

University of Macau
Undergraduate Civil Engineering Programme

Coordinating Unit:	Department of Civil and Environmental Engineering, Faculty of Science and Technology		
Supporting Unit(s):	Nil		
Course Code:	DRWG130	Year of Study:	1
Course Title:	Civil Engineering Drawing		
Compulsory/Elective:	Compulsory		
Course Prerequisites:	Technical Drawing I		
Prerequisite Knowledge:	Nil		
Duration:	One semester	Credit Units:	3.5
Class/Laboratory Schedule:	4 hours of lecture and 2 hours of tutorial per week.		
Laboratory/Software Usage:	Computer laboratory/AutoCAD		
Course Description:	<p>This course is designed to provide civil engineering undergraduates with basic understanding of the theory and practice of engineering drawings and computer-aided design for civil engineering applications. Students will learn to read and construct blueprints and working drawings by means of lectures, discussion of drawing examples related to existing buildings or projects, CAD practice in the laboratory. Topics will include basic fundamentals of graphics and drafting principles, Auto-Cad fundamentals, architectural drawings, structural floor plan of building, detailing for typical reinforced concrete structural members.</p>		
Course Objectives:	<ol style="list-style-type: none"> 1. To present fundamentals of graphics and drafting appropriate for developing functional skill in computer aided drafting. 2. To provide students with adequate knowledge and experience in preparing engineering drawings using AutoCAD. 3. To teach students to read, construct and understand basic Civil engineering drawings. 4. To help students acquire the skills pertinent to the production of properly detailed, formatted and dimensioned Architectural and Civil Engineering drawings using AutoCAD. 		
Learning Outcomes (LO):	<p>Upon completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. develop ability to produce geometric construction, multiview, sectional view, dimensioning and detail drawings of typical 2-D engineered objects using AutoCAD. [POs: a,e,k,l]; 2. ability to understand and complete architectural floor plan using AutoCAD. [POs: a,k,l]; 3. ability to understand and complete Structural framing plan using AutoCAD. [POs: a,e,k,l]; 4. ability to understand and complete typical reinforced concrete structural members detailing using AutoCAD. [POs: a,e,k,l] 		

Texts & References: <i>(* recommended textbook(s))</i>	<ol style="list-style-type: none"> 1. Introduction to AutoCAD 2011: A Modern Perspective Paul F. Richard, Prentice Hall, ISBN-13: 9780138016364 2. Handout provided by instructor 																
Student Assessment:	<ul style="list-style-type: none"> • Drawings exercises: 40%; • 3 examinations: 60% 																
Learning Outcome Assessment:	<ul style="list-style-type: none"> • Class work & Homework. • Examination • Course evaluation 																
Pedagogical Methods:	<table border="0"> <tr> <td><input checked="" type="checkbox"/> Lecture</td> <td><input type="checkbox"/> Service learning</td> </tr> <tr> <td><input type="checkbox"/> Guest speakers</td> <td><input type="checkbox"/> Internship</td> </tr> <tr> <td><input type="checkbox"/> Case study</td> <td><input type="checkbox"/> Field study</td> </tr> <tr> <td><input type="checkbox"/> Role playing</td> <td><input type="checkbox"/> Company visits</td> </tr> <tr> <td><input type="checkbox"/> Student presentation</td> <td><input type="checkbox"/> e-learning</td> </tr> <tr> <td><input type="checkbox"/> Project</td> <td><input checked="" type="checkbox"/> Independent study</td> </tr> <tr> <td><input type="checkbox"/> Simulation game</td> <td><input checked="" type="checkbox"/> Others: <u>Computer software Lab.</u></td> </tr> <tr> <td><input checked="" type="checkbox"/> Exercises and problems</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> Lecture	<input type="checkbox"/> Service learning	<input type="checkbox"/> Guest speakers	<input type="checkbox"/> Internship	<input type="checkbox"/> Case study	<input type="checkbox"/> Field study	<input type="checkbox"/> Role playing	<input type="checkbox"/> Company visits	<input type="checkbox"/> Student presentation	<input type="checkbox"/> e-learning	<input type="checkbox"/> Project	<input checked="" type="checkbox"/> Independent study	<input type="checkbox"/> Simulation game	<input checked="" type="checkbox"/> Others: <u>Computer software Lab.</u>	<input checked="" type="checkbox"/> Exercises and problems	
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Major Assessment Methods:	Case Study	Role Playing	Student Presentation	Individual project/paper	Group project/paper	Simulation Game	Exercises & problems	Service learning	Internship	Field Study	Company visits	Written examination	Oral examination	Others (Drawing examinations)
Class Participation/ Discussion (0%)														
Drawings (40%)							✓							
Test(s) (0%)														
Examination (60%)														✓
Others <i>(please specify)</i> Reports,presentations (0 %)														
Course Web: (if any)														

Course Content: (topic outline)	Week no.	Topics	Drawing Exercises no.	LO no.
	1	Introduction to Civil Engineering Drawings Syllabus review; course introduction; introduction to CAD drafting;	--	--
	2	AutoCAD Fundamentals I Getting started AutoCAD; AutoCAD screen components; drafting settings; snap symbols; drawing lines; coordinate systems; .	1	1
	3,4	AutoCAD Fundamentals II Basic drawing commands; Drawing circles and arcs; geometric constructions; tangencies; text; block diagrams; layers; line types; 2-D commands and drawings; orthographic views;	2	1
	5	AutoCAD Fundamentals III Further modification commands; sectional views; formats; dimensioning ;plotting drawing; paper size selection and fitting;	3	1
	6	Exam 1		1
	7	Interpretation and production of civil engineering drawings I Typical architectural drawing of a building: (site plan, building elevations, floor plan of each floor, basement plan and roof plan); house emergency floor plan; electrical floor plan ; air conditioning duct floor plan ; plumbing floor plan ; foundation floor plan (footing); foundation floor plan (pile);	4	2
	8	Exam 2		1
	9~13	Interpretation and production of civil engineering drawings II Introduction to reinforced concrete structures; Structural detailing drawings (RC members and connections) : -Structural framing plan -Beams -Columns -Foundations -Slabs	5~7	3~4
	14	Exam 3		4

Contribution to Program Outcomes:	Program Outcomes		Contribution to POs [#]				
			5 -----> 1 Significant Least				
			5	4	3	2	1
	(a) apply knowledge of mathematics, science, and engineering			✓			
	(b) design and conduct experiments, and analyze data						
	(c) design components, systems or processes in presence of constraints						
	(d) Function in a multi-disciplinary team						
	(e) Engineering problem solving		✓				
	(f) Understand professional and ethical responsibility						
	(g) Communicate effectively						
	(h) Understand the impact of engineering solutions to the society						
	(i) Recognize the need and have the ability for lifelong learning						
	(j) Have knowledge of contemporary issues						
	(k) Apply the skills, techniques, modern engineering tools		✓				
(l) Use the computer/IT tools relevant to the discipline		✓					
# Note 5: Significant contribution; 4: Supporting contribution; 3: Moderate contribution; 2: Marginal support; 1: Least support							
Course Instructor(s):	Dr. I. T. Ng (Session: 001) Mr. I.M. Wan (Session: 002)						

Percentage Content of:	Math	Basic Science	Engineering Science	Engineering Design and Synthesis	Complementary Studies	Computer Studies	Total
	0	---	40	---	20	40	100
Timetabled work in hours per week:	Lecture	Tutorial	Laboratory	Other	Total		
	4	2	---		6		