Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

PROGRAMME OF STUDY HANDBOOK

ACADEMIC DISCIPLINE OF ENGINEERING

BEng/HND/C/DipHE/CertHE Advanced Manufacturing Operations
BEng/HND/C/DipHE/CertHE Energy & Environmental Engineering
BEng/HND/C/DipHE/CertHE Manufacturing Systems Engineering
BEng/HND/C/DipHE/CertHE Materials Science
BEng/HND/C/DipHE/CertHE Mechanical Engineering
BEng/HND/C/DipHE/CertHE Mechanical & Manufacturing Engineering
BEng/HND/C/DipHE/CertHE Mechatronics Engineering
BSc/HND/C/DipHE/CertHE Engineering Management

LEVEL 4

WALES INSTITUTE OF SCIENCE & ART

2022-2023

CONTENTS PAGE

Page No

INTRODUCTION 1

FEEDBACK 1

PROGRAMMES OF STUDY AND PROGRAMME MANAGERS 2

SUPPORT DURING YOUR STUDIES 2

EXTERNAL EXAMINERS 3

ACADEMIC YEAR 2022/23 4

DISCLOSURE AND BARRING SERVICE (DBS) – ENHANCED 5

MODULAR TERMINOLOGY 6

ASSESSMENT 6

- Extenuating Circumstances 6
- Additional needs in terms of assessment 6
- Academic Appeals 7
- Assessment Regulations 7
- Responsibilities of students in relation to the assessment process 7

VIRTUAL LEARNING ENVIRONMENT (VLE) 7

ASSESSMENT FEEDBACK VIA TURNITIN 9

PROGRAMMES OF STUDY 10

- (1) BEng/HND/C/DHE/CHE Advanced Manufacturing Operations (PT) 10
- (2) BEng/HND/C/DHE/CHE Energy & Environmental Engineering 14
- (3) BEng/HND/C/DHE/CHE Manufacturing Systems Engineering (PT) 19
- (4) BEng/HND/C/DHE/CHE Materials Science (PT) 23
- (5) BEng/HND/C/DHE/CHE Mechanical Engineering 28
- (6) BEng/HND/C/DHE/CHE Mechanical & Manufacturing Engineering 33
- (7) BEng/HND/C/DHE/CHE Mechatronics Engineering 38
- (8) BSc/HND/C/DHE/CHE Engineering Management (PT) 43

UNIVERSITY ATTENDANCE POLICY 49

- ATTENDANCE MANAGEMENT FOR ENGAGEMENT AND ATTAINMENT 50
- SCHOOL OF ENGINEERING REPSONSE TO POOR ATTENDANCE 51

CODES OF CONDUCT 52

ABOUT ACADEMIC MISCONDUCT AND PLAGIARISM 53

- Plagiarism: Regulations, Procedure and Penalties 53

Avoiding Plagiarism 53
Other types of Academic Misconduct 54
LIBRARY AND LEARNING RESOURCES 54
DIGITAL CREATIVITY AND LEARNING (DCL) 55
IT SERVICE DELIVERY 56
STUDENT SERVICES 57
STUDY SKILLS 57
COMPLAINTS 58

INTRODUCTION

This handbook provides you with information about your Programme of Study for the academic year 2022/23. Module descriptors are presented in the accompanying Module Directory document.

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 advance warning in the event of any alteration.

FEEDBACK

Feedback on your programme of study and modules is welcome and important and will help us to improve and enhance your learning experience. You can give feedback in a number of ways: through the academic representatives for your programme of study, through module evaluation questionnaires, through informal meetings with your academic support tutor, teaching staff, or Programme Manager, through focus groups to gain feedback from students on particular issues, or through the Students' Union. If there are issues, then it is important that you share these with us so that we can address them. 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. Your opinion is valued.

PROGRAMMES OF STUDY AND PROGRAMME MANAGERS

This handbook covers the following Programmes of Study. The name and contact details of the Programme Managers are also listed below.

Programme of Study	Programme Manager	Tel. No.	E-mail
BEng/HND/C Advanced Manufacturing Operations	Arnaud Marotin	+441792481000 x3362	arnaud.marotin@uwtsd.ac.uk
BEng/HND/C Energy & Environmental Engineering	Andrew Thorn	+441792481000 x4321	andrew.thorn@uwtsd.ac.uk
BEng/HND/C Manufacturing Systems Engineering	Arnaud Marotin	+441792481000 x3362	arnaud.marotin@uwtsd.ac.uk
BEng/HND/C Materials Science	Arnaud Marotin	+441792481000 x3362	arnaud.marotin@uwtsd.ac.uk
BEng/HND/C Mechanical Engineering	Kelvin Lake	+441792481000 x4319	kelvin.lake@uwtsd.ac.uk
BEng/HND/C Mechanical & Manufacturing Engineering	Kelvin Lake	+441792481000 x4319	kelvin.lake@uwtsd.ac.uk
BEng/HND/C Mechatronics Engineering	Kelvin Lake	+441792481000 x4319	kelvin.lake@uwtsd.ac.uk
BSc/HND/C Engineering Management	Andrew Thorn	+441792481000 x4321	andrew.thorn@uwtsd.ac.uk

SUPPORT DURING YOUR STUDIES

A member of staff will be identified at the beginning of the academic year to act as a point of first contact for support issues. Further support can also be accessed through the Student Services department.

EXTERNAL EXAMINERS

All taught Programmes of Study which lead to an award of the University have at least one External Examiner. The principal purposes of the University's external examiner system are to ensure that:

- the standard of each award is maintained at the appropriate level;
- the standards of student performance are comparable with standards on similar programmes or subjects in other UK institutions with which they are familiar;
- the processes for assessment and the determination of awards are sound and fairly conducted.

Students may request a copy of the previous year's External Examiner's Report for their programme of study by contacting the Programme Manager.

The current External Examiners for the Programmes of Study are:

Programme of Study	**External Examiner for 2022/23 (forename/surname)**	**External Examiner for 2021/22 (if different to current)**
BEng/HND/C Advanced Manufacturing & Operations	Mr Rinkal Desai	
BEng/HND/C Energy & Environmental Engineering	Mr Rinkal Desai	
BEng/HND/C Manufacturing Systems Engineering	Mr Rinkal Desai	
BEng/HND/C Materials Science	Mr Rinkal Desai	
BEng/HND/C Mechanical Engineering	Mr Rinkal Desai	
BEng/HND/C Mechanical & Manufacturing Engineering	Mr Rinkal Desai	
BEng/HND/C Mechatronics Engineering	Mr Rinkal Desai	
BSc/HND/C Engineering Management	Mr Rinkal Desai	

Please note that students are not permitted to make direct contact with the External Examiners without permission and to do so may be considered a disciplinary offence.

ACADEMIC YEAR 2022/23

The academic year 2022/23 will be divided up as follows:

Induction	26/09/22 - 30/09/22
Semester 1:	26/09/22 - 27/01/23
Exam Period 1:	04/01/23 - 13/01/23
Examining Boards:	30/01/23 - 10/02/23
Semester 2:	30/01/23 - 14/07/23
Exam Period 2:	03/05/23 - 17/05/23
Examining Boards:	30/05/23 - 15/06/23
Re-sit Period:	17/07/23 - 21/07/23

Please note that dates are subject to change depending upon developments relating to the Coronavirus/Covid-19 pandemic.

INFORMATION ABOUT YOU AND YOUR PROGRAMME OF STUDY

Information about you and your programme of study is held by the University on a central Student Record System managed by the University Registry. It is essential that the University Registry has an accurate record of your personal details at all times. It is equally important to ensure that you are enrolled on the correct Programme of Study and on the correct modules and that you read and agree to the Enrolment Agreement.

My Student Record / MyTSD

You can view your personal details on MyTSD and make requests to amend data when your circumstances change. It is important to keep your personal details up to date. You can use MyTSD to:

- enrol for the new academic year
- generate a 'Confirmation of enrolment' letter
- generate a council tax exemption letter and/or bank letter
- view enrolment and module registration details
- amend your address
- check your financial information (e.g. fees due)
- submit a programme change request
- apply for 'Extenuating Circumstances'
- check your module results and examining board decision
- request to withdraw from your studies

Failure to keep your personal details up to date can result in a range of problems including:

- delays in obtaining your student loan;
- failure to contact you in an emergency;
- not being able to borrow materials from the Library and Learning Resources; and
- not being able to use the Information Technology services;
- potential non-compliance with visa regulations.

