

Module Information
2022.01, Approved
Summary Information

Module Code	3504USST
Formal Module Title	Foundation Physics - Mechanics, Materials and Waves
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 3
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
University of Shanghai For Science and Technology

Learning Methods

Learning Method Type	Hours
Lecture	33
Tutorial	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	12 Weeks

Aims and Outcomes

Aims	The aim of this module is to provide students who may not have studied A-level physics with the prerequisite knowledge regarding mechanics, materials and waves which is required to go on to study for an engineering or technology degree.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Apply their knowledge of force, energy and momentum to analyse the behaviour of simple mechanical systems
MLO2	2	Interpret the properties of materials and apply the equations that describe their characteristics.
MLO3	3	Illustrate the general properties of longitudinal and transverse waves in different media, and apply the governing equations to simple applications.
MLO4	4	Employ the principles of thermodynamics and the thermal properties of a simple system. Derive and apply equations which govern these principles.

Module Content

Outline Syllabus	The list below provides an indicative list of topics which may be covered in this module: Essential Knowledge • Base units • SI Units• Prefixes describing size or quantity• Converting between equivalent units• Scalar and vector quantities• Conditions for equilibrium Force, Energy and Momentum• Newton's laws of motion• Forces and moments• Motion in a straight line• Motion of a projectile• Circular motion• Simple harmonic motion• Momentum• Work, energy and power Materials• Properties of solid materials• Hooke's law• Young's Modulus• Elasticity, plasticity and fracture Waves• Longitudinal and transverse waves• Progressive and stationary waves• Refraction and diffraction • Coherence, interference, superposition and phase Thermodynamics• Thermodynamic laws• Internal energy and enthalpy• Absolute zero and the Kelvin scale• Heat transfer mechanisms• Changes of state• Heat capacity• Ideal gasses• Boyle's law and Charles's law• Molar mass and molecular mass• Brownian motion
Module Overview	
Additional Information	This module looks at the fundamentals of mechanics, materials and waves, using the maths developed during the Foundation Mathematics modules.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Exam	End of year examination	50	2	MLO1, MLO2, MLO3, MLO4
Portfolio	On-line tests	50	0	MLO1, MLO2

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
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Martin Sharp	Yes	N/A
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Partner Module Team

Contact Name	Applies to all offerings	Offerings
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