

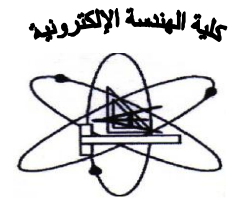
Department offering the program: Electronics and Electrical Communications
Department offering the course: Computer Sciences and Engineering

Course Specification

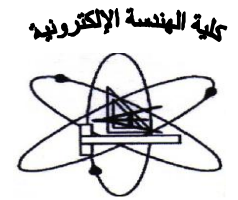
1- Course basic information		
Course Code: PME 023 Department requirement	Course Title: Mechanics	Academic year: 2015-2016 Level (0) – Semester (2nd)
Field: Mathematics and Basic Science	Teaching hours: Lecture (2) Tutorial (2)	

2- Course Objectives	<ol style="list-style-type: none"> 1. To equip students with Vector Analysis. 2. To provide students with the concepts of statics related to moments, Reduction of non-concurrent forces in space and equilibrium of bodies in space. 3. To provide students with the concepts of virtual work, and moment of inertia. 4. To provide students with dynamics principles appropriate to motion of particles in a straight line and in a resistive medium. 5. To enhance student ability to demonstrate Simple harmonic motion. 6. To teach students plane motion in Cartesian and Polar coordinates. 8. To introduce students to Projectiles and Impulse and Impact of particles. 9. To provide students with the concepts of dynamics of charged particles in magnetic and electric fields.
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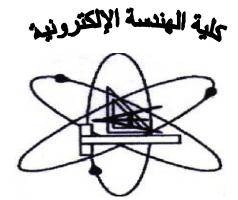
3- Intended Learning Outcomes: ARS		Course ILOs
A- Knowledge and Understanding	<p>A.1 Explain concepts and theories of mathematics and science appropriate to engineering Mechanics.</p> <p>A.3 Define characteristics of engineering materials related mechanics.</p> <p>A.5 Demonstrate methodologies of solving engineering problems, data collection and interpretation.</p>	<p>A1.1 Explain concepts of Vectors.</p> <p>A1.2 Explain concepts of statics appropriate to moments of forces and Reduction of non-concurrent forces in space.</p> <p>A1.3 Explain concepts and theories of mathematics appropriate to the equilibrium of forces in the space.</p> <p>A1.4 Explain concepts of statics appropriate to virtual work and moment of inertia.</p> <p>A1.5 Explain concepts of dynamics appropriate to motion of particles in a straight line, in a resistive medium and simple harmonic motion.</p> <p>A1.6 Explain concepts of dynamics appropriate to Projectiles and Impulse and Impact of particles.</p> <p>A1.7 Explain concepts of dynamics appropriate to motion of charged particles in magnetic and electric fields.</p> <p>A3.1 Define characteristics of resistive medium.</p> <p>A3.2 Define characteristics of charged particles in magnetic and electric fields</p> <p>A5.1 Demonstrate methodologies of solving moments of forces, equilibrium of forces and moment of inertia problems.</p> <p>A5.2 Demonstrate methodologies of solving dynamics problems related to linear, Simple Harmonic, planar and circular motion of particles.</p>



		<p>A5.3 Demonstrate methodologies of solving dynamics problems related to Projectiles and Impulse and Impact of particles.</p> <p>A5.4 Demonstrate methodologies of solving engineering problems related to dynamics of charged particles in magnetic and electric fields.</p>
B- Intellectual Skills	<p>B.2 Select appropriate solutions for engineering problems based on analytical thinking.</p>	<p>B2.1 Select appropriate solutions for static problems related to moments of forces, equilibrium of forces and moment of inertia.</p> <p>B2.2 Select appropriate solutions for dynamics problems related to linear, Simple Harmonic, planar and circular motion of particles.</p> <p>B2.3 Select appropriate solutions for dynamics problems related to Projectiles and Impulse and Impact of particles.</p> <p>B2.4 Select appropriate solutions for engineering problems related to dynamics of charged particles in magnetic and electric fields.</p>
C- Professional Skills	<p>C.1 Apply knowledge of mathematics, science, and engineering practice integrally to solve engineering problems.</p> <p>C.12 Prepare and present technical reports.</p>	<p>C1.1 Apply knowledge of mathematics, science, and engineering practice integrally to solve static problems related to moments of forces, equilibrium of forces and moment of inertia.</p> <p>C1.2 Apply knowledge of mathematics, science, and engineering practice integrally to solve dynamics problems related to linear, Simple Harmonic, planar and circular motion of particles.</p> <p>C1.3 Apply knowledge of mathematics, science, and engineering practice integrally to solve dynamics problems related to Projectiles and Impulse and Impact of particles.</p> <p>C1.4 Apply knowledge of mathematics, science, and engineering practice integrally to solve dynamics problems related to charged particles in magnetic and electric fields.</p> <p>C12.1 Prepare and present technical reports on Statics of moments of forces, equilibrium of forces and moment of inertia.</p> <p>C12.2 Prepare and present technical reports on linear motion of particles in a resistant medium.</p> <p>C12.3 Prepare and present technical reports on dynamics of charged particles in magnetic and electric fields..</p>
D- General Skills	<p>D.3. Communicate effectively.</p> <p>D.6. Effectively manage tasks, time, and resources.</p> <p>D.7. Search for information and engage in life-long self-learning Mathematics (1).</p>	<p>D3.1 Communicate effectively in lecture and tutorial class room.</p> <p>D6.1 Effectively manages tasks, time, and resources, when solving mechanics problems, and in exams.</p> <p>D7.1 Search for information and engage in life-long self-learning relevant to Statics of moments of forces, equilibrium of forces and moment of inertia.</p> <p>D7.2 Search for information and engage in life-long self-learning relevant to dynamics of Projectiles, Impulse and Impact of particles.</p>



