



MODULE DIRECTORY

FOUNDATION YEAR

SCHOOL OF APPLIED COMPUTING

FACULTY OF ARCHITECTURE COMPUTING AND ENGINEERING

2018-2019

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INTRODUCTION

This Module Directory includes all the modules for Foundation Year within the School of Applied Computing in the academic year 2018-2019.

This directory accompanies the Programme of Study Handbook, which will provide you with details of which modules you will be studying for your programme this year in the 'Programme of Study' section. This directory may include modules that are running on other programmes of study within your School/Faculty. If you require assistance in identifying the modules for your programme of study, please contact the Programme Director (whose name and contact details are provided in the accompanying Programme of Study Handbook), or the relevant Faculty Office.

The University has made every effort to make the information as full and as accurate as possible, but you should note that minor changes in the organisation of modules between the planning stage and the actual teaching are inevitable. We shall try to keep any such changes to a minimum, and you will receive plenty of advance warning in the event of any alteration. We would also be grateful if you would let us know about any changes that you think might be helpful if introduced into future handbooks.

MODULES

MODULE CODE: M4X01510
TITLE: Introduction to Electronics
DATED: 04/06/2015

LEVEL: 4
CREDITS: 20

JACS CODE: H610

AIM(S)

- To provide an essential understanding of electrical and electronic concepts considered necessary as a foundation for an engineering degree courses and to show the relevance of those concepts in everyday applications

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Demonstrate a sound grasp of basic electrical and electronic principles in analysing simple problems
2. Explain and evaluate the operation of simple Electrical/Electronic networks

INDICATIVE CONTENT

- DC Electrical Circuit: Electrical current/voltage. Mechanical analogies. Resistors in series and parallel. Heating effect of current, variation of resistance with temperature incandescent lamp. Voltage divider and current divider. Simple circuit calculations, use of Ohm's law and Kirchhoff's laws
- Signals: DC, sinusoid, square wave. Period and frequency. Use of oscilloscope. Peak, mean and rms.
- AC circuits: Capacitors and inductors. Rate of change of current and voltage, C R and L R behaviour to sine and step voltages
- Diodes and Rectifiers: Simple ideas of semiconductors. Simple half wave rectifiers.
- Transistor Amplifiers/Switches: What is a transistor? Design of simple amplifiers.
- Operational Amplifiers: What is an op. Amp? Design of simple inverting and non-inverting amplifiers.
- Digital Circuits: Representation of information by logic levels. Basic gates, AND, OR, NAND, NOR, NOT, XOR. Simple combinational logic.

LEARNING AND TEACHING STRATEGY

Lectures will be backed up by directed reading of books, together with problems sheets and CAL packages and discussed in tutorials.

Practical work will be laboratory based and consist of basic laboratory experiments to illustrate the principles, together with mini projects of a design and construction nature to generate interest and a sense of achievement.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1 – Coursework - 50%

Develop electrical and electronic circuits to well-defined scenarios/problems. This may take the form of a number of exercises presented in a single assignment or multiple worksheets to undertaken throughout the course. (1500 words)

Exemplar: Develop a circuit that counts from one to ten when a button is pressed and display the result using LEDs.

Assessment Component 2 – Written exam - 50%

Students will be required to sit an exam to assess their understanding of the electrical and electronic principles covered during the course. (1 hour)

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes
	No ✓
If yes please provide brief details (no more than 100 words):	

BIBLIOGRAPHY

Essential

Bird, J (2013) *Electrical circuit Theory and Technology*, Routledge,

Floyd, T L (2012) *DC/AC Fundamentals: A Systems Approach*, Prentice Hall

Background

Sinclair, I., Dutton, J (2006) *Practical Electronics Handbook*, Newnes

Journals

Elektor

Electronics World

Websites

<http://vl.fmnet.info/safety/>

<http://mingo.info-science.uiowa.edu/soft-eng/>

<http://www.fmeurope.org/>

MODULE CODE: M4X01508
TITLE: Introduction to Computer Programming
DATED: 04/06/2015

LEVEL: 4
CREDITS: 20

JACS CODE: I320

AIM(S)

- To enable students to understand and apply programming constructs, languages and tools.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Demonstrate an understanding of the syntax, semantics and software constructs of programming language.
2. Deploy a programming language in developing a program given a well-defined scenario or problem.

