



Module Specification

Foundation Mechanics

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Part 1: Information

Module title: Foundation Mechanics

Module code: UFMFAG-30-0

Level: Level 3

For implementation from: 2021-22

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Engineering, Design and Mathematics

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: Triangles: Pythagoras' Theorem; Trigonometric Ratios; Cosine and sine rule; Trigonometry, Graphs and Waveforms; Trigonometrical Identities and

other special relationships.

Fundamental Units, Vectors and Scalars. Vectorial Representation and force components.

Static Equilibrium: Newton's 1st and 3rd Laws, force, weight, resultant component. Moments, equilibrium, Centre of gravity, Centre of area. Free body diagrams. Stress and strain - shear, direct stress, basic definitions. Basic stress analysis.

Dry Friction: Limiting friction; Body at rest on an inclined plane; Impending motion up and down an incline.

Rigid Body Motion: Linear motion, displacement, velocity, acceleration, falling bodies, projectiles, relative velocity, application of Newton's 2nd Law. Work done, power and Conservation of Energy.

Angular Motion: Radians, angular velocity and accelerations. Centripetal and centrifugal acceleration.

Behaviour of Fluids: Fluid properties - pressure, temperature, density. Pressure and pressure measurement. Incompressible Fluid Flow. Volume flow rate and mass flow rate. Continuity Equation. Branched Pipes.

Part 3: Teaching and learning methods

Teaching and learning methods: Scheduled teaching and learning includes lectures and tutorial sessions. Demonstrations and practical experiments will be given within the taught sessions and worked examples, class examples and multiple tutorial questions used to clarify and compound understanding.

Independent learning includes hours engaged in problem solving and preparation of tutorial questions and assignment preparation.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Show an awareness of the basic properties of materials and simple stress analysis

MO2 Show a basic understanding of mechanical principles

MO3 Apply mechanical principles to solve problems in static and dynamic engineering situations

MO4 Show cognitive skills with respect to simplifying real problems and applying mathematical methods of analysis

MO5 Apply the principles of Equilibrium, Motion and Conservation of Energy and Conservation of Mass to solve practical problems

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmfag-30-0.html) via the following link <https://uwe.rl.talis.com/modules/ufmfag-30-0.html>

Part 4: Assessment

Assessment strategy: Component A, an end of module examination has been chosen to test the understanding and knowledge of the fundamentals of mechanics under controlled conditions.

Component B assessment is made up of a written assignment and two e-assessment (DEWIS) tests. These have been chosen to ensure students can solve

problems in static and dynamic engineering situations, display cognitive skills with respect to simplifying real problems and apply mathematical methods of analysis.

Assessment components:

Examination (Online) - Component A (First Sit)

Description: Online Examination: 4 hours

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

In-class test - Component B (First Sit)

Description: E-assessment test 1

Weighting: 10 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

In-class test - Component B (First Sit)

Description: E-assessment test 2

Weighting: 10 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Written Assignment - Component B (First Sit)

Description: Mechanics assignment

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Examination (Online) - Component A (Resit)

Description: Examination: 4 hours

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Written Assignment - Component B (Resit)

Description: Mechanics Assignment

(No set word length as mechanics based mathematical problems)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Automation and Robotics Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2021-22

Automation and Robotics Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2021-22

Mechanical Engineering {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Mechanical Engineering {Foundation}[Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Mathematics with Qualified Teacher Status {Foundation} [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Mathematics {Foundation}[Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Energy Technology and Management {Foundation} [Oct][FT][GCET][4yrs] BSc (Hons) 2021-22

Energy Technology and Management {Foundation} [Feb][FT][GCET][4yrs] BSc (Hons) 2021-22

Building Services Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2021-22

Building Services Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2021-22

Aerospace Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Aerospace Engineering with Pilot Studies {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Automotive Engineering {Foundation}[Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Automotive Engineering {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Electronic Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Electronic Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Robotics {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Robotics {Foundation}[Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Mathematics {Foundation}[Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Engineering {Foundation}[Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Engineering {Foundation}[Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Civil Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22

Civil Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22