

COURSE STAFF:

Instructor: Dr. Siamak Epackachi

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E-mail: epackachis@aut.ac.ir

Office hours: Tuesday 15:00-16:00

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CLASS SCHEDULE:

Lecture: Tue/Thu 07:45-09:15 AM

REFERENCES:

- Iranian National Building Code, Part 10: Design and construction of steel structures, 1392.
- AISC. 2016. "Specification for structural steel buildings", ANSI/AISC 360-16, and Commentary, American Institute of Steel Construction, Chicago, IL.
- AISC. 2016. "Seismic Provisions for Structural Steel Buildings Standard", ANSI/AISC 341-16, American Institute of Steel Construction, Chicago, IL.
- Steel Construction Manual "American Institute of Steel Construction." Inc., 15th Edition (2017).
- AISC Design example – Ver 15
- Segui, W. (2012). Steel design. Fifth edition, Cengage Learning

GRADING:

Assignments	20%
Mid-term exam	30%
Final exam	40%
Project	10%

- Attendance at all lectures and recitations, and active participation is expected. The instructor regularly brings up questions and discussions during lecture time. Students are encouraged to volunteer in answering questions and participate in discussions.
- *Sustained effort starting today:* Come to class and recitations regularly. Pay attention in class without distractions through smartphones etc. Bring a scientific calculator and follow along with calculations in class.



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- For the assignments, although students may consult with classmates, it is expected that solutions that are submitted, reflect the individual work of students.
- Every week, problem(s) will be assigned during the recitation. You must attempt to solve the problem(s). During recitation, the instructor will show in detail how to solve the problem(s), and help you reach the correct answer. The problem(s) will be collected at the end of recitation for extra credit. You will get 5 bonus points towards your HW grade for solving problems during each recitations. Attendance is not mandatory but it is strongly recommended as it will help you succeed in the course.
- A significant part of engineering is written communication of laboratory work and analysis/design proposals. Heavy emphasis will be placed on clarity, organization and readability of your work. (a) All assignments must be submitted with no more than one problem per page. (b) Write your name, course and homework number on a cover sheet. (c) Staple pages together. (d) A clear and well-labeled **drawing** or **free body diagram** as appropriate *must* be presented with every problem. (e) Always use **units** everywhere in your work – a number without units makes no sense in engineering. (f) Show each step of the problem and clearly explain the logic being used. (g) Clearly box all final answers.

Course Outlines:

- Introduction to steel material
- Design methods and load combinations
- Section properties
- Tension members
- Compression members
- Flexural members with lateral bracing
- Connections: welded and bolted