INDICATIVE CONTENT

- Weakly typed programming/scripting languages e.g. Python, Perl, etc.
- Declaring variables, local and global variables, function arguments.
- Branch constructs: if, else, switch, Boolean AND/OR/NOT
- Loop constructs: while, for loops
- Functions: Arguments and return values
- Design and documentation of code e.g. flow diagrams
- Using a code editor, fundamental debugging techniques

LEARNING AND TEACHING STRATEGY

Essential concepts and principles will be delivered formally in tutorials supported by concurrent practical laboratory exercises, which will allow students to deploy appropriate theory, practices and tools. Seminars will be punctuated with examples designed to underpin the ideas and techniques introduced, reducing the conceptual leap from theory to practice.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1 – Coursework - 30%

Write a report demonstrating an understanding of programming concepts. This may include the design of code using flow charts, etc. (1000 words)

Exemplar: Describe the importance of a loop in programming and how they can be applied to solve programs requiring a large set of numbers.

Assessment Component 2 – Coursework - 70%

Implement a program demonstrating the appropriate use of programming constructs. This may involve a set of exercises presented in a single assignment or a number of worksheets. (2000 words)

Exemplar: Implement a program that allows the user to enter ten numbers and displays the highest and lowest number in the set.

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	100%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes
	No ✓
If yes please provide brief details (no more than 100 words):	

BIBLIOGRAPHY

Essential

Lutz, M (2013) *Learning Python*, O'Reilly

Barry, P (2010) *Head First Python*, O'Reilly Media

Recommended

McGrath, M (2013) *Python in Easy Steps*, In Easy Steps Limited

Shaw, Z A (2013) *Learn Python the Hard Way: A Very Simple Introduction to the Terrifyingly Beautiful World of Computers and Code*, Addison Wesley

Griffiths, D (2009) *Head First Programming: A learner's guide to programming using the Python language*, O'Reilly Media

Cannon, J (2014) *Python Programming for Beginners: An Introduction to the Python Computer Language and Computer Programming*, CreateSpace Independent Publishing Platform

Websites

<https://www.python.org/>

<http://learnpythonthehardway.org/book/>

<http://www.learnpython.org/>

MODULE CODE: M4X01506
TITLE: Integrating Project
DATED: 04/06/2015

LEVEL: 4
CREDITS: 20

JACS CODE: I900

AIM(S)

- To enable student to apply the knowledge they have gained through the modules they have studied, in the development of project. The product of the project will take the form of a subject related application which may be a software application, electronics application, design, etc.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. To implement an application/design synthesizing their knowledge from a number of modules
2. To analyse a well-defined scenario, establish the requirements and develop an appropriate solution

INDICATIVE CONTENT

- Overview of research and development methodologies suitable for student projects.
- Ethical issues
- Sustainability issues
- Contingency planning
- Development of documentation for academic projects
- Presentation of work produced to an academic audience
- Subject-specific content as required

LEARNING AND TEACHING STRATEGY

At commencement of their studies, students will be provided with a project definition document that will describe a well-defined scenario/problem for which the student will be required to develop an application or design. The scenario will be tightly controlled to ensure that the student will be able to complete the project in the available time and with the knowledge they possess.

Students will be expected to bring to the module knowledge and skills gained in the other modules during the year. For example, research and academic writing skills are covered in the *Academic Writing* module. This will be supplemented by a series of lectures covering a number of topics including project planning, project documentation, requirements analysis, design methodologies and design evaluation.

