



Course Specifications

Course Title:	Computer Graphics
Course Code:	CE 202
Program:	B.Sc. in Civil Engineering
Department:	Civil Engineering
College:	Jubail University College
Institution:	Jubail University College

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	4
C. Course Content	4
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	6
1. Learning Resources	6
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	7

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 3, Second, Year
4. Pre-requisites for this course (if any): CE 101 Introduction To Civil Engineering	
5. Co-requisites for this course (if any): None	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	✓	100
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	45
3	Tutorial	-
4	Others (specify)	-
	Total	75

B. Course Objectives and Learning Outcomes

1. Course Description <i>CE 202 Computer Graphics (2-3-3)</i>	<i>Prerequisite: CE 101</i>
Introduction to computer aided design and Drafting (CAD). Introduction to Computer Graphics; graphics laboratory assignments to develop a skill in using the CAD system and produce quality engineering drawings; fundamentals of engineering graphics in 2D and 3D drawings, solid modeling, application to mining and civil engineering problems, through length and sloping lines, cut and fill, strike and dip; the forms of graphical communication for designers; example problems to develop students perception and visualization ability	
2. Course Main Objective The main purpose of this course is to prepare students to produce quality Civil Engineering drawings using CAD system and develop their perception and visualization ability.	

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding: N/A	
2	Skills :	
2.1	Use various drawing and editing features in AutoCAD system	1
2.2	Develop student's perception and visualization ability through orthographic projections of 3D objects and vice versa.	1
2.3	Draw quality Engineering drawings using AutoCAD software	1
3	Values	
	N/A	

C. Course Content

No	List of Topics	Contact Hours
1	Unit 1 : BASIC CONCEPTS 1.1 Understand the concepts of orthographic projection 1.2 Draw Plan, section and elevation of some basic objects manually 1.3 Understand the simple X – Y Coordinate system in AutoCAD 1.4 Understand the concept of angular measurement in AutoCAD 1.5 Understand the concepts of Absolute coordinates, relative coordinates and polar coordinates 1.6 Understand the various menus and elements of an AutoCAD screen	5
2	Unit 2 : DRAWING COMMANDS 2.1 Understand the following commands in AutoCAD : Line, Circle, Erase, Print, Undo 2.2 Prepare simple drawing using the above commands 2.3 Understand the following commands in AutoCAD Rectangle, Multiline, Trim, Extend, Offset, Object Snap 2.4 Prepare drawings using the above commands	10
3	Unit 3 : MODIFYING COMMANDS 3.1 Understand the following commands in AutoCAD : Move, Copy, Stretch, Mirror, Rotate, Fillet, Chamfer, Array 3.2 Prepare simple drawing using the above commands	10
4	Unit 4 : LAYER, TEXT, DIMENSIONING AND SCALE 4.1 Understand the following Commands in AutoCAD : Layer, Text, dimensioning, Scale, Properties, Match Properties, Zoom, Pan 4.2 Use these commands to the drawing to enhance their use	10
5	Unit 5 : ADDING USEFUL DATA TO DRAWING 5.1 Understand how to make initial settings for a drawing 5.2 Understand the importance of blocks in AutoCAD 5.3 Creating and inserting blocks 5.4 Prepare some simple blocks 5.5 Understand Align command and use it in drawing 5.6 Adding non graphical information to drawing – ATTRIBUTES Hatching and Filling areas 5.7 Formatting and Editing TEXT 5.8 Working with polyline 5.9 Setting out the layout of a drawing	5

6	Unit 6 : 3D DRAWINGS 6.1 Introduction to 3D 6.2 Isometric drawing 6.3 Working in 3 Dimensions and viewing 3D objects 6.4 Wire frame models and revolved objects 6.5 Solid Modeling	15
7	Unit 7: QUALITY ENGINEERING DRAWINGS 7.1 Preparation of a simple building drawing 7.2 Preparation of structural drawing 7.3 Measurements of cut and fills	20
Total		75