Please take time to check your enrolment details on MyTSD.

DISCLOSURE AND BARRING SERVICE (DBS) – ENHANCED

If your programme involves you coming into contact with children or vulnerable adults, you will be required to undertake a DBS check (Enhanced). Further details will be provided by the University Registry or Programme Manager.

As part of each programme's procedures relating to DBS, continuing students will normally be required to inform their Programme Manager immediately of any change to their criminal convictions' status.

You will also be asked to complete a formal self-declaration during the enrolment period at the beginning of the academic year, which confirms your criminal conviction status.

MODULAR TERMINOLOGY

Level (of Study):

A level is assigned to each module to define the standard of its academic demand in line with the National Qualifications Framework which incorporates both Further Education and Higher Education.

The level is not necessarily synonymous with a year, though very often Level 4 will be the first year of a Programme of Study, Level 5 will be the second year, and Level 6 will be the third year. The basic characteristics of the relevant levels of study are outlined by the Welsh Assembly government and available on their website:
https://gov.wales/sites/default/files/publications/2018-02/level-descriptors.pdf

ASSESSMENT

At the start of each module, tutors will provide on Moodle full details of the means by which you will be assessed in that module. This will include a full assessment brief and guidelines on the criteria that will be used for marking your work as well as clear information about when the assessments are due and the turn-around feedback time for the assessments. It will also detail how you will be able to discuss the feedback on your work and your performance and what to do if you have any questions.

All assessed written coursework needs to be submitted in electronic copy via Turnitin; alternative instructions will be provided by the Programme Manager for any forms of coursework that cannot be submitted via Turnitin.

The University offers programmes in both English and Welsh. The normal expectation is that you will be assessed in the same language in which the programme or modules are delivered. If you have been taught in English and wish to be assessed in Welsh, or vice versa, you should consult your Programme Manager about the options available to you.

You will receive confirmation of your assessment marks at the end of each year. Any marks released prior to formal approval by the Progression / Award Examining Board are provisional.

Extenuating Circumstances

If you believe that there are extenuating circumstances which may have adversely affected your ability to complete coursework or examinations, you should follow the University's procedures for Extenuating Circumstances for Taught Provision, which can be found on the University's website and forms part of the *Mitigating Circumstances Policy*:
http://www.uwtsd.ac.uk/academic-office/procedures-for-academic-appeals-complaints-and-other-student-cases/

Additional needs in terms of assessment

If you have any additional needs in terms of assessment, it is your responsibility to liaise with Student Services regarding those needs at the start of the academic year, so that a Statement of Compensatory Measures can be drafted in line with the University's procedures for assessment of students with additional needs.
http://www.uwtsd.ac.uk/services-for-disabled-students/

Academic Appeals
Information about how to appeal is provided in the 'Academic Appeal Procedure' which forms part of the *Academic Appeal Policy* associated with Chapter 12 of the Academic Quality Handbook, and in supporting documentation published on the Academic Office section on the University's website:
http://www.uwtsd.ac.uk/academic-office/procedures-for-academic-appeals-complaints-and-other-student-cases/

Additional advice is available from the Students' Union. It is very important that you note carefully the grounds on which appeals may be made and submit your appeal on the appropriate form because incomplete or ineligible appeals cannot be processed.

Assessment Regulations
The rules and regulations that govern the assessment of your Programme of Study are available in Chapters 6 and 7 of the University's Academic Quality Handbook, a copy of which is available on the Academic Office section of the website:
http://www.uwtsd.ac.uk/academic-office/academic-quality-handbook/

Responsibilities of students in relation to the assessment process
You are responsible for ensuring that:

i) You are correctly enrolled on your programme of study (including re-enrolment for each academic year after initial enrolment).
ii) You read and understand the information provided about how you will be assessed, how your final award will be determined, and the action to take in the event that you experience difficulties relating to assessment.
iii) You attempt every assessment component of a module.
iv) You attend examinations and other assessment events, including re-examination and re-assessment events, as required; and that you are available to attend oral examinations if required to do so within the published dates of terms or semesters, or other date notified to you in advance.
v) You submit work for assessment as required and in accordance with the required format and deadline.
vi) You inform your Programme Manager or Student Services of any disability or long-term impairment which might require special provisions for assessment.
vii) You familiarise yourself with the University's definition of academic misconduct and undertake assessments in a manner that does not attempt to gain unfair advantage.
viii) You follow the prescribed procedures in the event that you experience extenuating circumstances or wish to appeal against the decision of an Examining Board.
ix) You keep a copy of work presented for assessment wherever feasible.
x) You make your work available for sampling for external examining purposes.

VIRTUAL LEARNING ENVIRONMENT (VLE)

Moodle is the University's Virtual Learning Environment (VLE). The VLE is used to support learning and teaching. It can be accessed by **enrolled** students from anywhere in the world using the internet and a web browser.

Some of Moodle's features allow students to:

- Access course materials
- Facilitate communication between students and tutors - this may also take place via Microsoft Teams
- Support group tasks
- Take online assessments with automatic marking and feedback facilities

Moodle can be used for administration tasks such as:

- Displaying announcements e.g. lecture venue changed
- Submission of assignments electronically
- Administration of online surveys, such as module questionnaires

How to Access:

You can access Moodle in 3 different ways:

1. From Hwb - Access your Hwb dashboard either by logging into a campus PC and opening Internet Explorer, or accessing https://hwb.uwtsd.ac.uk from any browser on an internet-connected device. Click on the Moodle tile.
2. From the University Website - navigate to https://uwtsd.ac.uk/ and select Quick Links (top left side of screen) and then Moodle.
3. URL Input - Open any browser on an internet-connected device and navigate to https://moodle.uwtsd.ac.uk

If you are already signed into the Hwb or Office 365 you should be automatically signed into Moodle when you connect, if not log in using your Network username and password which are the same as used to access a campus PC.

If you are missing courses/modules in the **My Courses** block please contact your **lecturers** to ask if they use Moodle. Please note it can take 24hrs for enrolment data to feed into Moodle. If you have problems finding resources (timetables, lecture notes, assignment briefs etc.) please contact the **lecturer** that delivers the course/module.

For any technical issues or error messages contact the **IT Service Desk** via:
Web: https://webhelp.uwtsd.ac.uk
Tel: 0300 500 5055
Or email: ITServiceDesk@uwtsd.ac.uk
In any correspondence please include your name and username (your student number) together with details of your issue.

Further information on using online and digital resources can be found at https://digitallearning.uwtsd.ac.uk/

ASSESSMENT FEEDBACK VIA TURNITIN

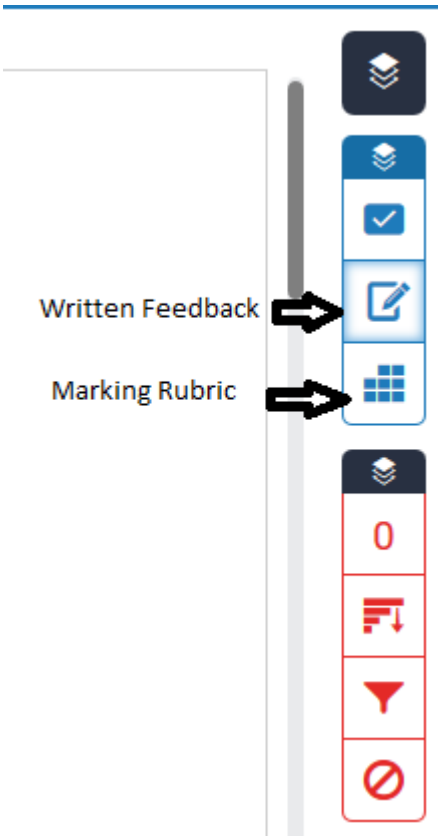
For feedback provided through Turnitin, there are two areas to get your feedback: written feedback, and the marking rubric.

Written feedback will comment on the overall work.

The marking rubric will focus on how the piece of work meets the criteria listed in the relevant rubric.