	D7.3 Search for information and engage in life-long self-learning relevant to dynamics of charged particles in magnetic and electric fields.
4- Course Contents	<p>Statics: Vectors (definition of vectors in space – Algebra of vectors – The moment of forces around point and line, and moment of a couples) – Reduction of non-concurrent forces in space– Theorem of the equilibrium forces in the space – Virtual work – Centroid – Moment of inertia.</p> <p>Dynamics: Linear motion (Motion of a particle in a straight line – Motion in a resistant medium – Simple harmonic motion) – Plane motion (Plane motion in Cartesian coordinates, in Polar coordinates and in Inertial coordinates – Circular motion and Projectiles) – Impulse and Impact of particles – Motion of charged particle in electrical and magnetic field.</p>
5- Teaching and Learning Methods	<ul style="list-style-type: none"> - Lectures - Tutorials. - Homework Exercises and Reports.
6- Teaching and Learning Methods for disable students	<ul style="list-style-type: none"> • Official low cost special classes for developing student skills, arranged by the faculty administration. • Assign a portion of the office hours for those students. • Face-to-face intermediate solving the problems and quizzes during the tutorial • Repeat the explanation of some of the material at lecture and tutorial times.
7- Student Assessment	
a- Assessment Methods	<ul style="list-style-type: none"> - Weekly sheet exercises at class room. - Quizzes. - Homework exercises and reports. - Mid-term and final exams.
b- Assessment Schedule	<ul style="list-style-type: none"> - Quiz 1: 5th week. - Mid-term examination: 8th week. - Quiz 2: 10th week. - Final written examination : 16th -17th weeks
c- Weighting of Assessment	<ul style="list-style-type: none"> - Mid-term examination: 15 % - Final-term examination: 70% - Semester work /reports/quizzes: <u>15 %</u> - Total: 100 %
8- List of text books and references:	
a- Course notes	The dynamics of Preparatory students of engineering colleges.
b- Text books	[1]Vector Mechanics for Engineers: Dynamics, Seventh Edition, by F. P. Beer, E., (2009).
c- Recommended books	[1] Principles of statics, 10e, Russell C. Hibbeler, 2010 [2] Principles of dynamics, 10e, Russell C. Hibbeler, 2010 [3] Complete system for mechanics courses. www.prenhall.com/onekey, 2005.
d- Periodicals, Web sitesetc	<ul style="list-style-type: none"> •http://emntserver.unl.edu/NEGAHBAN/EM373/Intro.htm •Hibbeler OneKEY, A complete system for mechanics courses. •www.prenhall.com/onekey



Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Vectors	1-2	A1.1			D3.1, D6.1
The moment of forces– Reduction of non-concurrent forces in space	3-4	A1.2 , A5.1	B2.1	C1.1, C12.1	D3.1,D6.1,D7.1
Theorem of the equilibrium forces in the space	5	A1.3 , A5.1	B2.1	C1.1, C12.1	D3.1,D6.1,D7.1
Virtual work – Centroid – Moment of inertia.	6-7	A1.4 , A5.1	B2.1	C1.1, C12.1	D3.1,D6.1,D7.1
Linear motion– Motion in a resistant medium – Simple harmonic motion – Plane motion– Circular motion	9-11	A1.5, A3.1, A5.2	B2.2	C1.2, C12.2	D3.1, D6.1
Projectiles – Impulse and Impact of particles	12-13	A1.6 , A5.3	B2.3	C1.3	D3.1,D6.1,D7.2
Motion of charged particle in electrical and magnetic field.	14-15	A1.7 , A3.2 A5.4	B2.4	C1.4, C12.2	D3.1,D6.1,D7.3

Teaching and Learning Methods - ILOs Matrix

Teaching and Learning Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Lectures	A1 , A3 , A5	B2		D3
Tutorials.	A1 , A3 , A5	B2	C1	D3, D6
Homework Exercises and Reports	A1 , A3 , A5	B2	C1, C12	D6,D7

Assessment Methods - ILOs Matrix

Assessment Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Weekly sheet exercises	A1 , A3 , A5	B2	C1	D6
Quizzes	A1 , A3 , A5	B2	C1	D6
Midterm, and final written exams	A1 , A3 , A5	B2	C1	D6

Authorized from department board at 15/05/2016

Authorized from college board at 05/06/2016

Course coordinator:
Dr. Hassan Abdulhafez

Head of Department:
Prof. Fathi El-Sayed Abd El-Samie



جامعة المنوفية
كلية الهندسة الإلكترونية
قسم هندسة الاتصالات والكهربية



Department offering the program:

Electronics and Electrical Communications

Department offering the course:

