

Module Specification

Module Summary Information

1	Module Title	Engineering Principles 1
2	Module Credits	20
3	Module Level	4
4	Module Code	ENG4091

5	Module Overview
<p>The module aims to provide the underpinning knowledge and problem solving skills in engineering science to enable you to progress to the next module in the theme, Engineering Principles II, and then on to the second year of a range of engineering degrees.</p> <p>As the practical aspects of engineering science are delivered in another theme of the common first year, the Engineering Principles modules concentrate on the theoretical aspects. The subject material will be delivered in two coherent streams one of which contains predominantly mechanical science and the other contains predominantly electrical science.</p> <p>Each stream will be delivered as a 2 hour lecture followed by a 2 hour small group tutorial giving 4 hours contact.</p> <p>This module will interact with modules in the other two themes in the common first year in that it will rely on knowledge of mathematical techniques developed in the maths/professional skills theme and will provide theoretical underpinning for the experimental activities in the practical theme.</p>	

6	Indicative Content
<p>Introduction to Mechanics Units, Concepts of Scalars and Vectors Forces, Newton's Laws, Equilibrium, Equations of Linear Motion, Circular Motion, Friction, Direct and Shear Stresses, Strains, Hooke's Law, Poisson's Ratio, Thermal Stress and Strain, Compound bars.</p> <p>Introduction to Materials Materials under Stress, Tensile Testing, Elasticity and Plasticity, Ductile and Brittle Materials.</p> <p>Introduction to Work and Heat Transfer Mechanical Work, Energy and Momentum, Conservation of Energy, Heat transfer principles, Simple Heat Exchangers.</p> <p>Introduction to Electrics and Electronics Electrical SI Units, Bohr's Atom, Electrons, Charge Voltage, Current and Resistance DC Circuits, Ohm's Law and Resistor Networks (Series and Parallel), Electric Power and Kirchhoff's Law, Network Analysis, Mesh and Branch Current AC Circuits, Periodic AC Signals, Electromagnetics, Capacitors, Inductors, Behaviour and Characteristics of Resistors, Inductors and Capacitors with AC Source, Phase and Magnitude Response for Simple Electronic Circuits.</p>	

7	Module Learning Outcomes		
	On successful completion of the module, students will be able to:		
	1	Analyse the material behaviour under different types of stresses.	
	2	Apply Energy conservation and friction principles to solve problems in engineering applications.	
	3	Employ network analysis on AC and DC passive circuits.	
	4	Analyse the behaviour and properties of DC transient response circuits.	

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
1-4	X		
1-4		X	

9	Breakdown Learning and Teaching Activities	
Learning Activities	Hours	
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	48	
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	0	
Private Study (PS) includes preparation for exams	152	
Total Study Hours:	200	