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
	N/A		
2.0	Skills		
2.1	Use various drawing and editing features in AutoCAD system	Interactive learning Cooperative learning Independent learning	Quizzes, midterm & final
2.2	Develop perception and visualization ability through orthographic projections of 3D objects and vice versa.	Interactive learning Independent learning	Quizzes, midterm & final) Lab report
2.3	Draw quality Engineering drawings using AutoCAD software	Interactive learning Promote utilization of Engineering technology Independent learning	Quizzes, midterm & final Lab report
3.0	Values		
	N/A		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz LB 1	4	10 %
2	Mid -Term LB	9	20 %
3	Quiz LB 2	12	10 %
4	Lab Report	15	20 %
5	Final Exam LB	16	40 %

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Office hours 6 hr/week; students can go in times of office hours for teacher to explain what could not be understood from the lesson.

- Students can communicate with a staff member outside the official working hours by email.
- Students are also encouraged to visit their academic advisors.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Yarwood, A. (2009). <i>Introduction to Auto-Cad 2010: 2D and 3D Design</i> . Burlington, USA: Newnes
Essential References Materials	Wedding, J. P. D. (2008). <i>Mastering Auto-Cad Civil 3D 2009</i> . New York ,USA: John Wiley & Sons, Palm, B. S. and Yarwood, A. (2016). <i>Introduction to AutoCAD 2017: 2D and 3D Design</i> . United Kingdom: Routledge
Electronic Materials	http://www.we-r-here.com/cad/tutorials/index.htm
Other Learning Materials	N/A

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Computer Lab with 26 computers installed with AutoCAD software Multimedia projector
Technology Resources (AV, data show, Smart Board, software, etc.)	AutoCAD software for design and drafting
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment as per QMS-Policy-006 Feedback Survey, QMS-QAP-116 Monitoring Students' Satisfaction	Students	Indirect: Analyzing the results of the following surveys Course Evaluation Survey(CES), Program Evaluation Survey (PES), Student Experience Survey (SES)
Quality of Exam papers and Verifying Standards of Student Achievement as per QMS-Policy-		Direct: Peer review of examination papers and review or double check a

Evaluation Areas/Issues	Evaluators	Evaluation Methods
004 Policy for Examinations and Marking, QMS-ACP-102 Procedure for Marking Examinations	Examination Committee	minimum of three or 10% of answer papers. Verifying the entries in the Activity Mark Sheet.
Achievement of learning outcomes as per QMS-Policy-001 Course Review, QMS-CDP-106, QMS-CDP-112 Curriculum Review	Faculty	Direct: Course Report (Section B-3)
Implementation of the action plans based on previous semester as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS-CDP-112 Procedure for Curriculum Review	Faculty	Direct and Indirect: Course report (Section G-1, G-2)
Monitoring Teaching and Learning as per QMS-Policy-005 Monitoring of Teaching and Learning	Chairperson/Program Director/Course Director	Indirect: Feedback by Chairperson/Program director/Course director. Program Delivery Record.
Effectiveness of planned Teaching Strategies QMS-Policy-001 Course Review	Faculty	Indirect: Course Report (Section B-4)
Course effectiveness and planning for improvement as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS- CDP-112 Procedure for Curriculum Review	Faculty	Direct and Indirect: Course report (Section G-3)
Verifying Standards of Student Achievement and Quality of Exam papers as per QMS-ACP-119 External Assessment Review	Assessment External Reviewer	Direct: Report of assessment external reviewer. Review of sample of ten or 10% of student's assessments and coursework scripts.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Civil Engineering Department Council
Reference No.	REG MIN-CED-10
Date	27-04-2020

Appendix A Revision Details

Revision no.	DESCRIPTION	Reference MoMs			
		DC		CDC	
		Sem	#	Sem	#
1	Revision of Course Teaching Strategies and action verbs based on the comments of NCAAA reviewer	392	4	392	4
2	Course Specification Template 2018	402			