

MODULE DESCRIPTOR

Module Title

Engineering Science

| | | | |
|-----------|---------------|-------------|--------|
| Reference | EN1106 | Version | 3 |
| Created | April 2023 | SCQF Level | SCQF 7 |
| Approved | December 2020 | SCQF Points | 30 |
| Amended | August 2023 | ECTS Points | 15 |

Aims of Module

To provide the student with the ability to apply introductory level engineering science to engineering problems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Recall the concepts of engineering mechanics.
- 2 Recall the concepts of thermofluids science.
- 3 Recall the concepts of DC electrical circuits.
- 4 Apply engineering science techniques to solve engineering problems.

Indicative Module Content

Units, forces, moments, equilibrium, stress-strain, shear force and bending moments, kinematics, linear and angular motion, work energy and power. Fluid statics, fluid properties, measurement of pressure.

Thermodynamic systems, properties of gases and common chemicals, processes, energy, heat and work transfers. Electric circuit concepts, voltage and current sources, resistance, current flow and potential distribution. Ohm's and Kirchhoff's laws, simple circuit analysis.

Module Delivery

The module is delivered in Blended Learning mode using structured online learning materials/activities and directed study, facilitated by regular online tutor support. Workplace Mentor support and work-based learning activities will allow students to contextualise this learning to their own workplace. Face-to-face engagement occurs through annual induction sessions, employer work-site visits, and modular on-campus workshops.

| Indicative Student Workload | Full Time | Part Time |
|---|-----------|-----------|
| Contact Hours | 30 | N/A |
| Non-Contact Hours | 30 | N/A |
| Placement/Work-Based Learning Experience [Notional] Hours | 240 | N/A |
| TOTAL | 300 | N/A |
| Actual Placement hours for professional, statutory or regulatory body | 240 | |

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

| | | | | | |
|--------------|---|------------|-----|--------------------|---------|
| Type: | Coursework | Weighting: | 70% | Outcomes Assessed: | 1, 2, 3 |
| Description: | Logbook of solved tutorial questions and quizzes. | | | | |

Component 2

| | | | | | |
|--------------|------------------------|------------|-----|--------------------|---|
| Type: | Coursework | Weighting: | 30% | Outcomes Assessed: | 4 |
| Description: | Open-book online test. | | | | |

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 2 components and to gain an overall pass a minimum D grade must be achieved in each component. The component weighting is as follows: C1 (y-axis) is worth 70% and C2 (x-axis) is worth 30%.

| | | Coursework: | | | | | | |
|-------------|----|--|---|---|---|---|---|----|
| | | A | B | C | D | E | F | NS |
| Coursework: | A | A | A | B | B | E | E | |
| | B | B | B | B | C | E | E | |
| | C | B | C | C | C | E | E | |
| | D | C | C | D | D | E | E | |
| | E | E | E | E | E | E | F | |
| | F | F | F | F | F | F | F | |
| | NS | Non-submission of work by published deadline or non-attendance for examination | | | | | | |

Module Requirements

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|--------------------------|---|
| Prerequisites for Module | Entry requirements normally include a pass in SQA Higher Grade Mathematics. |
| Corequisites for module | None. |
| Precluded Modules | None. |

INDICATIVE BIBLIOGRAPHY

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|---|---|
| 1 | BIRD, J. O., 2014. Electrical and Electronic Principles and Technology. Rev 5th ed. Oxford: Routledge |
| 2 | HEARN, E.J., 1997. Mechanics of Materials: Volume 1. 3rd ed. Oxford: Butterworth-Heinemann. |
| 3 | MERIAM, J.L. and KRAIGE, L.G., 2016. Engineering Mechanics (Statics and Dynamics). 8th ed. New York: Wiley. |
| 4 | Fundamental of Thermal-Fluid Sciences, Yunus A Cengel and Robert H. Turner |
| 5 | An Introduction to Mechanical Engineering, Part 1- Michel Clifford, Richard Brooks et al., Hodder Education |
| 6 | Fluid Mechanics 7th Ed. by B R Munson et al, published by WILEY |
| 7 | Mechanics of Fluids. by B Maessy, Published by Stanley Thornes Ltd |
| 8 | CLIFFORD, M., 2009. Introduction to Mechanical Engineering Part 1. London: Hodder Education. |