



<b>Module Code: EJ215033S</b>	Version: 1 Date: 9 <sup>th</sup> December 2005
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<b>1. Module Title:</b> <i>maximum 100 characters</i>
Engineering Principles.

<b>2a. Module Leader:</b>	<b>2b. Department:</b>	<b>2c. Faculty:</b>
S Yousef	Computing and Technology	Science and Technology

<b>3a. Level:</b> <i>see guidance notes</i>	<b>3b. Module Type:</b> <i>see guidance notes</i>
1	Standard

<b>4a. Credits:</b> <i>see guidance notes</i>	<b>4b. Study Hours:</b> <i>see guidance notes</i>
15	150

<b>5. Restrictions</b>	
<b>Pre-requisites:</b>	None
<b>Co-requisites:</b>	None
<b>Exclusions:</b>	None
<b>Pathways to which this module is restricted:</b>	None

**LEARNING, TEACHING AND ASSESSMENT INFORMATION (for inclusion in the Module Guide)**

<b>6a. Module Description:</b> <i>200 – 300 words</i>
<p>This module introduces the fundamentals of engineering principles, encompassing applied mechanics and electrical technology. It is intended to provide a sound theoretical basis for the analysis and synthesis of mechanical and electrical systems. The module will review mechanical and electrical circuit fundamentals, comprising static/dynamic systems and electrical engineering laws/theorems.</p> <p>Basic static systems such as moments of force, simple structural analysis and friction problems are introduced. Dynamics relating to Newton's laws of motion are also discussed and applied.</p> <p>Kirchoff's current and voltage laws will be developed intuitively and verified experimentally.</p> <p>Thevenin's and Norton's theorems will be introduced together with the concepts of maximum power transfer.</p> <p>Computer based packages will be integrated into the course.</p> <p>AC circuit theory will be developed initially in terms of phasor diagrams and then extended using complex number notation.</p> <p>Students carry out their assignments from a defined specification and are required to submit an individual report based on their findings. Assessment is by coursework and exam.</p>

<b>6b. Outline Content:</b>
<ul style="list-style-type: none"> <li>• Coplanar forces and frictional force.</li> <li>• Bending moments and direct and shear stress.</li> <li>• Velocity, acceleration and kinetic energy.</li> <li>• Dimensional analysis.</li> <li>• Resistance, inductance and capacitance characteristics in dc and ac circuits.</li> <li>• Kirchoff's laws, Thevenin, Norton and maximum power transfer theorems.</li> <li>• Resonance and bandwidth.</li> </ul>

<b>6c. Key Texts/Literature:</b>
<p>Text: Hannah J, Hillier. H. J. (1995). Applied Mechanics. Longman. 3th Edition.</p> <p>Hughes E. (1995). Electrical Technology. Longman. 7th Edition. ISBN 0 582 22696 1</p> <p>Course notes from Lecturer.</p> <p>Web notes.</p>

**6d. Specialist Learning Resources:**

Computers and electronic test equipment

**7. Learning Outcomes (threshold standards):**

	On successful completion of this module the student will be expected to be able to:
<b>Knowledge and understanding</b>	<ol style="list-style-type: none"> <li>1. Understand the foundations mechanical and electrical theory including the use of complex notation.</li> <li>2. Use the theory to analyse simple mechanical and electrical networks.</li> </ol>
<b>Intellectual, practical, affective and transferable skills</b>	<ol style="list-style-type: none"> <li>3. Appreciate the limitations of real components.</li> <li>4. Apply mechanical and electrical theory to practical systems.</li> </ol>

**8. Learning Activities**

Learning Activities	Hours	Learning Outcomes	Additional Comments (including details of use of web-CT)
Teacher managed learning:	36	1,2,4	Lectures, tutorials and lab sessions.
Student managed learning:	114	1,2,3,4	Practical exercises. Preparation for practical sessions. Web and library research.
<b>TOTAL</b>	<b>150</b>		

**9. Assessment**

Assessment Method	% contribution to module mark or P/F	Learning Outcomes
Exam	50	1,2,4
Coursework	50	1,2,3,4

**In order to pass this module, students are required to achieve an overall mark of 40%**  
**In addition, students are required to (a) for each element of fine graded assessment listed above, achieve a minimum mark of 30% (or higher - see Module Guide) and (b) pass any pass/fail elements**

**OTHER TECHNICAL DETAILS**

**10. Delivery of the Module** *Please delete as appropriate*

Delivery	This module is delivered over...	Yes or No?	Indicate which by deleting as appropriate	
1	...a single semester	Y	Semester 1	Semester 2

**11. Learning Activities – further details**

Learning Activities	Details of duration and frequency of learning activities
Teacher managed learning:	12 weeks. 1.5 hours lecture per week. 1.5 hours supervised lab/tutorial sessions per week
Student managed learning:	12 weeks 9.5 hours per week

**12. Module Assessment – further details**

Method	Length/duration	Fine graded (FG) or pass/fail (PF)	Minimum Qualifying Mark <i>see guidance notes</i>	Comments
Exam	2 hours	FG	40%	Professional body requirements
Assignment	1000 words	FG	40%	Professional body requirements

**13. Subject:** *see guidance notes*