



---

**Course description:**

This course provides a comprehensive overview of different building systems, components and various materials used in construction. The course introduces the building construction process, with a focus on construction techniques.

**Aims of the course:**

1. This course is intended to provide civil engineering students with the basics of building science as applied to the materials and systems of buildings.
2. To provide civil engineering students with a useful knowledge of the different construction materials and their properties. It covers a large variety of materials from foundations to roof systems.
3. To introduce civil engineering students to the different structural components and systems.
4. To introduce civil engineering students to the different techniques on building construction.

**Intended Learning Outcomes (ILOs):**

Successful completion of this course should lead to the following learning outcomes and the students will be able to:

1. Explain the meaning of a building, system, and identify the different systems of a building, their elements and the function of each one.
2. State the items of work needed before the construction work begins on site and when the major constructions starts.
3. Classify the types of loads on a building, their causes and effects.
4. Obtain a good knowledge in soil classifications, excavation and groundwork.
5. Identify the different types of foundations.
6. Describe and list the various steps and stages of the concrete pouring and finishing.
7. Obtain a good knowledge in the alternative techniques of conventional concrete.
8. Identify the strength of concrete and steel reinforcement in order to understand the relation and interaction between them and the concept of reinforcing.
9. Define and explain the terms of column, beam, and slabs, their structural functions and their reinforcement.
10. Identify the different types of one-way and two-way slab systems.
11. Understand the fundamentals of stair construction.
12. Describe the units and materials of masonry and stone works.
13. Obtain a good knowledge in finish works and describe the types and details of flooring, plastering and painting.

14. The student has the fundamental skills in oral and written communication as required to effectively communicate in the construction industry

**Course structures:**

Week	C. Hrs	ILOs	Topics	Teaching Procedure	Assessment methods
1-2	6	1, 2,3	<b>Introduction to Buildings:</b> Building site and environment, building systems, basic structural elements and loads on buildings.	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions.
3-4	6	4, 5,14	<b>Ground Work and Foundation Systems:</b> Function of foundations, essential requirement of good foundation, different types of shallow and deep foundations.	-Lecture notes presented through slide projector -Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions.
5-6	6	6,7	<b>Concrete and Reinforcement as a Structural Materials:</b> Ingredients of concrete, making placing and finishing concrete, alternatives to conventional concrete, steel reinforcement.	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions, students are required to make presentations in several topics, 1 <sup>st</sup> Exam
7-8	6	8	<b>Concrete Construction:</b> The concept of reinforcing of concrete and principles, splices and hooks in bars, corrosion protection of steel reinforcement.	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions, students are required to make presentations in several topics.
9-11	9	9,10,14	<b>Site Cast Concrete Framing Systems:</b> Reinforcement and formwork for columns, reinforcement and formwork for walls, types of concrete slabs, one-way and two-way flooring and roofing	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the	Regularly asking questions, students are required to make presentations in several topics,



			systems, hollow block slabs, calculating the dead and live loads imposed on slabs.	construction theory, and technology inherent in construction	2 <sup>nd</sup> Exam
12	3	11	<b>Stairs:</b> Stair fundamentals, technical terms, requirements of good stair, dimension of steps, classification.	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions, students are required to make presentations in several topics.
13	3	12,14	<b>Stone and Concrete Masonry:</b> Concrete masonry units, mortar, grout, natural stone, stone masonry walls.	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions, students are required to make presentations in several topics.
14-15	6	13,14	<b>Finish Works for Floors, Walls and Ceilings:</b> Components of a floor, selection of flooring materials, ceramic, mosaic, marble and terrazzo flooring, plaster, gypsum board and painting.	- Lecture notes presented through slide projector - Using photographs, detailed drawings and videos to convey the construction theory, and technology inherent in construction	Regularly asking questions, students are required to make presentations in several topics, Final Exam

#### References:

“Fundamentals of Building Construction: Materials and Methods” by E. Allen and J. Iano, 6<sup>th</sup> edition, Wiley, 2014.

“Building Construction Illustrated” by F. Ching, 5<sup>th</sup> Edition, Wiley, 2014.

#### Assessment Methods:

Methods	Grade	Date
Team Project (Report and Presentation)	10	Bi-weekly
1 <sup>st</sup> Exam	20	8/4/2017
2 <sup>nd</sup> Exam	20	8/5/2017
Final Exam	50	TBD