Project supervision will be determined by the subject area of the project, although initially supervision may be provided by the staff member delivering this module.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%
TOTAL	200	100%

The module is delivered in 2 identifiable stages:

1. Project Planning and Research
Criteria for assessment include:
 - Project Introduction (including identification of any legal, ethical and sustainability issues)
 - Background research
 - Understanding of subject area
 - Project plan
2. Design and/or Development
Criteria for assessment include:
 - Technical knowledge/skill
 - Originality
 - Analytical skills
 - Quality of result (performance of the finished application or suitability of the design)
 - Evaluation shown

ASSESSMENT

Assessment Component 1 – Coursework - 60%

Students will be required to produce a written report documenting the background research conducted, the design process, and the results. In addition, the students will be expected to provide a project plan. (2000 words)

Assessment Component 2 – Coursework - 40%

Students will be required to design and/or implement an application related to the subject area they wish to study. They will be required to present their project, in the form of a display/demonstration, to their project supervisor. (1500 words equivalent)

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	100%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes ✓
	No
If yes please provide brief details (no more than 100 words): During the project, students will be expected to consider legal and sustainability issues, and document their considerations in the introduction to the written report. Furthermore, the purpose of this module is to ensure that students are able to extract concepts and ideas from a number of modules and apply them together to achieve their objective. Sustainability is also about developing learning skills, and in this regard the module encourages that process of working independently.	

BIBLIOGRAPHY

Essential

Sommerville, I (2010) *Software Engineering*, Pearson Education

Recommended

Collis, J, Hussey, R (2009) *Business Research: a Practical Guide for Undergraduate and Postgraduate Students*, Palgrave Macmillan

Christopher, D (2013) *Computing Projects*, Pearson Education

Berndtsson, T (2012) *Planning and Implementing your Project*, Springer Verlag

Background

Cottrell, S. (2011) *Critical Thinking Skills: Developing Effective Analysis and Argument*, Palgrave Macmillan

Denscombe, M (2010) *The Good Research Guide*, OU Press

Journals

Appropriate journals from the core subject areas

Websites

Appropriate websites from the core subject areas.

MODULE CODE: M4X01500
TITLE: Computer Systems
DATED: 04/06/2015

LEVEL: 4
CREDITS: 20

JACS CODE: I111

AIM(S)

- To provide students with a fundamental understanding of the key components and characteristics of computer systems.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Understand computer hardware, operating systems and computer networking principles.
2. To install and manage a networked computer and a range of software applications.

INDICATIVE CONTENT

- Operating systems. Processes, services and applications. User management. DOS commands
- Computer networks, network cards, Ethernet cable, etc. RJ45 sockets, jacks and wiring, 4-port Ethernet switches.
- File systems e.g. files, folders, file name extensions, etc.
- Components of PC, processors, memory, motherboard, motherboard interfaces, e.g. PCI, PCI Express, and AGP.
- Security, personal firewalls, anti-virus software and software patches.
- Installing and configuring applications, windows registry, user rights, etc.
- The role of a network administrator
- Internet access, Broadband Routers, Internet Service Providers, DHCP, etc.
- Disposing of computer equipment, environmental, privacy and security implications

LEARNING AND TEACHING STRATEGY

Lectures will introduce the students to the concepts, principles and practices. Tutorials and seminars will introduce practical examples which will be used to support the application, discussion, and critical evaluation of techniques learned. Case studies will also be used to develop understanding and application of the techniques.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1 – Coursework – 50%

Install software, configure and manage a networked PC and write a report detailing the steps taken. This may take the form of a set of worksheets. (1500 words)

Exemplar: Install and configure an operating system suitable for an office network environment that provides access to file and printer sharing services.

Assessment Component 2 – Written - 50%

Students will be required to sit an exam assessing their understanding of the fundamental concepts of computer systems. (1 hour)

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes ✓
	No
If yes please provide brief details (no more than 100 words): The module will consider the environmental impact of disposing of computer equipment. This will include the security and privacy implications of old data stored on hard drives and other backup devices.	

