



Department of Architectural Engineering

University of Cihan /Sulaimaniya

Subject: Descriptive Geometry

Course Book – Year 1 – 1st Semester

Academic Year: 2015/2016

Course Book

1. Course name	Descriptive Geometry
2. Lecturer in charge	
3. Department/ College	Architectural Engineering
4. Contact	
5. Time (in hours) per week	Theoretical : 1 Practical: 2
6. Office hours	
7. Course code	
8. Teacher's academic profile	
9. Keywords	Engineering drawing, Descriptive geometry, Graphics
10. Course overview:	
<p>The course initially introduces the graphical representation methods and techniques in architectural design and presentation. Drawing tools and materials; architectural drafting conventions; orthographic projections and views, their types and use in building presentation.</p> <p>There are several subjects introduced into the first course:</p> <ol style="list-style-type: none"> 1- Geometrical hand writing and engineering drawing sheet arrangement. 2- Geometrical shape generation 4- Geometrical subtraction 5- Geometrical addition 6- Geometrical orthogonal projection 7- Geometrical shape analysis and synthesis 8- Using of geometrical roles to arrange geometrical shapes and forms. <p>That shape the first step to the following courses into descriptive geometry II, which help students imagination processing and help them also into shaping and reshaping forms in their architectural graphical drawings.</p>	
11. Course objective:	
<p>The subject aims to developing the skills needed for documenting designs using drawings and for performing graphical analysis of two dimensional</p>	

and three dimensional problems. The outcome of Engineering Graphics, in the first semester, is to enable students to comprehend general projection theory, with emphasis on orthographic projection to represent three-dimensional objects in two-dimensional views (principal, auxiliary, sections), to visualize the design represented using axonometric projection and to dimension and annotate two-dimensional engineering drawings. In addition, the Descriptive Geometry, in the second course, provides a training of the students' intellectual capability of space perception and spatial reasoning.

12. Student's obligation

- 1- Students must have to solve geometrical problems into studio.
- 2- They have to prepare homework's and present them according to teachers instructions

13. Forms of teaching

For the theoretical part it's accomplished as a normal lectures with discussions.

For the practical part it's accomplished as a design studio assessment.

14. Assessment scheme

The marks of this course are distributed as follows:

- 1- Daily projects and class work as 20% of the total mark.
- 2- Homework Exercises and mid exam as 25% of the total mark.
- 3- Presence & daily assessments as 5% of the total mark.
- 4- Final exam as 50% of the total mark.

15. Student learning outcome:

The outcome of the course should cover the following:

- 1- To know how to generate geometrical shapes
- 2- To know how to employ geometrical drawing roles to solve different visual problems
- 3- To know how to use the geometrical representation to arrange drawing sheets.
- 4- To know how to thing and solve problems visually throw the effective using of visio-spatial analysis and synthesis

16. Course Reading List and References:

- Key references: a lot of geometrical drawing handbooks such as:
 - Giesecke et al., Technical Drawing, Collier Macmillan Publishers, 1980.
 - David A. Madsen, David P. Madsen , 2011, Engineering Drawing & Design, 4th Ed. Elsevier, London.
 - Colin H. Simmons, Dennis E. Maguire, Neil Phelps, 2010, Manual of Engineering Drawing: Technical Product Specification, 4th Ed, Elsevier, London.
- Useful references:
 - Paul Smith, 2007, Drawing for Engineering, Jutaonline & company Ltd.
 - Ken Morling, 2003 Geometric and Engineering Drawing, 4th Ed. Elsevier, London.
 - Sidney Herbert Wells, 2012 A Text-book of Engineering Drawing and Design, J. Wiley & sons, London
- Magazines and review (internet):
 - <http://www.me.umn.edu/courses/me2011/handouts/drawing/blanco-tutorial.html>
 - <http://www.engineeringdrawing.org/>
 - <http://www.guru.com/d/freelancers/q/engineering-drawing/>

17. The Topics:

Lecturer's name

Week	Theoretic	Lecturer's name
1	Introduction to typical equipment for Engineering drawings	Starting from 29/9/2015
2	Lettering	
3	Instrumental drawing problems – 1	
4	Instrumental drawing problems – 2	
5	Geometric constructions -1	
6	Geometric constructions -2	
7	Dimensioning	
8	Multi view Projection	
9	Multi view Projection	
10	Sectional views – 1	
11	Sectional views – 2	

12	Introduction to Axonometric Projection	
13	Exam	
14	Isometric Projection of normal surfaces	
15	Isometric Projection of oblique surfaces	
16	Isometric Projection of Curves	
18. Practical Topics		Starting from 29/9/2015
Week	Practical	
1	The use of engineering drawing instruments (T-Square, Triangles, Compass And Protectors)	
2	Practicing the engineering lettering and sheet compositions with type of sheets used into practice and general (A standard sheets)	
3	2d geometrical shapes	
4	2d geometrical shapes and shape divisions	
5	General drawing of polygons	
6	General drawing of polygons	
7	Type of dimension lines and projection of dimension lines into forms, scaling and rescaling	
8	Cartesian orthogonal projections	
9	Exam	
10	Auxiliary view and auxiliary plan projections.	
11	Sectioning of shapes	
12	Sectioning of multi shapes	
13	Practicing the Axonometric Projection	
14	Practicing the Axonometric Projection	
15	Practicing the oblique Projection	
16	Practicing the curves orthogonal projections into multi view surfaces	

19. Examinations:

Most questions in this course are depending on visual thinking and visual problem solving for example:

- A- Inscribe a Pentagonal Star into (8 cm) diameter circle.
- B- A (4 cm) radius Arc tangent to a (120o) Obtuse Angle.
- C- An Ellipse with (6 cm) major axis and (3 cm) minor axis.
- D- A (4 cm) distance between a Line and centre of a (4 cm) diameter Circle, then join them with a tangent (4 cm) radius Arc.
- E- Divide a (5 cm) diameter Circle into three equal Sectors.

Or questions are as a geometrical form drawings and student has to redraw them into another scale

20. Extra notes:**21. Peer review**