



<b>Course Code</b> CVEE-110	<b>Course Title</b> Structural Design	<b>ECTS Credits</b> 6
<b>Department</b> Electrical & Computer Engineering	<b>Semester</b> Fall, Spring	<b>Prerequisites</b>
<b>Type of Course</b> Required	<b>Field</b> Civil & Environmental Engineering	<b>Language of Instruction</b> English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Year of Study</b> 1 <sup>st</sup>	<b>Lecturer(s)</b> Dr Antonia Sophocleous-Lemonari
<b>Mode of Delivery</b> Face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> None

### Objectives of the Course:

The main objectives of the course are to:

- Give an overview of trends and futures in computer-aided design which is used in modern civil engineering applications.
- Provide the hands-on practice of computer-aided design and drafting and use CAD software as a design tool in structural design.
- Develop drawing techniques to both improve students' visual communication skills (by using CAD tools) and procedures that directly apply to architectural engineering and structural design.
- Introduce visual thinking and to improve student's ability to visualize 3D geometrical constructions.
- To introduce students to Building Information Modeling
- Enhance the structural engineering-architectural relationship and collaboration towards the treatment of the building form.
- To introduce interdisciplinary design approach for structures and civil engineering projects.
- Encourage students to incorporate these computer-based design tools in subsequent structural courses.
- Establish an understanding of structures in an architectural context.

### Learning Outcomes:

After completion of the course students are expected to:

- Understand the basic principles of computer aided design.
- Develop understanding and capability in representation and communication of engineering information in order to establish civil engineering projects.
- Gain a design experience using drawing tools and techniques and understand the

structural form.

- Develop an ability to produce drawings that are creative and visually correct.
- Create designs that satisfy technical and aesthetical requirements.
- Apply the basic engineering drawing conventions: layouts of drawings, different line-styles, dimensioning, and appropriate use of notes and labels.

#### **Course Contents:**

- Introduction to graphic language and design.
- Introduction to Computer Aided Design.
- Theory and practice on presentation of plans, sections and side views drawings.
- Design and working drawings.
- Principles and practice of sketching.
- Representation of structures in 2d and 3d dimensions.
- Basic principles of interactive computer graphics, computer-aided drafting, 3-D modeling, and visualization in modern CAD systems.

#### **Learning Activities and Teaching Methods:**

- Lectures
- Teaching Assistant supervised lab sessions with daily/weekly projects and a final team project
- Hands-on laboratory (computer)

#### **Assessment Methods:**

Class assignments in AutoCAD 45%  
Final team project 2D drawings 35%  
Adobe Photoshop Rendering 10%  
Class participation & attendance 10%

#### **Required Textbooks/Reading:**

Authors	Title	Publisher	Year	ISBN
Ching, Francis; Adams, Cassandra	Building Construction Illustrated	John Wiley & Sons	2000	0-47-135898-3

#### **Recommended Textbooks/Reading:**

Authors	Title	Publisher	Year	ISBN
Peter Szalapaj	CAD principles for architectural design: Analytical approaches to the computational representation of architectural form.	Architectura l press, Oxford	2001	
Francis Ching	Architecture: Form, Space and Order	John Wiley & Sons		0-47-128616-8