The marking rubric does not give a mathematically calculated result based on the sum of individual components, but is used holistically to help determine the mark.

Written Feedback and the Marking Rubric can be found by clicking the buttons as shown when you view your submitted assignment in Turnitin.



PROGRAMMES OF STUDY

(1) BEng/HND/C/DHE/CHE Advanced Manufacturing Operations (PT)

The programme has the following general educational and specific aims:

To produce graduates who will:

- be able to establish and implement a quality culture within the manufacturing environment
- supervise the work of manufacturing engineers, trainee engineers and support staff
- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;
- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;
- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the advanced manufacturing and operations industry;
- be familiar with the nature of business and enterprise in the creation of economic and social value;
- appreciate the global dimensions of advanced manufacturing and operations, commerce and communication;
- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;
- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BEng Advanced Manufacturing Operations

Underpinning Mathematics, Science and Associated Disciplines (MSAD)

MSAD1 **Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in manufacturing and operations and associated disciplines, to enable appreciation of its operational context and to support their understanding of future developments and technologies.**

MSAD2 Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in manufacturing and

operations and associated disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of manufacturing and operational problems.

MSAD3 Exhibit an ability to apply and integrate knowledge and understanding of quality improvement to support the study of manufacturing and operation and associated disciplines.

Manufacturing and Operations Analysis (MA)

MA1 Demonstrate their knowledge and understanding of manufacturing and operation principles and the ability to apply them to analyse key operational processes.

MA2 Demonstrate an ability to identify, classify and describe the performance of systems and operations using analytical methods and modelling techniques.

MA3 Demonstrate an ability to apply quantitative methods and computer software relevant to manufacturing and operations and related disciplines, to solve operational problems.

MA4 Demonstrate an understanding of and an ability to apply a systems approach to manufacturing and operations.

Design (D)

D1 Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.

D2 **Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.**

D3 Identify and manage cost drivers.

D4 Use creativity to establish innovative solutions.

D5 Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.

D6 Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1 Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.

ES2 Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.

ES3 **Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.**

ES4 Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

ES5 Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (EP)

EP1 Demonstrate their knowledge of characteristics of particular equipment, processes or products.

EP2 Demonstrate engineering workshop and laboratory skills.

EP3 Demonstrate their understanding of contexts in which manufacturing knowledge can be applied (e.g. operations and management, technology, development, etc.)
EP4 Demonstrate their ability to use technical literature and other information sources.
EP5 Demonstrate an awareness of nature of intellectual property and contractual issues.
EP6 Demonstrate an understanding of appropriate codes of practice and industry standards.
EP7 Demonstrate an awareness of quality issues.
EP8 Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 2: HND/DipHE Advanced Manufacturing Operations

Underpinning Mathematics, Science and Associated Disciplines (MSAD)

MSAD1b **Demonstrate their knowledge and understanding of scientific necessary to underpin their education in manufacturing and operations and associated disciplines,**
MSAD2b Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key manufacturing and operation principles.

Manufacturing and Operations Analysis (MA)

MA1b **Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement**
MA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems.
MA3b Demonstrate an ability to apply a systems approach to manufacturing and operation problems.

Design (D)

D1b **Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.**
D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.
D3b Identify and manage cost drivers.
D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b Demonstrate their knowledge of management techniques which may be used to achieve manufacturing and operations objectives within that context.
ES2b Demonstrate their understanding of the requirement for manufacturing and operations activities to promote sustainable development.
ES3b Demonstrate an awareness of the framework of relevant legal requirements governing manufacturing and operations activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.
EP2b Demonstrate engineering workshop and laboratory skills.
EP3b Demonstrate their ability to use technical literature and other information sources.
EP4b Demonstrate an ability to use appropriate codes of practice and industry standards.
EP5b Demonstrate an awareness of quality issues.
EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Advanced Manufacturing Operations

Underpinning Mathematics, Science and Associated Disciplines (MSAD)

MSAD1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of manufacturing and operations and its underpinning science and mathematics.

Manufacturing and Operations Analysis (MA)

MA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of manufacturing and operations.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c **Demonstrate an awareness of the framework of relevant legal requirements governing manufacturing and operations activities, including personnel, health, safety, and risk (including environmental risk) issues.**

Engineering Practice (EP)

EP1c Demonstrate engineering workshop and laboratory skills.
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4

All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

Modules

PROGRAMME STRUCTURE

Structure: Part-time Students

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACMA4006	Engineering Mathematics	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
ACMA4002	Plant Operations and Performance	Compulsory	20
ACMA4004	Quality and Business Improvement	Compulsory	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACMA4003	Project Design	Compulsory	20
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5000	Group Industrial Project	Component Pass	40

(2) BEng/HND/C/DHE/CHE Energy & Environmental Engineering

The programme has the following general educational and specific aims:

To produce graduates who will:

- be able to solve societal and industrial problems in the fields of energy conversion and use, as well as process engineering and environment;

- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;

- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;

- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools;

- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the energy and environmental industry;

- be familiar with the nature of business and enterprise in the creation of economic and social value;

- appreciate the global dimensions of energy and environmental engineering, commerce and communication;

- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;

- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BEng Energy & Environmental Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1 Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in energy, environmental and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.

MSED2 Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in energy, environmental and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of engineering problems.

MSED3 **Exhibit an ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of energy, environmental and related engineering disciplines.**

Engineering Analysis (EA)

EA1 Demonstrate their knowledge and understanding of engineering principles and the ability to apply them to analyse key engineering processes.

EA2 Demonstrate an ability to identify, classify and describe the performance of systems and components using analytical methods and modelling techniques.

EA3 Demonstrate an ability to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems.
EA4 Demonstrate an understanding of and an ability to apply a systems approach to engineering problems.

Design (D)

D1 Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.
D2 Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.
D3 Identify and manage cost drivers.
D4 Use creativity to establish innovative solutions.
D5 Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.
D6 Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1 Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.
ES2 **Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.**
ES3 Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES4 Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.
ES5 Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (EP)

EP1 Demonstrate their knowledge of characteristics of particular equipment, processes or products.
EP2 Demonstrate engineering workshop and laboratory skills.
EP3 Demonstrate their understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc.).
EP4 Demonstrate their ability to use technical literature and other information sources.
EP5 Demonstrate an awareness of nature of intellectual property and contractual issues.
EP6 Demonstrate an understanding of appropriate codes of practice and industry standards.
EP7 **Demonstrate an awareness of quality issues.**
EP8 Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 2: HND/DipHE Energy & Environmental Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1b Demonstrate their knowledge and understanding of scientific necessary to underpin their education in energy, environmental and related engineering disciplines,

MSED2b **Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key engineering principles.**

Engineering Analysis (EA)

EA1b Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement

EA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems and components.

EA3b **Demonstrate an ability to apply a systems approach to engineering problems.**

Design (D)

D1b Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.

D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.

D3b Identify and manage cost drivers.

D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b **Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.**

ES2b **Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.**

ES3b Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.

EP2b Demonstrate engineering workshop and laboratory skills.

EP3b Demonstrate their ability to use technical literature and other information sources.

EP4b Demonstrate an ability to use appropriate codes of practice and industry standards.

EP5b Demonstrate an awareness of quality issues.

EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Energy & Environmental Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of energy and environmental engineering and its underpinning science and mathematics.

Engineering Analysis (EA)

EA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of engineering problems.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c **Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.**

Engineering Practice (EP)

EP1c Demonstrate engineering workshop and laboratory skills.
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4

All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE

Structure: Full-time Students

Semester 1 & 2

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
ACBD4002	Electrical and Electronic Principles	Compulsory	20
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20

ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20

(3) BEng/HND/C/DHE/CHE Manufacturing Systems Engineering (PT)

The programme has the following general educational and specific aims:

To produce graduates who will:

- be able to oversee and manage a project from start to finish;
- be able to liaise with designers, researchers and engineering consultants;
- be able to design, develop and install plant control systems;
- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;
- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;
- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools;
- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the manufacturing systems industry;
- be familiar with the nature of business and enterprise in the creation of economic and social value;
- appreciate the global dimensions of manufacturing systems engineering, commerce and communication;
- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;
- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BEng Manufacturing Systems Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1 Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in manufacturing systems and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.

