

Engineering Principles

Module Information

2022.01, Approved

Summary Information

Module Code	3107CIT
Formal Module Title	Engineering Principles
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
Changshu Institute of Technology

Learning Methods

Learning Method Type	Hours
Lecture	56
Practical	8

Module Offering(s)

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

Aims and Outcomes

Aims	This module is intended to provide students with a good appreciation of - the physical properties and behaviours that influence electrical systems, - how parameters are measured-communications systems
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Identify appropriate sensors and apply basic measurement principles.
MLO2	2	Understand the principles of communications systems and networks.
MLO3	3	Describe basic physical parameters such as heat, temperature, stress and strain and their impact on electrical systems.
MLO4	4	Discuss simple problems in communications systems and networks.

Module Content

Outline Syllabus	1 Basic concepts and methodsUnitsPrecisionaccuracyError analysis2 Measuring principle and sensorHeat, temperatureForces, stress, strainGyroscopes, position and orientationSensors for mechanical parametersMeasurement systems, transducers and sensorsThe effect of the physical environment on electrical systems3 Frequency domain and time domainSine Waves – Frequency, Phase, Amplitude; Time and frequency domain representation;Spectrum – Bandwidth and Frequency responseNoise and Interference; SNRPropagation – fibre, copper, radio; Signal Strength; power and energy; dB4 Basic principles of communication systemsBaseband– binary line coding, detection, timing, differential codes, block codes,Passband –modulation, AM, FMDigital and Analogue– comparison, uses, conversion, sampling5 Basic principles of networksNetwork introduction - topologies, connection types, media, synchronous and asynchronous systems, protocols
Module Overview	
Additional Information	This module will introduce students to fundamental mechanical parameters, their measurement, and their impact on electrical circuits, and the principles behind the communication of data.Reports are 2500 maximum word count.Examinations are 2 hour duration.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Exam	Exam	50	2	MLO3, MLO4
Report	Coursework	50	0	MLO1, MLO2

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Yongqiang Qiu	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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