# University of Jordan
# School of Engineering

**Faculty Name:** School of Engineering

**Dep. Name:** Architecture Engineering

**Semester:** Second Semester 2017/2018

**Course Title:** Computer Architectural Drawing

**Course Code:** (0932201) 2 Credit Hour

**Course Coordinator:** Dr. Hasan Isawi

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**Instructor:** Dr.Hasan Isawi

**Office Number:** Dept. of Architecture Engineering.

**Office Hours:** Sunday & Tuesday 12:00 – 1:00

**Course objectives:**

The course aims to provide students with the theoretical and practical knowledge necessary to understand and represent the architectural space through the tools of digital drawing. Which is the necessary tool to read and write the architecture whether it exists or in the planning stage. so the goal is to provide students with the practical tools to manipulate many of the fundamental problems of architecture and its virtual modeling, by selecting the most appropriate methods for its modeling and virtual representation.
Digital modeling is a geometric process that aims to use the computer to learn about the architectural entity from various aspects, such as geometric genesis, spatial reciprocal relations and various formal and dimensional information.
For example, how to determine the minimum projections necessary to generate a numerical model of any required architectural volume.

For example, two coplanar lines are necessary to generate a conical or cylindrical surface model. This means that once this 3D model is obtained, it is possible to generate all the possible dimensional and perceptual projections of the same model.
The technical projections include the plans, sections and facades, allowing, through the use of different graphic measures, to describe the shape and reveal spatial relations and possible reciprocal conflicts between the various construction elements. Perceptive projections include perspective and axonometry that allow, through representations, to simulate real space. This is done by generating a model with shading, materials and inserted in realistic contexts.

The fact that the student has already learned different ways of representation in the material of design and representation of architecture using traditional drawing tools (ruler and compass), represents an important and necessary first step to learn in this CAD material, not just the digital modeling techniques, but also to know more those methods of representation .

In this way, the student gains the ability to explore different possibilities of graphic expressions according to the given design situation, and in any case, the most expressive architectural communication tools.

**Topics of the course**

The course is divided into two parts: the first part of the course focuses on teaching students theories of architectural design through digital modeling, different presentation methods, and rendering and layout.

The second part deals with the application of what the student has learned in the first part on some famous architectural projects.

**The first part**
 The first part of the course deals with the following theoretical and practical subjects:
 - Drawing and representation of fundamental geometric entities (point, line and plane), and regular geometric shapes: polygon, circle, ellipse ... etc.
- Examine the theoretical part of the orthogonal projection method (or Monge method) and its application using AutoCAD software to generate architectural models with different degrees of complexity.
- Review of the theoretical part of the orthogonal axonometric method and its applications to generate and represent some geometric models
- Review the theoretical part of the perspective method and its applications to generate different types of perspective
- Examine the theoretical part of the theory of shadows and its digital applications to generate shade and shadow .
- Generate flat and spatial sections
- Learn the different types of representations (Wireframe, shading, render
- Learn the various output techniques , where the design is divided into several parts. Each part contains a different mode of representation (Monge, axonometry, perspective)
 - Find out how to set the dimensions, determine the measurements of the drawing, write the description of the drawings, and the headings of the drawings ... etc.
 - Address different options for displaying models with shadows and materials ... etc. And save drawings in various forms like Raster or Victor file formats

- Identify the different printing options: the thicknesses of the lines, and the dimensions of the drawings, and various formats of the printing paper ... etc.

**The second part of the chapter**
In the second part of the chapter, each student is required to choose:
- One of the famous architectural buildings
- Write a descriptive report on the building in question

- Modeling and constructing the building using the following methods: Orthogonal projections, , longitudinal and transversal sections. Perspectives and axonometric with shadows
 Note: each student must send a project report written in Arabic, name it with the same name of the project, and then upload it to the e_learning site dedicated to the course_

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## Technical Methods:

1- Lectures and Class Discussion:     Definition and discussions will precede each session and assignment.

2-Demonstration:     Demonstration is presented to students in each session which explains the topic and exercise.

3-Tutorials:     Students can use office hours for more info

4-Laboratory:     The classroom setting for this course is a studio, a large open lab with computers.

5- Assignments, Report, and Projects:     There will be an assignment in every lecture.

## Test and Evaluations:

1- Lab assignments and homeworks: **40%**

2- Exams: Time Table     Midterm exam, week 7: a lab assignment **(20%)**

Final exam week 15: a lab assignment **(40%)**

## References:

https://disegno-e-rappresentazione-arch-ju.blogspot.com/

## Grades:

Weekly exercises:     (40 %)
Midterm exam:     (20%)
Final exam:     (40%)

**Academic:**     Evaluation of students according to their personal efforts and work.