MSED2 Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in manufacturing systems and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of engineering problems.

MSED3 **Exhibit an ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of manufacturing systems and related engineering disciplines.**

Engineering Analysis (EA)

EA1 Demonstrate their knowledge and understanding of engineering principles and the ability to apply them to analyse key engineering processes.

EA2 Demonstrate an ability to identify, classify and describe the performance of systems and components using analytical methods and modelling techniques.

EA3 Demonstrate an ability to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems.

EA4 **Demonstrate an understanding of and an ability to apply a systems approach to engineering problems.**

Design (D)

D1 Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.

D2 Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.

D3 Identify and manage cost drivers.

D4 Use creativity to establish innovative solutions.

D5 Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal. D6 Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1 Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.

ES2 Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.

ES3 Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.

ES4 Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

ES5 Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (EP)

EP1 Demonstrate their knowledge of characteristics of particular equipment, processes or products.
EP2 Demonstrate engineering workshop and laboratory skills.
EP3 **Demonstrate their understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc.).**
EP4 Demonstrate their ability to use technical literature and other information sources.
EP5 Demonstrate an awareness of nature of intellectual property and contractual issues.
EP6 Demonstrate an understanding of appropriate codes of practice and industry standards.
EP7 Demonstrate an awareness of quality issues.
EP8 Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 2: HNC/DipHE Manufacturing Systems Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1b Demonstrate their knowledge and understanding of scientific necessary to underpin their education in manufacturing systems and related engineering disciplines,
MSED2b Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key engineering principles.

Engineering Analysis (EA)

EA1b Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement
EA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems and components.
EA3b Demonstrate an ability to apply a systems approach to engineering problems.

Design (D)

D1b Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.
D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.
D3b Identify and manage cost drivers.
D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.

ES2b Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES3b Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.
EP2b Demonstrate engineering workshop and laboratory skills.
EP3b Demonstrate their ability to use technical literature and other information sources.
EP4b **Demonstrate an ability to use appropriate codes of practice and industry standards.**
EP5b Demonstrate an awareness of quality issues.
EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Manufacturing Systems Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1c **Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of manufacturing systems engineering and its underpinning science and mathematics.**

Engineering Analysis (EA)

EA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of engineering problems.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1c **Demonstrate engineering workshop and laboratory skills.**
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support IMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4

All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE

Structure: Full-time Students

Semester 1 & 2

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5009	Group Project	Component Pass	20
ACMA5002	Manufacturing Design and Technology	Core	20

(4) BEng/HND/C/DHE/CHE Materials Science (PT)

The programme has the following general educational and specific aims:

To produce graduates who will:

- be able to determine the physical and mechanical behaviour of materials to optimise manufactured products;

- understand the structure, properties, processing, and service behaviour of engineering materials;

- be able to appraise and evaluate the characteristics and behaviour of engineering materials related to component design, material selection and structural integrity of mechanical systems;

- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;

- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;

- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools;

- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the materials science industry;

- be familiar with the nature of business and enterprise in the creation of economic and social value;

- appreciate the global dimensions of materials science systems, commerce and communication;

- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;

- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BEng Materials Science

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1 Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in materials science and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.

MSED2 Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in materials science and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of engineering problems.

MSED3 Exhibit an ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of materials and related engineering disciplines.

Engineering Analysis (EA)

EA1 Demonstrate their knowledge and understanding of engineering principles and the ability to apply them to analyse key engineering processes.
EA2 Demonstrate an ability to identify, classify and describe the performance of systems and components using analytical methods and modelling techniques.
EA3 Demonstrate an ability to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems.
EA4 Demonstrate an understanding of and an ability to apply a systems approach to engineering problems.

Design (D)

D1 Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.
D2 Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.
D3 Identify and manage cost drivers.
D4 Use creativity to establish innovative solutions.
D5 Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.
D6 Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1 Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.
ES2 Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.
ES3 Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES4 Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.
ES5 Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (EP)

EP1 Demonstrate their knowledge of characteristics of particular equipment, processes or products.
EP2 Demonstrate engineering workshop and laboratory skills.
EP3 Demonstrate their understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc.).
EP4 Demonstrate their ability to use technical literature and other information sources.
EP5 Demonstrate an awareness of nature of intellectual property and contractual issues.

EP6 Demonstrate an understanding of appropriate codes of practice and industry standards.
EP7 Demonstrate an awareness of quality issues.
EP8 **Demonstrate an ability to work with technical uncertainty.**

Intermediate/Exit Award 2: HND/DipHE Materials Science

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1b **Demonstrate their knowledge and understanding of scientific necessary to underpin their education in materials science and related engineering disciplines,**
MSED2b **Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key engineering principles.**

Engineering Analysis (EA)

EA1b Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement
EA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems and components.
EA3b Demonstrate an ability to apply a systems approach to engineering problems.

Design (D)

D1b **Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.**
D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.
D3b Identify and manage cost drivers.
D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.
ES2b Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES3b Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.
EP2b **Demonstrate engineering workshop and laboratory skills.**
EP3b Demonstrate their ability to use technical literature and other information sources.

EP4b Demonstrate an ability to use appropriate codes of practice and industry standards.
EP5b Demonstrate an awareness of quality issues.
EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Materials Science

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of materials and its underpinning science and mathematics.

Engineering Analysis (EA)

EA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of engineering problems.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1c Demonstrate engineering workshop and laboratory skills.
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4

All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE
Structure: Full-time Students

Semester 1 & 2

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
ACMA4001	Physical Science for Materials	Compulsory	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5009	Group Project	Component Pass	20
ACMA5002	Manufacturing Design and Technology	Core	20

(5) BEng/HND/C/DHE/CHE Mechanical Engineering

The programme has the following general educational and specific aims:

To produce graduates who will:

- apply their knowledge of physics, mechanics, materials science, heat transfer and thermodynamics to the study of a mechanical system
- function and communicate effectively both as individuals and in multidisciplinary teams to solve technical problems.
- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;
- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;
- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools;

- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the mechanical industry;

- be familiar with the nature of business and enterprise in the creation of economic and social value;

- appreciate the global dimensions of mechanical engineering, commerce and communication;

- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;

- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

rogramme Learning Outcomes

Main Award: BEng Mechanical Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1 **Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.**

MSED2 **Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of engineering problems.**

MSED3 **Exhibit an ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of mechanical and related engineering disciplines.**

Engineering Analysis (EA)

EA1 **Demonstrate their knowledge and understanding of engineering principles and the ability to apply them to analyse key engineering processes.**

EA2 Demonstrate an ability to identify, classify and describe the performance of systems and components using analytical methods and modelling techniques.

EA3 Demonstrate an ability to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems.

EA4 Demonstrate an understanding of and an ability to apply a systems approach to engineering problems.

Design (D)

D1 **Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.**
D2 Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.
D3 **Identify and manage cost drivers.**
D4 **Use creativity to establish innovative solutions.**
D5 **Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal. D6 Manage the design process and evaluate outcomes.**

Economic, Social and Environmental Context (ES)

ES1 **Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.**
ES2 **Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.**
ES3 Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES4 Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.
ES5 Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (EP)

EP1 **Demonstrate their knowledge of characteristics of particular equipment, processes or products.**
EP2 **Demonstrate engineering workshop and laboratory skills.**
EP3 **Demonstrate their understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc.).**
EP4 **Demonstrate their ability to use technical literature and other information sources.**
EP5 **Demonstrate an awareness of nature of intellectual property and contractual issues.**
EP6 **Demonstrate an understanding of appropriate codes of practice and industry standards.**
EP7 Demonstrate an awareness of quality issues.
EP8 Demonstrate an ability to work with technical uncertainty

Intermediate/Exit Award 2: HND/Dip HE Mechanical Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1b **Demonstrate their knowledge and understanding of scientific necessary to underpin their education in mechanical and related engineering disciplines,**
MSED2b Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key engineering principles.

Engineering Analysis (EA)

EA1b Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement
EA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems and components.
EA3b Demonstrate an ability to apply a systems approach to engineering problems.

Design (D)

D1b Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.
D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.
D3b Identify and manage cost drivers.
D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.
ES2b Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES3b Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.
EP2b Demonstrate engineering workshop and laboratory skills.
EP3b Demonstrate their ability to use technical literature and other information sources.
EP4b Demonstrate an ability to use appropriate codes of practice and industry standards.
EP5b Demonstrate an awareness of quality issues.
EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Mechanical Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of mechanical engineering and its underpinning science and mathematics.

