**Course name:** BUILDING STRUCTURES
**Course code:** CE 261
**Course hours:** Credit hours 2, Contact hours 3
**Course Pre-requisites:** MATH 299

## Course Description

Types of structures, supports and loads. Idealization of structures and loads. Geometric stability and determinacy. Analysis of determinate trusses, beams, plane frames and arches; reaction computation; axial force, shear force and bending moment diagrams. Internal force releases. Load-shear-moment relationship. Differential equation of elastic curve. Deflections by integration, moment-area, conjugate-beam and virtual work methods. Influence lines of determinate structures.

## Course Main Objective

In this course, the students will be to:

- Develop an understanding of the principles of stability and equilibrium of different types of structures.
- Understand how to solve equilibrium problems involving trusses, beams, frames and arches.
- Be able to determine internal forces in members of trusses. Be able to draw shear force and bending moment diagrams for beams and frames.
- Be able to calculate the displacements in different structures.
- Understand the concept of moving loads and influence lines.

## Course Learning Outcomes

After the completion of this course, the students will be able to;

- A knowledge of stability and equilibrium of different types of structures and an ability to apply them.
- An understanding of how to calculate the reactions of different structures.
- An ability to use method of joints and method of sections to solve truss problems.
- An ability to analyze and draw shear force and bending moment diagrams of determinate beams.
- An ability to draw normal force, shear force and bending moment diagrams of frames and analyze arches.
- An ability to use different methods to calculate deflections for determinate structures.
- An ability to draw influence lines for internal forces in different structures.

## Course evaluation

- Quizzes, practical assignments
- Weekly/biweekly reviews
- Midterm examination
- Attendance
- Final examination

## Course recommended books

- R. C. Hibbeler, Structural Analysis, 6th Edition, Pearson Prentice Hall, 2006.

## Course References

- Illustrated lectures and a scientific material prepared according to the PowerPoint program.