BIBLIOGRAPHY

Essential

Stallings, W (2012) *Computer Organization and Architecture: Designing for Performance*, Pearson Education

Patterson, D A (2013) *Computer Organization and Design: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design)*, Morgan Kaufmann Publishers

Recommended

Petzold, C (2000) *Code: The Hidden Language of Computer Hardware and Software*, Microsoft Press

Tanenbaum, A (2013) *Computer Networks*, Prentice Hall

Northrup, T (2013) *Windows 8.1 Inside Out*, Microsoft Press

Tanenbaum, A (2013) *Computer Networks*, Prentice Hall

Boyce, J (2014) *Windows 8.1 Bible*, John Wiley & Sons

Background

Tanenbaum, A. S (2013) *Modern Operating Systems*, Prentice Hall

Journals

IEEE Computer Magazine

IEEE Network Magazine

IEEE Transactions on Networking

IEEE Communications Magazine

IEEE Internet Computing Magazine

IEEE Transactions on Communications

IEEE Transactions on Wireless Communications

Websites

<http://anandtec.com>

<http://tomshardware.com>

<http://storagereview.com>

<http://www.cisco.com>

<http://www.microsoft.com>

<http://www.ss64.com/nt>

<http://www.networktutorials.info>

MODULE CODE: M4X01499
TITLE: Analysing and Solving Problems
DATED: 04/06/2015

LEVEL: 4
CREDITS: 20

JACS CODE: I290

AIM(S)

- To provide students with the ability to develop generic solutions to problems using abstract thinking skills.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Evaluate a problem and formulate requirements and constraints.
2. Analyse a problem and produce a logical solution.

INDICATIVE CONTENT

- Deconstructing Technical Language and Identifying Problems
- Problem solving approaches and techniques
 - Interpreting natural language problems
 - Subdividing problems
 - Constraining problems
- Determining generic and specific solutions.
- Abstract thinking skills
- Reapplying solutions across different contexts
- Rules, heuristics and algorithms
- Logic and rhetoric
- Logical fallacies
- Boolean algebra
- Statistics and analysing results

LEARNING AND TEACHING STRATEGY

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1 – Written - 50%

Time-constrained in-class test (1 hour)

Assessment Component 2 – Coursework - 50%

Students will be required to solve a problem given logically, presenting requirements and possible solutions. (1500 words)

Exemplar: Describe the logical rules of tic tac toe and develop requirements for a computer program to simulate the game.

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes
	No ✓
If yes please provide brief details (no more than 100 words):	

BIBLIOGRAPHY

Essential

Levitin, A and Levitin, M (2011) *Algorithmic Puzzles*, Oxford University Press.

McInerny, D Q (2005) *Being Logical*, Random House.

Michalewicz, M and Michalewicz Z (2010), *Puzzle-based Learning; An introduction to critical thinking, mathematics and problem solving*, Hybrid Publishers.

Background

Fraser, Jen and Anthony, P (2014) *Everyone's a Genius: Simple Tips to Boost Your Brilliance Now*, Ideation Training Pty Ltd

Gardner, M (1978) *aha! Insight*, Scientific American.

Watanbe, K (2009) *Problem Solving 101: A Simple Book for Smart People*

MODULE CODE: M4X01498
TITLE: Academic Writing
DATED: 04/06/2015

LEVEL: 4
CREDITS: 20

JACS CODE: X210

AIM(S)

- To enable students to communicate effectively in a written form when describing concepts or constructing arguments.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Write clearly and effectively when describing ideas and concepts relevant to their field.
2. Consult and reference appropriate resources to support their analysis or findings.

INDICATIVE CONTENT

- The learning process and the skills required to develop an understanding of a concept or principle.
- Gathering information, planning and researching a topic
- Strategies for taking notes, writing essays and reports
- Understanding the elements of non-verbal communication, constructing and documenting arguments
- Developing confidence in tackling communication tasks and being able to debate effectively
- The importance of referencing and the standard referencing systems

LEARNING AND TEACHING STRATEGY

Lectures will provide the student with the necessary techniques and approaches to develop their own writing skills. Tutorials will be used to discuss and disseminate ideas, or to evaluate the findings of the students in completing tasks.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%

TOTAL	200	100%
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ASSESSMENT

Assessment Component 1 – 50% - Coursework (1500 words)

Write a report that discusses a specified topic, providing evidence of background research.

Assessment Component 2 – 50% - Coursework (1500 words)

Debate a topic either specified by the lecturer or chosen by the student in a written essay, demonstrating a clear understanding of the arguments being presented.

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	100%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes ✓
	No
If yes please provide brief details (no more than 100 words): Sustainability extends to the abilities a student possesses to further their learning and adapt to changes throughout their working lives. One of the aims of this modules is to help the student to manage their own learning and development, including the time management and organisational skills required for employment whilst recognising the need for lifelong learning.	

BIBLIOGRAPHY

Essential

Osmond, A (2013) *Academic Writing and Grammar for Students*, Palgrave Macmillan

Pears, R, Shields, G (2010) *Cite Them Right: The Essential Referencing Guide*, Palgrave Macmillan

Recommended

Cottrell, S (2013) *The Study Skills Handbook*, SAGE Publications Ltd

Gillett, A (2009) *Inside Track to Successful Academic Writing*, Longman

Greetham, B (2013) *How to Write Better Essays*, Palgrave Macmillan

Background

Cottrell, S (2011) *Critical Thinking Skills: Developing Effective Analysis and Argument*, Palgrave Macmillan

Journals

International Journal for Academic Development.

Journal of the International Consortium for Educational Development.

International Journal of Training and Development.

Websites

<http://www.skills4study.com>

<http://www.palgrave.com/skills4study>

<http://www.cipd.co.uk>

<http://www.ltscotland.org.uk/studyskills>

<http://www.bized.co.uk/reference/studyskills/index.htm>

<http://www.how-to-study.com>

<http://www.employment-studies.co.uk>

MODULE CODE: M3X01513
TITLE: Science
DATED: 04/06/2015

LEVEL: 3
CREDITS: 10

JACS CODE: K290

AIM(S)

- To establish an understanding of engineering units of measurement.
- To establish an understanding of statics in engineering.
- To provide an introduction to electrical science.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Identify and apply appropriate physical principles and relationships in the solution of engineering problems
2. Manipulate equations to produce numerical values in engineering units

INDICATIVE CONTENT

- Units - basic SI units of length, mass and time, area and volume, density and relative density, mass and weight, force, work and power.
- Forces and moments - conditions of static equilibrium, forces and reaction, especially simply supported beams. Moments of a form. Resultant, couples, centre of gravity. Vector rotation. Resolution of forces. Polygon of forces.
- Electrical current/voltage. Mechanical analogies. Resistors in series and parallel. The heating effect of current, variation of resistance with temperature-incandescent lamp. Voltage divider and current divider. Simple circuit calculations, use of Ohm's law and Kirchhoff's laws.

LEARNING AND TEACHING STRATEGY

Activity type	Hours	Percentage
Scheduled learning	30	30%
Independent learning	70	70%
Placement learning	0	0%
TOTAL	100	100%

ASSESSMENT

Assessment Component 1 – Coursework - 30%

Coursework based on laboratory experiment to assess student's ability to conduct experimental studies. (500 words)

Exemplar:

Assignments for this module are expected to have a practical element whereby the students are expected to use engineering equipment in order to perform an experiment which explores the laws that they have been studying. The experiment will be conducted by the students and the results collated, analysed and reported, with particular reference to the validation of the laws being investigated and with particular attention to the resolution and errors of the experimental methodology.