Engineering Analysis (EA)

EA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of engineering problems.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1c Demonstrate engineering workshop and laboratory skills.
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4
All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE

Full-time Students **Semester 1 & 2**

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
ACMA4000	Materials and Introduction to Processing	Compulsory	20

Part-time Students

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5001	Control and Automation	Compulsory	20
ACMA5009	Group Project	Component Pass	20

(6) BEng/HND/C/DHE/CHE Mechanical & Manufacturing Engineering

The programme has the following general educational and specific aims:

To produce graduates who will:

- be able to create competitive advantage through manufacturing planning, strategy, quality, and control;
- be able to design manufacturing processes that result in products that meet specific material and other requirements;
- be able to design products and the equipment, tooling, and environment necessary for their manufacture.
- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;

- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;

- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools;

- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the mechanical and manufacturing industry;

- be familiar with the nature of business and enterprise in the creation of economic and social value;

- appreciate the global dimensions of mechanical and manufacturing engineering, commerce and communication;

- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;

- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BEng Mechanical & Manufacturing Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1 Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and manufacturing and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.

MSED2 Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of engineering problems.

MSED3 Exhibit an ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of mechanical and manufacturing and related engineering disciplines.

Engineering Analysis (EA)

EA1 Demonstrate their knowledge and understanding of engineering principles and the ability to apply them to analyse key engineering processes.

EA2 Demonstrate an ability to identify, classify and describe the performance of systems and components using analytical methods and modelling techniques.

EA3 Demonstrate an ability to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems.

EA4 Demonstrate an understanding of and an ability to apply a systems approach to engineering problems.

Design (D)

D1 Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.
D2 **Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.**
D3 **Identify and manage cost drivers.**
D4 Use creativity to establish innovative solutions.
D5 Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.
D6 Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1 Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.
ES2 Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.
ES3 Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES4 Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.
ES5 **Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.**

Engineering Practice (EP)

EP1 Demonstrate their knowledge of characteristics of particular equipment, processes or products.
EP2 Demonstrate engineering workshop and laboratory skills.
EP3 Demonstrate their understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc.).
EP4 **Demonstrate their ability to use technical literature and other information sources.**
EP5 Demonstrate an awareness of nature of intellectual property and contractual issues.
EP6 Demonstrate an understanding of appropriate codes of practice and industry standards.
EP7 Demonstrate an awareness of quality issues.
EP8 Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 2: HND/DipHE Mechanical & Manufacturing Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1b Demonstrate their knowledge and understanding of scientific necessary to underpin their education in mechanical and manufacturing and related engineering disciplines

MSED2b Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key engineering principles.

Engineering Analysis (EA)

EA1b Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement

EA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems and components.

EA3b Demonstrate an ability to apply a systems approach to engineering problems.

Design (D)

D1b Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.

D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.

D3b Identify and manage cost drivers.

D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.

ES2b Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.

ES3b **Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.**

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.

EP2b Demonstrate engineering workshop and laboratory skills.

EP3b Demonstrate their ability to use technical literature and other information sources.

EP4b Demonstrate an ability to use appropriate codes of practice and industry standards.

EP5b Demonstrate an awareness of quality issues.

EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Mechanical & Manufacturing Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of mechanical and manufacturing engineering and its underpinning science and mathematics.

Engineering Analysis (EA)

EA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of engineering problems.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1c Demonstrate engineering workshop and laboratory skills.
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4
All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE

Full-time Students **Semester 1 & 2**

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20

ACMA4007	Engineering Applications and Study Skills	Component Pass	20
ACMA4000	Materials and Introduction to Processing	Compulsory	20

Part-time Students

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5009	Group Project	Component Pass	20
ACMA5002	Manufacturing Design and Technology	Core	20

(7) BEng/HND/C/DHE/CHE Mechatronics Engineering

The programme has the following general educational and specific aims:

To produce graduates who will:

- apply the fundamental concepts of mechanics, thermodynamics, electronics and engineering science in relation to the analysis, design and implementation of mechatronic systems;

- be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality;

- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner;

- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools;

- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the mechatronics engineering industry;

- be familiar with the nature of business and enterprise in the creation of economic and social value;

- appreciate the global dimensions of mechatronics engineering, commerce and communication;

- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;

- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BEng Mechatronics Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1 Demonstrate their knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechatronics and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.

MSED2 Demonstrate their knowledge and understanding of mathematical principles necessary to underpin their education in mechatronics and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analytical and numerical solution of engineering problems.

MSED3 Exhibit an ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of mechatronics and related engineering disciplines.

Engineering Analysis (EA)

EA1 Demonstrate their knowledge and understanding of engineering principles and the ability to apply them to analyse key engineering processes.

EA2 Demonstrate an ability to identify, classify and describe the performance of systems and components using analytical methods and modelling techniques.

EA3 Demonstrate an ability to apply quantitative methods and computer software relevant to mechatronics and related engineering disciplines, to solve engineering problems.

EA4 Demonstrate an understanding of and an ability to apply a systems approach to engineering problems.

Design (D)

D1 Investigate and define a problem and identify constrains including environmental and sustainability limitations, health and safety and risk assessment issues.
D2 Demonstrate an understanding of customer and user needs and the importance of considerations such as aesthetics.
D3 Identify and manage cost drivers.
D4 **Use creativity to establish innovative solutions.**
D5 Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.
D6 Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1 Demonstrate their knowledge and understanding of commercial and economic context of engineering processes.
ES2 Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.
ES3 Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES4 **Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.**
ES5 Demonstrate their understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (EP)

EP1 Demonstrate their knowledge of characteristics of particular equipment, processes or products.
EP2 Demonstrate engineering workshop and laboratory skills.
EP3 Demonstrate their understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc.).
EP4 **Demonstrate their ability to use technical literature and other information sources.**
EP5 Demonstrate an awareness of nature of intellectual property and contractual issues.
EP6 Demonstrate an understanding of appropriate codes of practice and industry standards.
EP7 Demonstrate an awareness of quality issues.
EP8 Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 2: HND/DipHE Mechatronics Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1b Demonstrate their knowledge and understanding of scientific necessary to underpin their education in mechatronics and related engineering disciplines

MSED2b Demonstrate their knowledge and understanding of mathematical principles necessary to support application of key engineering principles.

Engineering Analysis (EA)

EA1b Demonstrate an ability to monitor, interpret and apply the results of analysis in order to bring about continuous improvement
EA2b Demonstrate an ability to apply quantitative methods in order to understand the performance of systems and components.
EA3b Demonstrate an ability to apply a systems approach to engineering problems.

Design (D)

D1b Demonstrate an ability to define a problem and identify constraints such as environmental and sustainability limitations, health, safety risk assessment issues.
D1b Demonstrate an awareness of customer and user needs and the importance of considerations such as aesthetics.
D3b Identify and manage cost drivers. D4b Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1b Demonstrate their knowledge of management techniques which may be used to achieve engineering objectives within that context.
ES2b Demonstrate their understanding of the requirement for engineering activities to promote sustainable development.
ES3b Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1b Demonstrate an understanding of characteristics of particular equipment, processes or products.
EP2b Demonstrate engineering workshop and laboratory skills.
EP3b Demonstrate their ability to use technical literature and other information sources.
EP4b Demonstrate an ability to use appropriate codes of practice and industry standards.
EP5b Demonstrate an awareness of quality issues.
EP6b Demonstrate an ability to work with technical uncertainty.

Intermediate/Exit Award 1: HNC/CertHE Mechatronics Engineering

Underpinning Mathematics, Science and Associated Engineering Disciplines (MSED)

MSED1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of mechatronics engineering and its underpinning science and mathematics.

Engineering Analysis (EA)

EA1c Demonstrate an ability to apply appropriate quantitative science and engineering tools to the analysis of engineering problems.

Design (D)

D1c Manage the design process and evaluate outcomes.

