Department of Civil Engineering

Course Name:

Loading of Structures

Course Number: 20-028	**Credit:** 3
Program: Undergraduate	**Course Type:** Technical elective
Prerequisite: Structural Analysis I	**Corequisite:** -

Course Description (Objectives):

In this course students learn the principles and engineering methods of determining the forces acting on the civil structures. It is the first and the most important step towards analyzing and designing of structures. Due to the nature of the loads and the complexity associated with their determination, experimental measurements and analytical methods are used and corresponding results are compiled in the loading Standards. Accordingly, calculating the actions on the structures caused by the gravitational force, thermal effect, impact, wind, snow, earthquake, blast and implementation of these actions on the analytical models of the structures based on the Standard provisions is the main concern of this course.

Course Content (outline):

1. Loading Standards, Principles of Loading and Corresponding Probabilistic Bases
2. Dead Loads
3. Live Loads
4. Soil Loads and Hydrostatic Pressure
5. Snow Loads
6. Wind Loads
7. Seismic Loads
8. Flood Loads
9. Rain Loads
10. Ice Loads
11. Blast loads
12. Combinations of Loads and Computer-based Modeling

References:

1. INBC-Part 6. (2020). Loads on the buildings. Iranian National Building Code.
2. BHRC- Standard No. 2800. (2014). Iranian Code of Practice for Seismic Resistant Design of Buildings, 4th Edition. Building and Housing Research Center.
3. ASCE/SEI 7-22. (2022). Minimum design loads and associated criteria for buildings and other structures. American Society of Civil Engineers.
4. Charney, F. A., Heausler, T. F., & Marshall, J. D. (2020, April). Seismic Loads: Guide to the Seismic Load Provisions of ASCE 7-16. American Society of Civil Engineers.
5. Mehta, K. C., & Coulbourne, W. L. (2013, June). Wind Loads: Guide to the Wind Load Provisions of ASCE 7-10. American Society of Civil Engineers.
6. O'Rourke, M (2017). Snow Loads: Guide to the Snow Load Provisions of ASCE 7-16. American Society of Civil Engineers.