

Presentation pattern *October to March*

Module description

This module expands on and extends the broad base of engineering introduced in previous engineering modules. Materials and atomic structure, statics and electricity generation and storage feature as core engineering topics. Underpinning scientific principles, mathematical techniques and design methodologies are introduced as necessary in an engineering context. The module is presented in three parts led by the module website with each part supported by a printed book.

In Part 1 of this module, the use of materials for engineering and the importance of material choice will be investigated. The basic underlying principles that define materials properties will be investigated and materials selection for engineering purposes will be practised. The internal structure of materials will be used to explain many of the material properties. Industry standard materials selection software will be used to understand materials and their selection for appropriate engineering use.

In Part 2, the essential engineering skill of structural analysis using graphical methods such as free body force diagrams, bending moment diagrams and shear force diagrams will be studied. These skills will be contextualised by a problem based case study. Human needs are key to successful engineering design and knowledge gained will be applied to solving problems related to some structural elements of the human body. An understanding of the engineers' theory of bending will be gained and linked to the second moment of area; the theory will be extended into the failure criteria of structures..

In Part 3, the concepts of the generation and storage of electrical energy will be studied, including the laws of electromagnetism. Along with a knowledge of electrical storage and generation comes a responsibility to understand the demand, ethics and environmental impact of electrical generation. Throughout Part 3, case studies will be used to contextualise your studies and highlight key safety aspects of the generation, use and storage of electrical energy.

In addition, throughout this module, significant emphasis is placed on developing study skills. These include technical reading, peer reviewing and reflective practice.

Person specification

The person specification for this module should be read in conjunction with the generic person specification for an associate lecturer at The Open University.

As well as meeting all the requirements set out in the generic person specification, you should be able to demonstrate:

- evidence of recently teaching Engineering at university level
- an enthusiasm for teaching engineering, and associated mathematics, both face to face and online
- the ability to explain difficult Engineering concepts about the properties of engineering materials and their selection, basic structural analysis and the fundamentals of electricity generation, storage and distribution.
- a willingness to develop expertise in the effective use of industry standard software, the use of which are integral to this module
- proven ability of facilitating and developing academic skills in Engineering.

It would be an advantage to have:

- recent experience of working in an engineering environment
- experience of teaching adults at a distance
- a teaching qualification, or professional recognition with a teaching institution such as the Higher Education Academy
- membership of an engineering institution
- experience of supporting students with personal and professional development planning

Additional information

Tuition will be provided through a mix of face-to-face and online tutorials, forums and other online tools, including the Open STEM lab and Open engineering studio.

Module related details - a full explanation can be found on the website

Credits awarded to the student for the successful completion of a module:	30
Number of assignments submitted by the student:	3
Number of computer marked assignments	3
Method of submission for assignments:	2
Level of ICT requirements:	2
Number of students likely to be in a standard group:	20
Salary band:	3
Estimated number of hours per teaching week:	3.0

There may be opportunities for ALs to undertake associated assessment work for which there will be additional payment and about which you will be contacted separately if applicable.