Economic, Social and Environmental Context (ES)

ES1c Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

Engineering Practice (EP)

EP1c Demonstrate engineering workshop and laboratory skills.
EP2c Demonstrate their ability to use technical literature and other information sources.
EP3c Demonstrate an ability to use appropriate codes of practice and industry standards.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4
All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE

Full-time Students **Semester 1 & 2**

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
ACDA4000	Micros, Peripherals and Interfaces	Compulsory	20

Part-time Students

Module Code	Title	Module type (component pass, core, compulsory or optional)	Credits
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACDB4002	Electrical and Electronic Principles	Compulsory	20
ACMA4006	Engineering Mathematics	Compulsory	20
ACHA4002	Engineering Science	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACDA4000	Micros, Peripherals and Interfaces	Compulsory	20
ACMA4008	Engineering Design	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5009	Group Project	Component Pass	20
ACMA5002	Manufacturing Design and Technology	Core	20

(8) BSc/HND/C/DHE/CHE Engineering Management (PT)

The programme has the following general educational and specific aims:

To produce graduates who will:

- master specialist knowledge of engineering management theories, methods, practices and strategies;
- develop an in-depth understanding of business practices, organisational behaviour, management skills and business improvement techniques;
- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities of the engineering management industry;
- be familiar with the nature of business and enterprise in the creation of economic and social value;
- appreciate the global dimensions of engineering management, commerce and communication;

- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue;

- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Programme Learning Outcomes

Main Award: BSc Engineering Management

Knowledge and understanding (KU)

KU1 Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of engineering management and its underpinning science and mathematics.
KU2 Apply and integrate knowledge and understanding of engineering disciplines and appreciate the wider multidisciplinary management context.
KU3 Appreciate the social, environmental, ethical, economic and commercial considerations affecting the exercise of their management judgement.
KU4 Knowledge and understanding of mathematical and computational concepts, methods and techniques which are employed elsewhere in the programme or regarded as essential for professional management.
KU5 Appreciate the full range of management techniques employed in the industry.
KU6 Exhibit familiarity with the generic elements of current engineering applications and practices and have an awareness of the professional, legal and ethical responsibilities of the engineering manager.
KU7 Demonstrate a basic knowledge of business and management concepts, methods and techniques relevant to practicing engineering management.

Cognitive (thinking) skills (CS)

CS1 Apply appropriate management tools to enhance business operations.
CS2 Demonstrate a knowledge of management techniques which may be used to achieve specific engineering objectives.
CS3 Demonstrate creativity and innovation in the synthesis of solutions and in formulating designs.
CS4 **Investigate and define an engineering problem and identify associated constraints such as environmental and sustainability limitations, and health and safety.**
CS5 Manage effectively the design process, appreciate customer and user needs, evaluate outcomes, assess commercial risk and manage cost drivers.

Practical skills (PS)

PS1 Analyse and solve engineering management problems.
PS2 Employ basic theoretical models and management principles where appropriate.
PS3 Demonstrate an awareness of the mathematical and computational tools and techniques which provide essential support for problem solving and decision making in engineering.
PS4 Demonstrate an awareness to design a system, component or process.

PS5 Take a holistic approach to problem-solving to encompass technical, business and social factors and constraints.
PS6 Use laboratory and workshop equipment, along with appropriate instrumentation, in order to execute a series of experiments, both effectively and safely.
PS7 Demonstrate an ability to select appropriate computer software for design purposes and as a means of analysing and solving engineering problems.
PS8 Demonstrate an understanding of technical reports to a professional standard.

Key skills (KS)

KS1 Communicate effectively in writing, verbally and through graphical media.
KS2 Manage time and resources, prioritise and work to deadlines.
KS3 **Use computers and information technology effectively.**
KS4 Locate and assemble information using various sources
KS5 **Demonstrate generic problem-solving skills acquired during the programme.**
KS6 Work and learn independently.
KS7 Work effectively as a member of a group or team.
KS8 Prepare for engineering management employment

Intermediate/Exit Award 2: HND/DipHE Engineering Management

Knowledge and understanding (KU)

KU1b Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of engineering management and its underpinning science and mathematics.
KU2b Appreciate the full range of management techniques employed in the industry.
KU3b Demonstrate a basic knowledge of business and management concepts, methods and techniques relevant to practicing engineering management.

Cognitive (thinking) skills (CS)

CS1b Apply appropriate management tools to enhance business operations.
CS2b Demonstrate a knowledge of management techniques which may be used to achieve specific engineering objectives.
CS3b Demonstrate creativity and innovation in the synthesis of solutions and in formulating designs.

Practical skills (PS)

PS1b Analyse and solve engineering management problems.
PS2b Employ basic theoretical models and management principles where appropriate.
PS3b Demonstrate an awareness of the mathematical and computational tools and techniques which provide essential support for problem solving and decision making in engineering.
PS4b **Use laboratory and workshop equipment, along with appropriate instrumentation, in order to execute a series of experiments, both effectively and safely.**
PS5b Demonstrate an ability to select appropriate computer software for design purposes and as a means of analysing and solving engineering problems.

Key skills (KS)

KS1b Communicate effectively in writing, verbally and through graphical media.
KS2b Manage time and resources, prioritise and work to deadlines.
KS3b Work effectively as a member of a group or team.
KS4b Prepare for engineering management employment

Intermediate/Exit Award 1: HNC/CertHE Engineering Management

Knowledge and understanding (KU)

KU1c Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of engineering management and its underpinning science and mathematics.

Cognitive (thinking) skills (CS)

CS1c Apply appropriate management tools to enhance business operations.
CS2c Demonstrate a knowledge of management techniques which may be used to achieve specific engineering objectives.

Practical skills (PS)

PS1c Analyse and solve engineering management problems.
PS2c Employ basic theoretical models and management principles where appropriate.
PS3c Demonstrate an awareness of the mathematical and computational tools and techniques which provide essential support for problem solving and decision making in engineering.

Key skills (KS)

KS1c Communicate effectively in writing, verbally and through graphical media.
KS2c Manage time and resources, prioritise and work to deadlines.

To support iMechE accreditation, the programme is mapped to the Accreditation of Higher Education Programmes (AHEP) 3rd learning outcomes, please refer to the Appendix One for the full learning outcome statements.

Level 4
All Level 4 students must normally pursue 120 credits at Level 4. The credit rating of each module is specified in the module details.

PROGRAMME STRUCTURE

Part-time Students

Module Code	Title	Module type (component pass,	Credi ts

		core, compulsory or optional)	
Year 1	**Level 4**	**Semester 1 & 2**	**Sept. to July**
ACMA4006	Engineering Mathematics	Compulsory	20
ACMA4007	Engineering Applications and Study Skills	Component Pass	20
ACMA4004	Quality and Business Improvement	Compulsory	20
ACMA4002	Plant Operations and Performance	Compulsory	20
Year 2	**Level 4/5**	**Semester 1 & 2**	**Sept. to July**
ACMA4003	Project Design	Compulsory	20
ACMA4000	Materials and Introduction to Processing	Compulsory	20
ACMA5007	Management, Innovation and Sustainability	Component Pass	20
ACMA5000	Group Industrial Project	Component Pass	40

Where appropriate, the University may allow students to study modules in addition to the 120 credits studied for the level of study e.g. Welsh medium or IT modules. Students would need to discuss this with their Programme Manager.

Note that on Programmes of Study offering a large number of options, timetable constraints will inevitably mean that not all combinations of options will be possible.

Module details are correct on 1 September 2022, and will not normally be changed during the year. In the unlikely event of changes having to be made to these details during the year, you will be notified in writing. Module descriptors are presented in the accompanying Module Directory document.

UNIVERSITY ATTENDANCE POLICY

Attendance is an important indicator of your engagement with and success in your studies. All students are therefore required to attend all scheduled classes and tutorials and Institutes will record individual academic attendance. It is important that:

- you familiarise yourself with the attendance policy relevant to you (see https://www.uwtsd.ac.uk/academic-office/other-forms-and-policies/);
- you are fully aware of procedures to follow in case of unexpected absences;
- you are aware that disciplinary action will be taken for any sustained periods of unauthorised absence.

This is particularly important for **international students with a UKVI student Visa.** Failure to adhere to the requirements and conditions of the Attendance Policy will lead to withdrawal from your programme and the University will also inform the UKVI to withdraw your student visa sponsorship.

Appeal against withdrawal due to poor attendance – Information on how to appeal against withdrawal due to poor attendance is provided on the University's website (http://www.uwtsd.ac.uk/academic-office/procedures-for-academic-appeals-complaints-and-other-student-cases/).

The attendance policy for the School of Engineering is outlined below;

UWTSD SCHOOL OF ENGINEERING

ATTENDANCE MANAGEMENT FOR ENGAGEMENT AND ATTAINMENT STATEMENT FOR HANDBOOK

FULL TIME UNDERGRADUATES & POSTGRADUATES

Through the years of running these engineering programmes, data has shown the correlation between students who have a high level of attendance and those who succeed on the course. Generally, those who attend well also often excel at their assessments too. With this in mind the School of Engineering would not only encourage students to attend the obligatory timetabled lectures but also the extra-curricular content that is offered as well. By taking full advantage of the opportunities open while studying, students will gain a range of skills that industry finds most desirable. These skills will not only make students successful within the course but also highly employable too after graduating.

ATTENDANCE MANAGEMENT FOR ENGAGEMENT AND ATTAINMENT

The School of Engineering will monitor the attendance of all students for engagement and attainment purposes. The School of Engineering has identified that the minimum percentage attendance / engagement will be 70% for students studying on a full time provision. However, it should be stressed that to be fully successful on these courses, students should aim for 100% attendance.

For students who are repeating or only taking limited modules as a full time student, the minimum percentage attendance will be decided on an individual basis and will be communicated to the students by their Head of Year.

The School of Engineering will ensure that its staff are aware of the University Attendance Policy and the specific School of Engineering arrangements.

The School of Engineering has implemented a Pastoral System, that will enable a student's attendance and attainment is managed effectively. As part of the pastoral system, each student will be assigned a specific Head of Year who will be their contact for any issues relating to attendance, engagement and attainment.

Foundation Level – Head of Year will be Richard Sutton
Level 4 – Head of Year will be Abi Summerfield
Level 5 – Head of Year will be Andrew Harrison
Level 6 – Head of Year will be the Programme Manager
Level 7 – Head of Year will be Dr Kerry Tudor

Undergraduate (UG) and Postgraduate (taught) (PGT) students should attend all their scheduled academic sessions (e.g. lectures, workshops, supervisory meetings). Students will register their attendance at academic sessions via a register system. This data will be recorded in a University devised electronic attendance monitoring system by the module tutors.

The Head of Year's will be checking the students attendance on a weekly basis to ensure that attendance issues are noted as soon as possible and a solution can be found to ensure the student remains engaged with the programme.

Face-to-Face attendance will be the only accepted form of attendance, unless previously agreed with a student's Head of Year.

Where there are circumstances in which a student is unable to attend for good reason, the School of Engineering would ask the students to contact their Head of Year so that authorised absences can be included on the registers.

If students are struggling with attendance or attainment, then as well as the Head of Year contact, the university also has a number of other support systems in place that students can contact

Student Hwb can be contacted for access to any of the support services available through Student Services on hwb@uwtsd.ac.uk

Student Assistance Programme can be accessed 24/7 by any UWTSD student, including mental health support, on 0800 028 3766. The professional staff are on hand to offer you support at any time.

Study Skills Support Sessions – studyskillsdistance@uwtsd.ac.uk

Counselling Service information available at www.uwtsd.ac.uk/counselling

Money Support available at www.uwtsd.ac.uk/student-services/money-support

SCHOOL OF ENGINEERING RESPONSE TO POOR ATTENDANCE

As stated, a student's average attendance should aim to be 100%. For those students whose attendance drops, the School of Engineering has a set process that will be triggered.

The process will be a mixture of informal and formal responses and is shown in the table below;

Letter/email label	Letter or email	UG	PGT Part I	Response Required
Percentage attendance related:				
EA1 Percentage Attendance Reminder (UG/PGT Part I)	E	✓	✓	
EA2 Percentage Attendance Warning (UG/PGT Part I)	E & L	✓	✓	✓
EA3 Notification of Action Required (Second Warning) (UG/PGT Part I)	E & L	✓	✓	✓
EA4 Notification of Withdrawal due to Percentage Attendance (UG/PGT Part I)	E & L	✓	✓	✓

CODES OF CONDUCT

The University is committed to providing all students with a safe and inclusive learning environment where all students have the potential to succeed to the best of their ability.

The University expects all students to abide by the Student Code of Conduct (see https://www.uwtsd.ac.uk/studentcharter/).

The University also has Support for Study and Fitness to Practise Policies (see https://www.uwtsd.ac.uk/academic-office/academic-quality-handbook/).

In addition, many programmes have a professional code of conduct that you are expected to adhere to. Your Programme Manager will provide you with appropriate details.

ABOUT ACADEMIC MISCONDUCT AND PLAGIARISM

The University defines academic misconduct as 'any act, intentional or otherwise, whereby a person may obtain for himself/herself or for another, an unpermitted advantage…'. Committing academic misconduct in assessment is one of the most serious offences in academic life, and its consequences can be severe. It undermines the integrity of scholarship, research, and of the examination and assessment process.

It is very important to understand that it is no defence to claim that academic misconduct has been committed unintentionally, accidentally, due to extenuating circumstances or a long-term impairment (irrespective of whether or not these circumstances or long-term impairment have been acknowledged by the University).

Plagiarism is one type of academic misconduct. Plagiarism is passing off, or attempting to pass off, another's work as your own. It includes copying the words, ideas, images or research results of another ***without acknowledgement***, whether those words etc. are published or unpublished. It is plagiarism, for example, to copy the work of another student, of a member of staff or a published article without crediting the author. Persons who allow their work to be plagiarised are also guilty.

It should be noted that re-submitting work that has already been submitted for a different assessment task without noting that this is the case is also regarded as plagiarism (and is called self-plagiarism) and will be treated as such.

Plagiarism is one of the worst offences in academic life, and its consequences can be severe. It undermines the integrity of scholarship, research, and of the examination and assessment process. The guidance that follows explains what is meant by plagiarism, describes the University's regulations for dealing with it, and provides help in avoiding it.

When enrolling as a student at the University of Wales Trinity Saint David you have consented to your work being scrutinised both electronically and in person to check for cases of plagiarism. Normally, your work will be submitted electronically via Moodle.

For submissions outside of the Moodle platform, it is equally important that you reference your sources accurately. In some cases, you will be expected to submit both hard and electronic copies, which can be checked against the database of the UK Higher Education Plagiarism Detection Service. For handwritten, portfolio and process workbook submissions check with your module tutor if you are in any doubt about whether you have infringed the regulations. They are here to assist you; ensure that you take advantage of their expertise.

Plagiarism: Regulations, Procedure and Penalties

Full details of the University's procedures and penalties for dealing with issues of plagiarism can be found in Chapter 12 of the *Academic Quality* Handbook and the associated *Academic Misconduct Policy*, which can be seen on the University website or obtained from the Institute Offices.
https://www.uwtsd.ac.uk/academic-office/academic-quality-handbook/

Avoiding Plagiarism

Coursework, dissertations, or creative work are meant to be your own original work. Obviously, you will use the work of others. Not only is this inevitable, it is expected.
All scholarship builds on the work of others. The important thing to remember is always to **acknowledge your sources**. The University recognises four referencing styles: APA, Harvard, IEEE and MHRA and provides a handbook for each of these styles.

For your programme of study, you should be using **Harvard** The handbooks can be found online: https://www.uwtsd.ac.uk/library/infoskills/referencing-handbooks/ or in print from the Library and Learning Resources. A Referencing Essentials session will be provided during the first term of your first year but as a general rule of thumb observe the following:

- *Anything that is copied or quoted from another source, including electronic sources such as the internet, must be in quotation marks and attributed to the original author. This may be in the body of the text or as a footnote, depending on which Referencing style you are asked to use.*

- *Paraphrasing or summarising the work of others involves putting their ideas into your words. This is fine, but again, acknowledge your source.*

- *Where you are generally indebted for your ideas to one or two main sources, this can be a bit trickier. If the ideas or the way they are presented come from one or two sources, make this clear. Do the same if they come from lectures. It is important not to claim originality where it does not exist but to indicate in general where the information comes from.*

- *Full citations in timed unseen examinations are obviously not expected, but you should indicate general indebtedness and always credit any quotations you have managed to remember.*

The golden rule is; ***`if in doubt, provide references'*** and your Referencing Handbook will provide you with specific guidance to help you to do this correctly. For support, contact your tutor or Academic Liaison Librarian. There are no penalties for asking for advice and guidance; there are severe penalties for plagiarism and failure to reference means your work could be considered to be plagiarised.

Other types of Academic Misconduct
There are other types of academic misconduct, including, but not limited to producing work as a group where it is an individual task (called collusion), fabricating data or making false claims to have carried out research, using the service of an essay bank/essay mill, having an unauthorised source of information in an examination, prohibited communication during an examination. The same regulations, procedures and penalties apply to all types of academic misconduct.

LIBRARY AND LEARNING RESOURCES

Library and Learning Resources (LLR) supports the learning, teaching and research activities of staff and students across the University with library services available at Birmingham, Carmarthen, Lampeter, London and Swansea including online resources, social learning spaces, special collections and archives.

The library prioritises the purchase of e-books over print wherever possible and loan periods are regularly reviewed by the library to ensure that they are appropriate and provide equitable access to resources. It is expected that at least all Essential reading list items are available from the library. The LLR follows a Fairer Fines policy which means students are only fined on items if they are in heavy demand or requested by another library user.

The LLR provides a *Need More?* service which aims to provide a one stop shop for all learning resource needs, for example, if a book, journal or thesis is needed which is

not in the library stock then it may be purchased or borrowed from another library. Further information can be found here: https://uwtsd.ac.uk/library/need-more/.

Learning Spaces
As well as collections, the library provides a variety of modern and flexible learning spaces, reflecting different styles of working e.g. group study spaces and quiet areas, as well as IT facilities, wireless internet, photocopying and printing facilities and excellent customer service.

Online Library
The LLR offers a wide range of printed and electronic resources including an extensive collection of online e-journals and e-books that are available 24/7 providing access to scholarly journals, newspapers, company reports and reference material. The library catalogue searches the whole range of print and online library materials and gives access to your library account from anywhere.

InfoSkills
All students are provided with a library tour, a Basic Skills session and a Referencing Essentials session in the first few weeks at the University. Academic Liaison Librarians will help students to develop the skills required to find, use and evaluate information sources within their subject areas. Numerous sessions are offered throughout the year to help students develop their Information Skills further to support their academic success and employability. These include sessions on identifying fake news, using statistics, Copyright awareness, and managing your online identity. The LLR operates an open door policy which enables students to ask for help and advice on the information resources available throughout the academic year. Academic Liaison Librarians are welcomed to Staff / Student Committees, and also attend other relevant Institute meetings where invited, including the Institute Board. For further information on InfoSkills provision go to: https://www.uwtsd.ac.uk/library/infoskills/

Special Collections and Archives
The Library is also home to the Special Collections of UWTSD, including the University's oldest printed books, manuscripts and archives. The Special Collections include over 35,000 printed works, 8 medieval manuscripts, around 100 post medieval manuscripts, and 69 incunables. Material from the Archives includes the institutional archive of St David's College, later The University of Wales, Lampeter, and Trinity College Carmarthen, both constituent members of the University of Wales Trinity Saint David. Students are encouraged to use these wonderful resources as part of their studies, regardless of discipline. Visits and workshops are often arranged within the purpose-built reading rooms in the Lampeter campus library and there is a regular programme of exhibitions across the campuses and online.

For recent service developments, updates and contact information please visit the University Library website at http://www.uwtsd.ac.uk/library/. Please also follow the Library and Learning Resources on Facebook, Instagram or Twitter for up-to-date news, service developments and information on new services and resources: @UWTSDLib

DIGITAL CREATIVITY AND LEARNING (DCL)

Digital learning

Digital learning encompasses a wide variety of learning models and approaches, digital technologies, and services, therefore, playing a vital role in how content is delivered and how students learn. The current Covid situation has been a catalyst to elevating

the significance of high-quality digital teaching and learning resources, and also the importance of ensuring parity for both face-to-face and remote learning experiences.

A well-developed package of digital learning materials can:
- Improve learning experience
- Widen participation and collaboration
- Improve accessibility
- Develop key employability skills

IT SERVICE DELIVERY

IT support is available through our IT Service Desk who are available to help and assist you over the phone, in person or via our online Web Help Desk system.

To request IT Support, visit our Web Help Desk service. Alternatively, we also provide telephone support 24 hours a day, 365 days a year so no matter when you may need assistance, we're here to help by calling us on 0300 500 5055.

Wi-Fi
All students can access our eduroam wireless network on their laptop, mobile phone or tablet.

Eduroam is the wireless network available to use across all campuses. Eduroam also provides you with Wi-Fi access at any other eduroam enabled institution across the world.

Open Access Computers & Booking Facilities
Students can access general IT facilities through our open access computer areas across our University campuses.

What do computer rooms offer?
- PCs connected to the University's data network
- Usually a multifunctional device (MFD) offering colour and black and white printing, copying and scanning or a colour laser printer
- May also contain wireless access and more specialised equipment such as plotters, Sports Analysis Equipment and audio visual equipment
- Long opening hours with many of them open 24/7
- Ability to pre-book a PC to use remotely to make sure you have access at the time you need to study.

Student IT Exclusives
We provide students with access to free or heavily discounted software and computer solutions through our Student IT Exclusives offers.

Free Microsoft Office 365
As a UWTSD student, you can download Microsoft Office 365 Pro Plus including Word, Excel and PowerPoint to use free for the duration of your studies at UWTSD.

Adobe Creative Cloud
Students studying on eligible courses are able to access Adobe Creative Cloud suite for free which can be installed on your personal device during your studies.

You can also purchase a copy of Adobe Creative Cloud directly from Adobe's Website and save over 65% discount paying on a monthly basis.

Free Windows 10 & 11
We are able to provide all students with a license to use Microsoft's latest operating system for free from our On the Hub store.

Software Discounts
We've created an online store where all students can download a huge range of free or heavily discounted software for use at home.

The EDU store
Discounts are available for students on a range of products including the Microsoft Surface, Apple devices, Phones & Smart Watches. Free 4 year warranty on all Apple products & free next day delivery on all orders.

Select Easy Upgrade
Get the Apple Product you want right now. Spread the cost with low monthly payments, upgrade to the latest device at the end of the plan or pay off the balance with the Easy Upgrade Store

Apple's Education store
You can get great Apple education pricing by visiting the Apple Education Store.

Free Autodesk
Download a range of Autodesk software including Fusion 360, Inventor Professional, Revit, AutoCAD, 3ds Max & Maya.

Print, Copy & Scan
Students have access to print, copy and scanning services which are available across all University Learning Resource Centres as well as specific computer rooms and open access areas.

UWTSD use Multi-Functional Devices (MFDs) which all have print, copy and scan functions available in full colour or black and white.

STUDENT SERVICES

A professional support service providing high quality information, advice, guidance, practical and emotional support to enable all students to reach their full potential. Support available includes the Careers Service, Financial Support, Learning Support, Well-being Support, Counselling Service and support for students from a care background. For further details see http://www.uwtsd.ac.uk/student-services/.

STUDY SKILLS

All students have access to study skills support to assist them in their studies. Details of provision are available from the Student Services offices on each campus and at http://www.uwtsd.ac.uk/study-skills/.

Topics covered include:
Developing effective study strategies
Planning and writing assignments
Preparing presentations
Planning for seminars
Preparing for exams

Drop-in study skills sessions and 1:1 appointments are available online (and in person where possible) – no appointment necessary. Please see the Student Services study skills webpages for further details: http://www.uwtsd.ac.uk/study-skills/.

COMPLAINTS

You have a right to make a complaint about any specific concern about the provision of your Programme of Study or a related academic service. Full details of the complaints process can be found in the *Student Complaint Policy* associated with Chapter 12 of the Academic Quality Handbook and in supporting documentation published on the Academic Office section on the University's website: http://www.uwtsd.ac.uk/academic-office/procedures-for-academic-appeals-complaints-and-other-student-cases/