Assessment Component 2 – Written exam - 70%

Examination to assess student's understanding of key theories, concepts and calculations. (1 hour)

Assessment Summary

Activity type	Percentage
Written exam	70%
Coursework	30%
Practical	0%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes
	No ✓
If yes please provide brief details (no more than 100 words):	

BIBLIOGRAPHY**Essential**

Bolton, W. (2007) *Engineering Science*, Arnold

McDonagh, I. and Waterworth, G. *Engineering Science Volumes 1 and 2*, Arnold

McDonagh, I., *Mechanical Science for Technicians Volume 1*, Arnold

Background

Hannah, J. and Hillier, M. 1999) *Mechanical Engineering Science*, Longman

Bird, J. O. and Ross, C. (2012) *Mechanical Engineering Principles*, Routledge

MODULE CODE: ACFA4000
TITLE: Further Mathematics
DATED: 28/03/2018

LEVEL: 4
CREDITS: 20

JACS CODE: H100

AIM(S)

- To provide students with a sound understanding of mathematical principles and the application of these principles to concepts in engineering.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

- demonstrate understanding in aspects of mathematical principles to a level that underpins the knowledge required for further study at a higher level;
- Use mathematics as an instrument for the solution of basic engineering problems.

INDICATIVE CONTENT

- Differential Calculus
 - The concept of calculus and the gradient at a point on curve.
 - Differentiation of basic functions.
 - Maximum and minimum theory.
- Integral Calculus
 - Integration of functions and the relationship with differential calculus.
 - Standard integrals.
 - RMS values.
- Trigonometry
 - Solution of any triangle and angles of any magnitude.
 - Introduction to complex numbers and how they plotted the Argand diagram.
 - Basic trigonometric identities.
- Statistics
 - Sampling and data presentation, eg, bar charts, histograms and frequency curves.
 - The normal distribution.

LEARNING AND TEACHING STRATEGY

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☒ **Written exam** ☐ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Exam	90 minutes	100%

Assessment Summary

Activity type	Percentage
Written exam	100%
Coursework	0%
Practical	0%
TOTAL	100%

READING LIST

Module Code	ACFA4000	
Module Title	Further Mathematics	
Classification	Reading List entry	Electronic*
Essential	Bird, J (2005) <i>Basic Engineering Mathematics</i> , Newnes.	☐
Essential	Davies, H, Hicks, A, <i>Mathematics for Scientific and Technical Students</i> .	☐
Essential	Stroud, K A, (2007) <i>Engineering Mathematics</i> , Industrial Press .	☐
Further	Bird, J. O. and Ross, C. (2012) <i>Mechanical Engineering Principles</i> , Routledge.	☐
Further	Bird, J, (2006) <i>Higher Engineering Mathematics</i> , Newnes.	☐

MODULE CODE: ACFA3000
TITLE: Mathematics
DATED: 18/12/2017

LEVEL: 3
CREDITS: 10

JACS CODE: G100

AIM(S)

- To provide students with a sound understanding of mathematical principles.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

- apply fundamental mathematical principles to a level that underpins the knowledge required for further study at a higher level;
- apply mathematics in the solution of basic engineering problems.

INDICATIVE CONTENT

- Introduction to basic fractions, indices and standard form
- Introduction to logarithms
- Introduction to the transposition of formulae
- Plotting standard graphs usually found in Science for example, linear, quadratic, reciprocal and exponential functions
- Techniques for resolving equations using graphical methods
- An introduction to vectors
- Evaluation of basic trigonometrical equations

LEARNING AND TEACHING STRATEGY

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	30	30%
Independent learning	70	70%
Placement learning	0	0%
TOTAL	100	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Exam	90 minutes	100%

Assessment Summary

Activity type	Percentage
Written exam	100%
Coursework	0%
Practical	0%
TOTAL	100%

READING LIST

Module Code	ACFA3000	
Module Title	Mathematics	
Classification	Reading List entry	Electronic
Essential	Bird, J (2005) <i>Basic Engineering Mathematics</i> , Newnes	☐
Essential	Davies, H; Hicks, A, <i>Mathematics for Scientific and Technical Students</i>	☐
Essential	Stroud, K A, (2007) <i>Engineering Mathematics</i> , Industrial Press	☐
Further	Bird, J. O. and Ross, C. (2012) <i>Mechanical Engineering Principles</i> , Routledge	☐
Further	Bird, J, (2006) <i>Higher Engineering Mathematics</i> , Newnes	☐