



Course Specifications

Course Title:	Statics
Course Code:	CE 201
Program:	B.Sc. in Civil Engineering
Department:	Civil Engineering
College:	Jubail University College
Institution:	Jubail University College

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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: CE: Level 2 / First Year ME: Level 3 / Second Year
4. Pre-requisites for this course (if any): SCI 152 General Physics 1
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	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description CE 201 Statics (3-0-3)	Prerequisite: SCI 152
<p>Basic concepts and principles of mechanics; vector algebra; equilibrium of particles in two and three dimensions; definition of moment and couple; reduction of systems forces; equilibrium of rigid bodies; statically determinate structures, including beams, trusses, frames, and machines; internal forces, shear force and bending moment diagrams in beams; friction and its applications, centroid and center of gravity of lines, areas, and volumes; moment of inertia and radius of gyration.</p>	

2. Course Main Objective

The main purpose of this course is to prepare students to evaluate the equilibrium of rigid bodies subjected to a system of forces and apply this knowledge efficiently and independently to develop the relationship with internal and external forces to solve determinate structures.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
	NA	
2	Skills :	
2.1	Use equations of equilibrium to determine the resultant and equilibrant of systems of coplanar forces, internal forces in pin joined structural elements.	1
2.2	Show the conditions of static equilibrium of forces acting on the structural elements.	1
2.3	Calculate the centroid and moment of inertia of the sections.	1
2.4	Evaluate the dry friction force by using the laws of friction.	1
2.5	Draw the shear force and bending moment diagram for determinate structures.	1
3	Values:	
	NA	

C. Course Content

No	List of Topics	Contact Hours
1	Unit 1. 1.1 Fundamental concepts in mechanics, Units of measurement 1.2 Systems of units, Numerical Calculations	3
2	Unit 2. 2.1 Concept of scalar and vector, Vector operations, 2.2 System of coplanar forces, Position vector, 2.3 Force vector directed along a line, Dot product of vectors.	6
3	Unit 3. 3.1 Conditions of equilibrium in 2D and 3D, Free body diagram 3.2 Coplanar force system, Three-dimensional force system.	3
4	Unit 4. 4.1 Moment of a force, Vector formulation, Principle of moments 4.2 Moment of a couple, Equivalent system, 4.3 Reduction of a force and couple system, 4.4 Reduction of a simple distributed loading.	6
5	Unit 5. 5.1 Conditions of rigid body equilibrium 5.2 Equations of equilibrium in 2D and 3D, Support reactions 5.3 Constraints of a rigid body.	6
6	Unit 6. 6.1 Simple truss, Method of joints, Method of sections 6.2 Frames and machines.	6
7	Unit 7. 7.1 Internal forces developed in structural members, 7.2 Shear and moment equations and diagrams.	6

8	Unit 8. 8.1 Characteristics of dry friction, 8.2 Problems involving dry friction.	3
9	Unit 9. 9.1 Centroid and center of gravity of a body, Composite bodies 9.2 Pressure distribution over a surface	3
10	Unit 10. 10.1 Definition of moments of inertial for areas 10.2 Parallel axes theorem, Moment of inertial of composite areas 10.3 Radius of gyration,	3
Total		54

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		
	NA		
2.0	Skills		
2.1	Use equations of equilibrium to determine the resultant and equilibrant of systems of coplanar forces, internal forces in pin joined structural elements.	Interactive learning Independent learning	Assignments, Written Exams (Quiz, Midterm, Final)
2.2	Show the conditions of static equilibrium of forces acting on the structural elements.		
2.3	Calculate the centroid and moment of inertia of the sections.		
2.4	Evaluate the dry friction force by using the laws of friction.		
2.5	Draw the shear force and bending moment diagram for determinate structures.		
3.0	Values		
3.1	NA		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	4	10%
2	Assignment 1	6	10%
3	Mid-term LT	8	20%
4	Quiz 2	12	10%
5	Assignment 2	14	10%
6	Final Exam LT	17-19	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 1 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	Hibbeler, R.C. (2013). Engineering Mechanics: Statics, USA: Prentice Hall Publisher.
Essential References Materials	Riley .W. F, Sturges. L. D. (1996). <i>Engineering Mechanics –Statics</i> , USA: John Wiley & sons. • Meriam. J.L, Kraige. L.G. (2008) <i>Engineering Mechanics: Statics</i> , USA: John Wiley & sons.
Electronic Materials	http://www.aboutcivil.org/index.html
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture rooms with a capacity of at least 25 students and fitted with multimedia projector and a computer.
Technology Resources (AV, data show, Smart Board, software, etc.)	None
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),

Evaluation Areas/Issues	Evaluators	Evaluation Methods
		Student Experience Survey (SES)
Quality of Exam papers and Verifying Standards of Student Achievement as per QMS-Policy-004 Policy for Examinations and Marking, QMS-ACP-102 Procedure for Marking Examinations	Examination Committee	Direct: Peer review of examination papers and review or double check a 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 Reviewer External	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
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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 2020	402			