



Arab Academy for Science, Technology & Maritime Transport
College of Engineering & Technology
Department of Basic and Applied Science

University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Mechanical Engineering

Form No. (12)
Course Specification

1- Course Data

Course Code: BA 141	Course Title: Mechanics(1)		Academic Year/Level: 1st year / 1st semester
Specialization: All Programs	No. of Instructional Units	Lecture	Practical
	3 credits	2 hrs.	2 hrs.

2- Course Aim

The aim of the course is to provide the student with an introduction to many of the fundamental concepts in mechanics.

3- Intended Learning Outcome (ILO's)

a- Knowledge and Understanding	<p>K1) Concepts and theories of mathematics and sciences, appropriate to the discipline.</p> <p>a1. Define the scalars and vectors quantities. a2. Express the forces in plan and space. a3. Recognize equilibrium conditions and objectives. a4. Identify the concept of moment and couple system. a5. Identify different types of support and its reactions. a6. Explain the concepts of friction and its applications. a7. Define the principle work and virtual work.</p>
b- Intellectual Skills	<p>I2) Select appropriate solutions for engineering problems based on analytical thinking.</p> <p>b1. Determine the resultant force and its direction. b2. Use free bodies diagrams analyses to determine the sum of the forces. b3. Solve plane motion rigid body dynamics problems using full vector notation approaches. b4. Determine the forces and their types in the members of a truss using the method of joint. b5. Determine the forces and their types in the members of a truss using the method of section. b6. Analyze the forces action on the members of frames and machines composed of pin-connected members. b7. Determine the mass moment of inertia.</p>
c- Professional and Practical Skills	<p>P1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.</p> <p>c1. Apply equations of equilibrium to solve rigid body problems. c2. Solve problem having two loaded bodies connected with internal support.</p>

d- General Skills	G6) Effectively manage tasks, time, and resources. d1. Check the ability of the students to decompose applied problems and get an analytical solution in a specified time by short quiz.
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4- Course Content

Lecture		
Wk	Hrs	Description
1	2	<i>Rectangular components of forces</i>
2	2	<i>Parallelogram law</i>
3	2	<i>Equilibrium of a particle – springs and cables</i>
4	2	moment of forces
5	2	Free body diagram
6	2	<i>Equilibrium of a rigid body</i>
7	2	7 th week Exam
8	2	Trusses (joint method – zero – force members) .
9	2	Trusses (method of sections) .
10	2	Frames
11	2	Frames (cont.)
12	2	12 th week Exam
13	2	Friction
14	2	Mass moment of inertia
15	2	Virtual work
16	2	Final Exam

5- Teaching and Learning Methods

<ol style="list-style-type: none"> 1. Lectures 2. Tutorials 3. Individual and group coursework 4. Project group technical reports 5. Individual and group project
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6- Teaching and Learning Methods for Students with Special Needs

<ol style="list-style-type: none"> 1. Consulting with lecturer during office hours 2. Consulting with teaching assistant during office hours. 3. An academic supervisor is appointed for handicapped students. Constant follow ups are done for handicapped students after each assessment to evaluate their academic level of achievement.
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7- Student Assessment

a- Procedures used:	<ol style="list-style-type: none"> 1. Written examinations to assess the Intended learning outcomes. 2. Continuous assessment (reports, discussions, etc.....) to assess the Intellectual skills.
b- Schedule:	Assessment 1: 7 th Week Written Exam Assessment 2: 12 th Week Written Exam Assessment 3: Continuous Assessments Assessment 4: 16 th Week Final Written Exam

c- Weighing of Assessment:	7 th Week Examination : 30 %
	12 th Week Examination: 20 %
	Final-term Examination: 40 %
	Oral Examination : 0 %
	Practical Examination : 0 %
	Semester Work : 10 %
Total : 100%	

8- List of References:

a- Course Notes	Prepared by lecturer
b- Required Books (Textbooks)	R.C Hibbeler “Engineering Mechanics Statics ” 12th. edition, Prentice Hall, 2010.
c- Recommended Books	F.B. Beer and E.R. Johnston “ Vector Mechanics for Engineering” , 9th. edition , Mcgraw Hill , 2009.
d- Periodicals, Web Sites, ..., etc.	

Course coordinator:

Program Manager: