



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

PROGRAMME DOCUMENT

PROGRAMME TITLE(S)

Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Automotive Engineering)

Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Built)

Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Computing)

Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Electronics)

Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Environmental)

Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Manufacturing)

Academic Discipline of:

**Computing
Engineering**

Wales Institute of Science & Art

Validated

May 2020

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1.1 Overview of the proposal

This section provides an overview of each award/programme title and its associated intermediate and exit awards.

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Awarding Institution/Body:	University of Wales Trinity Saint David (UWTSD)	University of Wales Trinity Saint David (UWTSD)	University of Wales Trinity Saint David (UWTSD)
PSRB(s) associated with final award:	None	None	None
Other accreditation:	None	None	None
Teaching Institution:	UWTSD	UWTSD	UWTSD
Award Title:	Certificate of Higher Education	Certificate of Higher Education	Certificate of Higher Education
Programme title/name:	Science, Technology, Engineering and Mathematics (Automotive Engineering)	Science, Technology, Engineering and Mathematics (Built)	Science, Technology, Engineering and Mathematics (Computing)
Intermediate Award (enrolable awards): N/A	Choose an item.	Choose an item.	Choose an item.
	If programme title differs to the main award, specify	If programme title differs to the main award, specify	If programme title differs to the main award, specify
Exit Award (awarded on early exit of main programme): N/A	Choose an item.	Choose an item.	Choose an item.
	If programme title differs to the main award, specify	If programme title differs to the main award, specify	If programme title differs to the main award, specify

Programme JACS or HECoS Code:	H330 - 100201		K200 - 100149		I100 - 100358	
UCAS code:	UCAS code for a new programme will be added after validation		UCAS code for a new programme will be added after validation		UCAS code for a new programme will be added after validation	
Mode of attendance: (tick all that apply)	☒	Full-time	☒	Full-time	☒	Full-time
	☒	Part-time	☒	Part-time	☒	Part-time
Mode of study: (tick all that apply)	☒	On-campus	☒	On-campus	☒	On-campus
	☐	Online/distance learning	☐	Online	☐	Online
	☐	Blended (a mix of on-campus and online study)	☐	Blended (a mix of on-campus and online study)	☐	Blended (a mix of on-campus and online study)
	☐	Other (specify)	☐	Other (specify)	☐	Other (specify)
Duration:	☒	Standard (AQH 6.2)	☒	Standard (AQH 6.2)	☒	Standard (AQH 6.2)
	☐	Non-standard (specify)	☐	Non-standard (specify)	☐	Non-standard (specify)
Location(s) of delivery:	UWTSD, SA1 Campus					
Language of delivery: (tick all that apply)	☒	English	☒	English	☒	English
	☐	Welsh	☐	Welsh	☐	Welsh

	☒	English and Welsh (bilingually)	☒	English and Welsh (bilingually)	☒	English and Welsh (bilingually)
	☐	Other (specify)	☐	Other (specify)	☐	Other (specify)
QAA Subject Benchmarking Statement(s):	QAA Subject Benchmarks for Engineering, October 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-engineering.pdf?sfvrsn=1f2c881_4		QAA Subject Benchmarks for Land, Construction, Real Estate and Surveying https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-land-construction-real-estate-and-surveying.pdf?sfvrsn=f9f3c881_4		QAA Subject Benchmarks for Computing, October 2019 (https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-computing.pdf?sfvrsn=ef2c881_4)	
Other external benchmarks:	• QAA The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies November 2014 • QAA Education for Sustainable Development: Guidance for UK Higher Education Providers June 2014 • Well-being of Future Generations (Wales) Act 2015 • QAA Foundation Degree Characteristics Statement September 2015		• QAA The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies November 2014 • QAA Education for Sustainable Development: Guidance for UK Higher Education Providers June 2014 • Well-being of Future Generations (Wales) Act 2015 • QAA Foundation Degree Characteristics Statement September 2015		• QAA The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies November 2014 • QAA Education for Sustainable Development: Guidance for UK Higher Education Providers June 2014 • Well-being of Future Generations (Wales) Act 2015 • QAA Foundation Degree Characteristics Statement September 2015	

(Table 2 of 2)

Awarding Institution/Body:	University of Wales Trinity Saint David (UWTSD)	University of Wales Trinity Saint David (UWTSD)	University of Wales Trinity Saint David (UWTSD)
PSRB(s) associated with final award:	None	None	None
Other accreditation:	None	None	None
Teaching Institution:	UWTSD	UWTSD	UWTSD
Award Title:	Certificate of Higher Education	Certificate of Higher Education	Certificate of Higher Education
Programme title/name:	Science, Technology, Engineering and Mathematics (Electronics)	Science, Technology, Engineering and Mathematics (Environmental)	Science, Technology, Engineering and Mathematics (Manufacturing)
Intermediate Award (enrolable awards): N/A	Choose an item.	Choose an item.	Choose an item.
	If programme title differs to the main award, specify	If programme title differs to the main award, specify	If programme title differs to the main award, specify
Exit Award (awarded on early exit of main programme): N/A	Choose an item.	Choose an item.	Choose an item.
	If programme title differs to the main award, specify	If programme title differs to the main award, specify	If programme title differs to the main award, specify
Programme JACS or HECoS Code:	H600 - 100163	F750 - 100381	H300 - 100190

UCAS code:	UCAS code for a new programme will be added after validation		UCAS code for a new programme will be added after validation		UCAS code for a new programme will be added after validation	
Mode of attendance: (tick all that apply)	☒	Full-time	☒	Full-time	☒	Full-time
	☒	Part-time	☒	Part-time	☒	Part-time
Mode of study: (tick all that apply)	☒	On-campus	☒	On-campus	☒	On-campus
	☐	Online/distance learning	☐	Online	☐	Online
	☐	Blended (a mix of on-campus and online study)	☐	Blended (a mix of on-campus and online study)	☐	Blended (a mix of on-campus and online study)
	☐	Other (specify)	☐	Other (specify)	☐	Other (specify)
Duration:	☒	Standard (AQH 6.2)	☒	Standard (AQH 6.2)	☒	Standard (AQH 6.2)
	☐	Non-standard (specify)	☐	Non-standard (specify)	☐	Non-standard (specify)
Location(s) of delivery:	UWTSD, SA1 Campus					
Language of delivery: (tick all that apply)	☒	English	☒	English	☒	English
	☐	Welsh	☐	Welsh	☐	Welsh
	☒	English and Welsh (bilingually)	☒	English and Welsh (bilingually)	☒	English and Welsh (bilingually)
	☐	Other (specify)	☐	Other (specify)	☐	Other (specify)

						
QAA Subject Benchmarking Statement(s):	QAA Subject Benchmarks for Computing, October 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-computing.pdf?sfvrsn=ef2c881_4) QAA Subject Benchmarks for Engineering, October 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-engineering.pdf?sfvrsn=1f2c881_4		QAA Subject Benchmarks for Earth Sciences, Environmental Sciences and Environmental Studies, October 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-earth-sciences-environmental-sciences-and-environmental-studies.pdf?sfvrsn=ff2c881_4		QAA Subject Benchmarks for Engineering, October 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-engineering.pdf?sfvrsn=1f2c881_4 QAA Subject Benchmarks for Materials, August 2017 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-materials-17.pdf?sfvrsn=8499f781_10	
Other external benchmarks:	• QAA The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies November 2014 • QAA Education for Sustainable Development: Guidance for UK Higher Education Providers June 2014 • Well-being of Future Generations (Wales) Act 2015 • QAA Foundation Degree Characteristics Statement September 2015		• QAA The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies November 2014 • QAA Education for Sustainable Development: Guidance for UK Higher Education Providers June 2014 • Well-being of Future Generations (Wales) Act 2015 • QAA Foundation Degree Characteristics Statement September 2015		• QAA The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies November 2014 • QAA Education for Sustainable Development: Guidance for UK Higher Education Providers June 2014 • Well-being of Future Generations (Wales) Act 2015 • QAA Foundation Degree Characteristics Statement September 2015	

1.2 Module Summary Table

							STEM (Auto Eng)	STEM (Built)	STEM (Computing)	STEM (Electronics)	STEM (Environmental)	STEM (Manufacturing)	
JACS/ HECoS code and HESA Cost Centre	Module Code 1. Specify language of delivery if not English. 2. Specify mode of study if modules are not all the same mode.	Module Title	New or Existing (Revised) (ER) Existing (Format updated) (EF) Existing (Unchanged)(EU)	Credits	Level	Assessment summary	Module status	Module status	Module status	Module status	Module status	Module status	Is module shared with other programmes not included in this document? Y/N
H300/120	ACHA3000 (Formerly ACFA3000/ M3X01513)	Introduction to Mathematics and Science	ER	20	3	Component 1 - 50% Written Exam (1 hour) Component 2 - 50% Written Exam (1 hour)	CM	CM	CM	CM	CM	CM	N
H300/120	ACHA4005 (Formerly M4X01498)	Academic Skills	ER	20	4	Component 1 - 50% Coursework – Report (1500 words) Component 2 - 50% Coursework – Report (1500 words)	CM	CM	CM	CM	CM	CM	N
I100/121	ACCA4019 (Formerly M4X01499)	Analysing and Solving Problems	ER	20	4	Component 1 - 50% Practical (1 hour) Component 2 - 50% Coursework – Written Assessment (1500 words)			CM	CM			N
F750/111	ACNA4000 (Formerly M4X01501)	Environmental Science	ER	20	4	Component 1 - 50% Coursework – Written report (1500 words) Component 2 - 50% Written Exam (1 hour)					CM		N

							STEM (Auto Eng)	STEM (Built)	STEM (Computing)	STEM (Electronics)	STEM (Environmental)	STEM (Manufacturing)	
F750/111	ACNA4001 (Formerly M4X01502)	Fieldwork Studies	ER	20	4	Component 1 - 50% Coursework – Written Report (1500 words) Component 2 - 50% Coursework – Written Report (1500 words)					CM		N
H300/120	ACHA4006 (Formerly ACFA4000)	Further Mathematics	ER	20	4	Component 1 - 100% Written Exam (2 hours)	CM	CM			CM	CM	N
K200/123	ACBA4008 (Formerly M4X01504)	Further Science for Construction	ER	20	4	Component 1 - 100% Coursework – Written Report (3000 words)		CM					N
H300/120	ACHA4007 (Formerly M4X01505)	Further Science for Engineering	ER	20	4	Component 1 - 30% Coursework – Written Report (1200 words) Component 2 - 70% Written Exam (1.5 hours)	CM					CM	N
H300/120	ACHA4008 (Formerly M4X01506)	Integrating Project	ER	20	4	Component 1 - 60% Coursework – Written Assessment (2000 words) Component 2 - 40% Practical Presentation or Demonstration (Approx. 10 minutes)	CM	CM	CM	CM	CM	CM	N
H330/120	ACHA4009 (Formerly M4X01507)	Introduction to Automotive Engineering	ER	20	4	Component 1 - 50% Coursework – CAD Assessment (2000 words) Component 2 - 50% Coursework – Written Report (2000 words)	CM						N
I100/121	ACCA4020 (Formerly M4X01508)	Introduction to Computer Programming	ER	20	4	Component 1 - 100% Coursework – Written report, with associated coding (3000 words equivalent)			CM				N

							STEM (Auto Eng)	STEM (Built)	STEM (Computing)	STEM (Electronics)	STEM (Environmental)	STEM (Manufacturing)	
I100/121	ACCA4021	Introduction to Computer Systems	New	20	4	Component 1 - 50% Written Exam (1 hour) Component 2 - 50% Coursework – Written Assessment (1500 words)			CM	CM			N
K200/123	ACBA4009 (Formerly M4X01509)	Introduction to Construction Technology	ER	20	4	Component 1 - 50% Coursework – Written Report (1500 words) Component 2 - 50% Coursework – Written Report (1500 words)		CM					N
H600/119	ACDA4012 (Formerly M4X01510)	Introduction to Electronics	ER	20	4	Component 1 - 50% Coursework – Written Assessment (1500 words) Component 2 - 50% Written Exam (1 hour)				CM			N
H700/120	ACMA4005 (Formerly M4X01511)	Manufacturing and Materials	ER	20	4	Component 1 - 50% Coursework – Written Report (1500 words) Component 2 - 50% Coursework – Written Report (1500 words)						CM	N

EU – Existing Unchanged (no changes made, date remains as per last validation)

ER – Existing Revised (date to be changed to this point of validation, new code to be allocated if it meets the criteria defined in Appendix PV9, if so, note the existing module code in brackets e.g. ABCD1234 (formerly ABCD1000))

EF – Existing Format updated only (no changes made other than to place an existing module on the current module template – date remains as per last validation unless it is 5 years old and this is the official revalidation point)

1.3 Archiving of Modules

Can any existing modules be deleted and archived as a result of this proposal? YES ☒ / NO ☐

If YES, please list the relevant modules below and indicate when each existing module may be archived (if a module is being revised for the following year, you may need to keep the current version live until the end of the academic year, while students remain in the system):

Module Code	Module Title	Date to be archived (MM/YYYY)*
M4X01498	Academic Writing	09/2020
M4X01499	Analysing and Solving Problems	09/2020
M4X01500	Computer Systems	09/2020
M4X01501	Environmental Science	09/2020
M4X01502	Fieldwork Studies	09/2020
ACFA4000	Further Mathematics	09/2020
M4X01504	Further Science for Construction	09/2020
M4X01505	Further Science for Engineering	09/2020
M4X01506	Integrating Project	09/2020
M4X01507	Introduction to Automotive Engineering	09/2020
M4X01508	Introduction to Computer Programming	09/2020
M4X01509	Introduction to Construction Technology	09/2020
M4X01510	Introduction to Electronics	09/2020
M4X01511	Manufacturing and Materials	09/2020
ACFA3000	Mathematics	09/2020
M3X01513	Science	09/2020

1.4 Transition Arrangements for Students

Please provide an explanation of the transition arrangements for each level of the programme for each cohort (including dates of transition):

NEW STUDENTS

New students	Intake month and year i.e. when the programme will be introduced	Notes/explanation <i>If the programme has more than one intake annually, please explain the arrangements for each intake</i>
Level 3/4* FT	September 2020	Only one intake per year, new students will automatically enrol onto the new programmes.
Level 3/4* PT	September 2020	Only one intake per year, new students will automatically enrol onto the new programmes.

* Or appropriate first year Level depending on the programme

CURRENT STUDENTS

If current students are to be transitioned to the proposed programme, please provide an explanation of the transition arrangements for each level of the programme for each cohort (including dates of transition).

Please tick to confirm:

☒	Mapping of module equivalency has taken place (i.e. that the modules already undertaken taken by the student are equivalent to the learning that they would have undertaken in the proposed programme)
☒	Students will be informed/consulted about any material changes to the programme and their written consent to transition will be obtained.

Current students and direct entry	Month and year i.e. when the students will transition from the current version of the programme to the proposed version	Notes/explanation <i>If the programme has more than one intake annually, please explain the arrangements for each intake</i>
Level 3/4	September 2020 – Repeat Modules with Attendance	As this is one-year programme and all students are currently studying full-time, there are no transition arrangements required for this programme. The only possible situation the team can foresee is a student who is repeating part of the year when the move to the revalidated programme takes place. However, since there are very few changes in the module structure, we do not anticipate any difficulties – modules will be mapped on a case-by-case basis (the number of students involved will be very small)

2. Programme 1: Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Automotive Engineering)

2.1 Programme Structure

<i>Programme duration :</i>	One year Full-time study, or Two years Part-time study
<i>Mode of study/delivery:</i>	On-campus
<i>Pattern of attendance (Full-time and/or part-time):</i>	Full-time and part-time
<i>Credits and levels:</i>	120 credits at Levels 3 and 4
<i>Pattern of delivery:</i>	Two semesters per academic year. Full-time students study 60-credits worth of modules per semester. Part-time students study 80-credits worth of modules in the first year and 40 in the second year. Within a semester, the modules run in parallel with each other.
<i>Intake points and instances of module delivery:</i>	Full-time and part time intakes in September. Each module is, therefore, delivered once annually.
<i>Module size:</i>	All modules are of 20-credits.
<i>Balance of compulsory and optional modules:</i>	All modules are compulsory
<i>Pre-requisite modules (please state module codes for the module and its pre-requisite):</i>	There are no pre-requisite modules in the programme. All modules are broadly independent of each other – with the exception of the Integrating Project, which draws from the other modules.

TYPICAL DELIVERY PLAN

The tables below indicate the typical delivery schedules for the programme for each pattern of attendance. The team reserves the right to re-organise the delivery of modules per semester, in accord with resource availability and student requests (which will be accommodated where feasible).

Full-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
ACHA4009	Introduction to Automotive Engineering	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4006	Further Mathematics	Compulsory	20
ACHA4007	Further Science for Engineering	Compulsory	20

ACHA4008	Integrating Project	Compulsory	20
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Part-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4007	Further Science for Engineering	Compulsory	20
ACHA4006	Further Mathematics	Compulsory	20
Year 2	Level 4	Semester 1	Sept. to Feb.
ACHA4009	Introduction to Automotive Engineering	Compulsory	20
Year 2	Level 4	Semester 2	Feb. to May
ACHA4008	Integrating Project	Compulsory	20

2.2 Programme Aims

The programme has the following general educational and specific aims:

- To develop in students a requisite understanding of aspects of a range of concepts, principles and techniques associated with Engineering.
- To develop students understanding of mathematical principles and methods.
- To enable students to apply appropriate technologies, techniques and tools to resolve problems or to meet a set of requirements
- To encourage students to identify problems or tasks, and design solutions with appropriate documentation, that demonstrates an ability to draw on supporting evidence and to communicate effectively.
- To promote the discussion of applications, Engineering concepts and principles, techniques and theory based upon a body of knowledge

2.3 Programme Learning Outcomes

Main Award: Certificate of Higher Education

Knowledge and understanding (KU)

KU1	Develop an understanding of key aspects of a range of concepts, principles and techniques associated with the programme.
KU2	Display theoretical and practical knowledge associated with the programme
KU3	Consistently apply theoretical and practical aspects of Engineering Science, Mathematical concepts and automotive technologies

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Cognitive (thinking) skills (CS)

CS1	Apply mathematical principles to the solution of problems
CS2	Apply computational principles to the solution of problems
CS3	Understand applications, concepts, principles, techniques and theory based upon a body of knowledge
CS4	Solve problems, plan and implement tasks at an appropriate level

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Practical skills (PS)

PS1	Apply Engineering related technologies, techniques and tools in resolving problems or meeting a set of requirements
PS2	Design Engineering-related components using CAD software
PS3	Demonstrate practical knowledge of automotive technologies
PS4	Communicate knowledge and conclusions clearly

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Key skills (KS)

KS1	Work as an individual or as a member of a team with guidance
KS2	Create appropriate documentation drawing on relevant supporting evidence.
KS3	Consider professional, legal and ethical issues including sustainability.
KS4	Manage own learning and development, including time management and organisational skills

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Intermediate/Exit Awards

None

3. Programme 2: Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Built)

3.1 Programme Structure

<i>Programme duration :</i>	One year Full-time study, or 2 years Part-time study
<i>Mode of study/delivery:</i>	On-campus
<i>Pattern of attendance (Full-time and/or part-time):</i>	Full-time and part-time
<i>Credits and levels:</i>	120 credits at Levels 3 and 4
<i>Pattern of delivery:</i>	Two semesters per academic year. Full-time students study 60-credits worth of modules per semester. Part-time students study 80-credits worth of modules in the first year and 40 in the second year. Within a semester, the modules run in parallel with each other.
<i>Intake points and instances of module delivery:</i>	Full-time and part time intakes in September. Each module is therefore, delivered once annually.
<i>Module size:</i>	All modules are of 20-credits.
<i>Balance of compulsory and optional modules:</i>	All modules are compulsory
<i>Pre-requisite modules (please state module codes for the module and its pre-requisite):</i>	There are no pre-requisite modules in the programme. All modules are broadly independent of each other – with the exception of the Integrating Project, which draws from the other modules.

TYPICAL DELIVERY PLAN

The tables below indicate the typical delivery schedules for the programme for each pattern of attendance. The team reserves the right to re-organise the delivery of modules per semester, in accord with resource availability and student requests (which will be accommodated where feasible).

Full-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
ACBA4009	Introduction to Construction Technology	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4006	Further Mathematics	Compulsory	20
ACBA4008	Further Science for Construction	Compulsory	20

ACHA4008	Integrating Project	Compulsory	20
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Part-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4006	Further Mathematics	Compulsory	20
ACBA4008	Further Science for Construction	Compulsory	20
Year 2	Level 4	Semester 1	Sept. to Feb.
ACBA4009	Introduction to Construction Technology	Compulsory	20
Year 2	Level 4	Semester 2	Feb. to May
ACHA4008	Integrating Project	Compulsory	20

3.2 Programme Aims

The programme has the following general educational and specific aims:

- To develop in students a requisite understanding of aspects of a range of concepts, principles and techniques associated with civil engineering, quantity surveying, etc.
- To develop students understanding of mathematical principles and methods associated with the construction industry and general engineering.
- To enable students to apply appropriate concepts and principles to resolve engineering problems
- To develop in students the ability to communicate effectively.
- To promote the discussion of applications, concepts, principles, techniques and theory based upon a body of knowledge

3.3 Programme Learning Outcomes

Main Award: Certificate of Higher Education

Knowledge and understanding (KU)

KU1	Develop an understanding of key aspects of a range of concepts, principles and techniques associated with the programme.
KU2	Display theoretical and practical knowledge associated with the programme.

KU3	To develop in students a requisite understanding of key aspects of a range of concepts, principles of civil engineering and material physics.
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Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Cognitive (thinking) skills (CS)

CS1	Apply mathematical principles to the solution of problems.
CS3	Understand applications, concepts, principles, techniques and theory based upon a body of knowledge.
CS4	Self-direct in solving problems, plan and implement tasks at an appropriate level.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Practical skills (PS)

PS1	To enable students to apply built environment related technologies, techniques and tools in resolving problems or meeting a set of requirements.
PS2	Demonstrate practical knowledge of technologies associated with the Built Environment.
PS3	Communicate knowledge and conclusions clearly

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Key skills (KS)

KS1	Work as an individual or as a member of a team with guidance.
KS2	Create appropriate documentation drawing on relevant supporting evidence.
KS3	Consider professional, legal and ethical issues including sustainability.
KS4	Manage own learning and development, including time management and organisational skills.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Intermediate/Exit Awards

None.

4. Programme 3: Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Computing)

4.1 Programme Structure

<i>Programme duration :</i>	One year Full-time study, or 2 years Part-time study
<i>Mode of study/delivery:</i>	On-campus
<i>Pattern of attendance (Full-time and/or part-time):</i>	Full-time and part-time
<i>Credits and levels:</i>	120 credits at Levels 3 and 4
<i>Pattern of delivery:</i>	Two semesters per academic year. Full-time students study 60-credits worth of modules per semester. Part-time students study 80-credits worth of modules in the first year and 40 in the second year. Within a semester, the modules run in parallel with each other.
<i>Intake points and instances of module delivery:</i>	Full-time and part time intakes in September. Each module is, therefore, delivered once annually.
<i>Module size:</i>	All modules are of 20-credits.
<i>Balance of compulsory and optional modules:</i>	All modules are compulsory
<i>Pre-requisite modules (please state module codes for the module and its pre-requisite):</i>	There are no pre-requisite modules in the programme. All modules are broadly independent of each other – with the exception of the Integrating Project which draws from the other modules.

TYPICAL DELIVERY PLAN

The tables below indicate the typical delivery schedules for the programme for each pattern of attendance. The team reserves the right to re-organise the delivery of modules per semester, in accord with resource availability and student requests (which will be accommodated where feasible).

Full-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACCA4021	Introduction to Computer Systems	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACCA4019	Analysing and Solving Problems	Compulsory	20
ACCA4020	Introduction to Computer Programming	Compulsory	20

ACHA4008	Integrating Project	Compulsory	20
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Part-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACCA4020	Introduction to Computer Programming	Compulsory	20
ACCA4019	Analysing and Solving Problems	Compulsory	20
Year 2	Level 4	Semester 1	Sept. to Feb.
ACCA4021	Introduction to Computer Systems	Compulsory	20
Year 2	Level 4	Semester 2	Feb. to May
ACHA4008	Integrating Project	Compulsory	20

4.2 Programme Aims

The programme has the following general educational and specific aims:

- To develop in students a requisite understanding of aspects of a range of concepts, principles and techniques associated with computing.
- To develop students understanding of mathematical principles and methods.
- To enable students to apply appropriate technologies, techniques and tools to resolve problems or to meet a set of requirements
- To encourage students to identify problems or tasks, and design solutions with appropriate documentation, that demonstrates an ability to draw on supporting evidence and to communicate effectively.
- To promote the discussion of applications, concepts, principles, techniques and theory based upon a body of knowledge

4.3 Programme Learning Outcomes

Main Award: Certificate of Higher Education

Knowledge and understanding (KU)

KU1	Develop an understanding of key aspects of a range of concepts, principles and techniques associated with the programme.
KU2	Display theoretical and practical knowledge associated with the programme
KU3	Consistently apply theoretical and practical aspects of computing and information systems technologies

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Cognitive (thinking) skills (CS)

CS1	Apply mathematical principles to the solution of problems.
CS2	Apply computational principles to the solution of problems.
CS3	Understand applications, concepts, principles, techniques and theory based upon a body of knowledge.
CS4	Self-direct in solving problems, plan and implement tasks at an appropriate level.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Practical skills (PS)

PS1	Apply computing related technologies, techniques and tools in resolving problems or meeting a set of requirements.
PS2	Design, implement and test well-defined software solutions.
PS3	Demonstrate practical knowledge of computer systems.
PS4	Communicate knowledge and conclusions clearly.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Key skills (KS)

KS1	Work as an individual or as a member of a team with guidance.
KS2	Create appropriate documentation drawing on relevant supporting evidence.
KS3	Consider professional, legal and ethical issues including sustainability.
KS4	Manage own learning and development, including time management and organisational skills.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Intermediate/Exit Awards

None

5. Programme 4: Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Electronics)

5.1 Programme Structure

<i>Programme duration :</i>	One year Full-time study, or 2 years Part-time study
<i>Mode of study/delivery:</i>	On-campus
<i>Pattern of attendance (Full-time and/or part-time):</i>	Full-time and part-time
<i>Credits and levels:</i>	120 credits at Levels 3 and 4
<i>Pattern of delivery:</i>	Two semesters per academic year. Full-time students study 60-credits worth of modules per semester. Part-time students study 80-credits worth of modules in the first year and 40 in the second year. Within a semester, the modules run in parallel with each other.
<i>Intake points and instances of module delivery:</i>	Full-time and part time intakes in September. Each module is, therefore, delivered once annually.
<i>Module size:</i>	All modules are of 20-credits.
<i>Balance of compulsory and optional modules:</i>	All modules are compulsory
<i>Pre-requisite modules (please state module codes for the module and its pre-requisite):</i>	There are no pre-requisite modules in the programme. All modules are broadly independent of each other – with the exception of the Integrating Project which draws from the other modules.

TYPICAL DELIVERY PLAN

The tables below indicate the typical delivery schedules for the programme for each pattern of attendance. The team reserves the right to re-organise the delivery of modules per semester, in accord with resource availability and student requests (which will be accommodated where feasible).

Full-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACCA4021	Introduction to Computer Systems	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACCA4019	Analysing and Solving Problems	Compulsory	20
ACDA4012	Introduction to Electronics	Compulsory	20
ACHA4008	Integrating Project	Compulsory	20

Part-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACDA4012	Introduction to Electronics	Compulsory	20
ACCA4019	Analysing and Solving Problems	Compulsory	20
Year 2	Level 4	Semester 1	Sept. to Feb.
ACCA4021	Introduction to Computer Systems	Compulsory	20
Year 2	Level 4	Semester 2	Feb. to May
ACHA4008	Integrating Project	Compulsory	20

5.2 Programme Aims

The programme has the following general educational and specific aims:

- To develop in students a requisite understanding of aspects of a range of concepts, principles and techniques associated with electronics systems.
- To develop students understanding of mathematical principles and methods.
- To enable students to apply appropriate technologies, techniques and tools to resolve problems or to meet a set of requirements
- To encourage students to identify problems or tasks, and design solutions with appropriate documentation, that demonstrates an ability to draw on supporting evidence and to communicate effectively.
- To promote the discussion of applications, concepts, principles, techniques and theory based upon a body of knowledge

5.3 Programme Learning Outcomes

Main Award: Certificate of Higher Education

Knowledge and understanding (KU)

KU1	Develop an understanding of key aspects of a range of concepts, principles and techniques associated with the programme.
KU2	Display theoretical and practical knowledge associated with the programme.
KU3	Consistently apply theoretical and practical aspects of computing and electronics systems technologies.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Cognitive (thinking) skills (CS)

CS1	Apply mathematical principles to the solution of problems.
CS2	Apply electronics principles to the solution of problems.
CS3	Understand applications, concepts, principles, techniques and theory based upon a body of knowledge.
CS4	Self-direct in solving problems, plan and implement tasks at an appropriate level.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Practical skills (PS)

PS1	Apply electronics related technologies, techniques and tools in resolving problems or meeting a set of requirements.
PS2	Design, implement and test well-defined electronics solutions.
PS3	Demonstrate practical knowledge of computer systems.
PS4	Communicate knowledge and conclusions clearly.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Key skills (KS)

KS1	Work as an individual or as a member of a team with guidance.
KS2	Create appropriate documentation drawing on relevant supporting evidence.
KS3	Consider professional, legal and ethical issues including sustainability.
KS4	Manage own learning and development, including time management and organisational skills.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Intermediate/Exit Awards

None.

6. Programme 5: Cert STEM (Environmental)

6.1 Programme Structure

<i>Programme duration :</i>	One year Full-time study, or 2 years Part-time study
<i>Mode of study/delivery:</i>	On-campus
<i>Pattern of attendance (Full-time and/or part-time):</i>	Full-time and part-time
<i>Credits and levels:</i>	120 credits at Levels 3 and 4
<i>Pattern of delivery:</i>	Two semesters per academic year. Full-time students study 60-credits worth of modules per semester. Part-time students study 80-credits worth of modules in the first year and 40 in the second year. Within a semester, the modules run in parallel with each other.
<i>Intake points and instances of module delivery:</i>	Full-time and part time intakes in September. Each module is, therefore, delivered once annually.
<i>Module size:</i>	All modules are of 20-credits.
<i>Balance of compulsory and optional modules:</i>	All modules are compulsory
<i>Pre-requisite modules (please state module codes for the module and its pre-requisite):</i>	There are no pre-requisite modules in the programme. All modules are broadly independent of each other – with the exception of the Integrating Project which draws from the other modules.

TYPICAL DELIVERY PLAN

The tables below indicate the typical delivery schedules for the programme for each pattern of attendance. The team reserves the right to re-organise the delivery of modules per semester, in accord with resource availability and student requests (which will be accommodated where feasible).

Full-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
ACNA4000	Environmental Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4006	Further Mathematics	Compulsory	20
ACNA4001	Fieldwork Studies	Compulsory	20
ACHA4008	Integrating Project	Compulsory	20

Part-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACNA4001	Fieldwork Studies	Compulsory	20
ACHA4006	Further Mathematics	Compulsory	20
Year 2	Level 4	Semester 1	Sept. to Feb.
ACNA4000	Environmental Science	Compulsory	20
Year 2	Level 4	Semester 2	Feb. to May
ACHA4008	Integrating Project	Compulsory	20

6.2 Programme Aims

The programme has the following general educational and specific aims:

- To develop in students a requisite understanding of aspects of a range of concepts, principles and techniques associated with the Earth's systems and processes.
- To develop students understanding of mathematical principles and methods.
- To enable students to apply appropriate technologies, techniques and tools in the scientific study of the physical, chemical, biological and anthropogenic processes operating on the ecosystems
- To enable students to describe, record, interpret and evaluate observations/results in a logical manner.
- To develop in students the ability to communicate effectively.
- To promote the discussion of applications, concepts, principles, techniques and theory based upon a body of knowledge

6.3 Programme Learning Outcomes

Main Award: Certificate of Higher Education

Knowledge and understanding (KU)

KU1	Develop an understanding of key aspects of a range of concepts, principles and techniques associated with the programme.
KU2	Display theoretical and practical knowledge associated with the programme.

KU3	Develop a requisite understanding of key aspects of a range of concepts, principles and techniques associated with environmental science.
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Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Cognitive (thinking) skills (CS)

CS1	Apply mathematical principles to the solution of problems.
CS2	Apply physical principles to the solution of problems related to the natural environment.
CS3	Understand applications, concepts, principles, techniques and theory based upon a body of knowledge.
CS4	Self-direct in solving problems, plan and implement tasks at an appropriate level.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Practical skills (PS)

PS1	To enable students to apply environmental science related technologies, techniques and tools in analysing the environment through observation and interpretation of results.
PS2	Communicate knowledge and conclusions clearly.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Key skills (KS)

KS1	Work as an individual or as a member of a team with guidance.
KS2	Create appropriate documentation drawing on relevant supporting evidence.
KS3	Consider professional, legal and ethical issues including sustainability.
KS4	Manage own learning and development, including time management and organisational skills.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Intermediate/Exit Awards

None

7. Programme 6: Certificate of Higher Education in Science, Technology, Engineering and Mathematics (Manufacturing)

7.1 Programme Structure

<i>Programme duration :</i>	One year Full-time study, or 2 years Part-time study
<i>Mode of study/delivery:</i>	On-campus
<i>Pattern of attendance (Full-time and/or part-time):</i>	Full-time and part-time
<i>Credits and levels:</i>	120 credits at Levels 3 and 4
<i>Pattern of delivery:</i>	Two semesters per academic year. Full-time students study 60-credits worth of modules per semester. Part-time students study 80-credits worth of modules in the first year and 40 in the second year. Within a semester, the modules run in parallel with each other.
<i>Intake points and instances of module delivery:</i>	Full-time and part time intakes in September. Each module is, therefore, delivered once annually.
<i>Module size:</i>	All modules are of 20-credits.
<i>Balance of compulsory and optional modules:</i>	All modules are compulsory
<i>Pre-requisite modules (please state module codes for the module and its pre-requisite):</i>	There are no pre-requisite modules in the programme. All modules are broadly independent of each other – with the exception of the Integrating Project which draws from the other modules.

TYPICAL DELIVERY PLAN

The tables below indicate the typical delivery schedules for the programme for each pattern of attendance. The team reserves the right to re-organise the delivery of modules per semester, in accord with resource availability and student requests (which will be accommodated where feasible).

Full-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
ACMA4005	Manufacturing and Materials	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4006	Further Mathematics	Compulsory	20
ACHA4007	Further Science for Engineering	Compulsory	20
ACHA4008	Integrating Project	Compulsory	20

Part-time study

Module Code	Module Title	Module type	Credits
Year 1	Level 3/4	Semester 1	Sept. to Feb.
ACHA4005	Academic Skills	Compulsory	20
ACHA3000	Introduction to Mathematics and Science	Compulsory	20
Year 1	Level 4	Semester 2	Feb. to May
ACHA4007	Further Science for Engineering	Compulsory	20
ACHA4006	Further Mathematics	Compulsory	20
Year 2	Level 4	Semester 1	Sept. to Feb.
ACMA4005	Manufacturing and Materials	Compulsory	20
Year 2	Level 4	Semester 2	Feb. to May
ACHA4008	Integrating Project	Compulsory	20

7.2 Programme Aims

The programme has the following general educational and specific aims:

- To develop in students a requisite understanding of aspects of a range of concepts, principles and techniques associated with Engineering.
- To develop students understanding of mathematical principles and methods.
- To enable students to apply appropriate technologies, techniques and tools to resolve problems or to meet a set of requirements
- To encourage students to identify problems or tasks, and design solutions with appropriate documentation, that demonstrates an ability to draw on supporting evidence and to communicate effectively.
- To promote the discussion of applications, Engineering concepts and principles, techniques and theory based upon a body of knowledge

7.3 Programme Learning Outcomes

Main Award: Certificate of Higher Education

Knowledge and understanding (KU)

KU1	Develop an understanding of key aspects of a range of concepts, principles and techniques associated with the programme.
KU2	Display theoretical and practical knowledge associated with the programme.

KU3	Consistently apply theoretical and practical aspects of Engineering Science, Mathematical concepts and manufacturing technologies.
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Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Cognitive (thinking) skills (CS)

CS1	Apply mathematical principles to the solution of problems.
CS2	Apply computational principles to the solution of problems.
CS3	Understand applications, concepts, principles, techniques and theory based upon a body of knowledge.
	Self-direct in solving problems, plan and implement tasks at an appropriate level.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Practical skills (PS)

PS1	Apply Engineering related technologies, techniques and tools in resolving problems or meeting a set of requirements.
PS2	Design Engineering-related components using CAD software.
PS3	Demonstrate practical knowledge of manufacturing technologies.
PS4	Communicate knowledge and conclusions clearly.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Key skills (KS)

KS1	Work as an individual or as a member of a team with guidance.
KS2	Create appropriate documentation drawing on relevant supporting evidence.
KS3	Consider professional, legal and ethical issues including sustainability.
KS4	Manage own learning and development, including time management and organisational skills.

Each of the above PLOs is covered by at least 2 modules at the appropriate level (taking into account individual patterns of study)

Intermediate/Exit Awards

None

8. Module Details

Module Code	ACHA3000
Title	Introduction to Mathematics and Science
Date	14/05/2020
Level	3
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

- Apply fundamental mathematical principles to a level that underpins the knowledge required for further study at a higher level.
- Identify and apply appropriate physical principles and relationships in the solution of problems

INDICATIVE CONTENT

- Introduction to basic fractions, indices and standard form
- Introduction to the transposition of formulae
- Solution of linear equations
- Solution of quadratic equations
- Solution of simultaneous equations
- Introduction to trigonometry and right-angled triangles (SOHCAHTOA)
- An introduction to vectors
- Units - basic SI units of length, mass and time, area and volume, density and relative density, mass and weight, force, work and power.
- Forces and moments - conditions of static equilibrium, forces and reaction, especially simply supported beams. Moments of a form. Resultant, couples, centre of gravity. Vector rotation. Resolution of forces. Polygon of forces.
- Electrical current/voltage. Mechanical analogies. Resistors in series and parallel. The heating effect of current, variation of resistance with temperature incandescent lamp.
- Voltage divider and current divider. Simple circuit calculations, use of Ohm's law and Kirchhoff's laws.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Exam	1 hour	50%

Assessment Component 2

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Exam	1 hour	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACHA3000	
Module Title	Introduction to Mathematics and Science	
Classification	Reading List entry	Electronic*
Essential	Smedley, R., Wiseman, G., Introducing Pure Mathematics (Oxford, 2001)	☐
Essential	Stroud, K.A. - <i>Engineering Mathematics</i> , (Palgrave Macmillan, 2013)	☒
Further	Davies, H; Hicks, A, Mathematics for Scientific and Technical Students (1998)	☐
Further	Stroud, K A, (2007) Engineering Mathematics, Industrial Press	☐
Further	McDonagh, I. and Waterworth (2015), G. Engineering Science Volumes 1 and 2, Arnold	☒
Further	Bird, J. O. and Ross, C. (2012) Mechanical Engineering Principles, Routledge	☐

Further	Bird, J, (2006) Higher Engineering Mathematics, Newnes	☐
Further	McDonagh, I., Mechanical Science for Technicians Volume 1, Arnold	☐
Further	Hannah, J. and Hillier, M.(1999) Mechanical Engineering Science, Longman	☐
Further	Bird, J. O. and Ross, C.(2012) Mechanical Engineering Principles, Routledge	☐
Reference	www.khanacademy.org	☒

Module Code	ACHA4005
Title	Academic Skills
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To enable students to communicate effectively in a written form when describing concepts or constructing arguments
- To enable students to use a range of suitable academic to help them present information and data.

LEARNING OUTCOMES

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

- Write clearly and effectively when describing ideas and concepts relevant to their field and consulting and reference appropriate resources to support their analysis or findings.
- Use a range of suitable academic tools (theoretical, computational or practical) to help solve problems and communicate the results in a professional manner.

INDICATIVE CONTENT

- The learning process and the skills required to develop an understanding of a concept or principle.
- Gathering information, planning and researching a topic
- Strategies for taking notes, writing essays and reports
- Understanding the elements of non-verbal communication, constructing and documenting arguments
- Developing confidence in tackling communication tasks and being able to debate effectively
- The importance of referencing and the standard referencing systems
- Apply professional skills learned to area of study
- Developing knowledge of suitable computational software that can help with academic work, such as Microsoft Word and Microsoft Excel
- Gaining relevant additional skills specific to programme stream.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	1500 words	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	1500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACHA4005	
Module Title	Academic Skills	
Classification	Reading List entry	Electronic*
Essential	Osmond, A (2015) Academic Writing and Grammar for Students 2 nd Edition, Palgrave Macmillan	☐
Essential	Pears, R, Sheilds, G (2019) Cite Them Right: The Essential Referencing Guide, Palgrave Macmillan	☒
Essential	UWTSD Library Referencing Handbooks, available at: https://www.uwtسد.ac.uk/library/student-essentials/referencing-handbooks/	☒
Further	Cottrell, S (2019) The Study Skills Handbook, SAGE Publications Ltd	☒
Further	Gillett, A (2009) Inside Track to Successful Academic Writing, Longman	☐
Further	Greetham, B (2013) How to Write Better Essays, Palgrave Macmillan	☐

	Cottrell, S (2011) Critical Thinking Skills: Developing Effective Analysis and Argument, Palgrave Macmillan	☐
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Module Code	ACCA4019
Title	Analysing and Solving Problems
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

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

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
Practical – for example, a Moodle-based quiz or a task such as flowcharting a problem	1 hour	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written assessment	1500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA4019	
Module Title	Analysing and Solving Problems	
Classification	Reading List entry	Electronic*
Essential	Curzon P and McCowan P (2017) Power Of Computational Thinking, The: Games, Magic And Puzzles To Help You Become A Computational Thinker, World Scientific	☒
Essential	Levitin, A and Levitin, M (2011) Algorithmic Puzzles, Oxford University Press.	☐
Further	Michalewicz, M and Michalewicz Z (2010), Puzzle-based Learning; An introduction to critical thinking, mathematics and problem solving, Hybrid Publishers.	☐

Further	Fraser, Jen and Anthony, P (2014) Everyone's a Genius: Simple Tips to Boost Your Brilliance Now, Ideation Training Pty Ltd	☐
Further	Gardner, M (1978) aha! Insight, Scientific American.	☐
Further	McInerney, D Q (2005) Being Logical, Random House	☐
Further	Watanabe, K (2009) Problem Solving 101: A Simple Book for Smart People	☐

Module Code	ACNA4000
Title	Environmental Science
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To provide a basic scientific foundation in Environmental Science suitable for an undergraduate programme in environmental conservation or science.

LEARNING OUTCOMES

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

- Evaluate the fundamental features and processes of the natural environment and its relationships with human activities, and analyze, using collected data, human impacts on the environment.
- Acquire practical skills for scientific problem-solving, including familiarity with laboratory and field instrumentation, computer applications, statistical and modeling techniques.
- Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.

INDICATIVE CONTENT

- Environmental Hazard Management
- Environmental Processes, Pollution and Climate Change
- Environmental chemistry, toxicology and pollution.
- Geology, soils, earth's physical resources, earthquakes and volcanoes.
- Ecology – basic introduction to terrestrial, freshwater and marine ecology, nutrient cycling.
- Hydrology, Oceanography.
- Climate and Weather, Global warming and Climate Change, Air Quality.
- Environmental Hazards and Applied basic science.
- The Principles of Environmental Management.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Component 2

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Exam	1 hour	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACNA4000	
Module Title	Environmental Science	
Classification	Reading List entry	Electronic*
Essential	Botkin, D.B. (2014). Environmental Science Earth as a Living Planet. John Wiley & Sons Inc.	☐
Essential	Cresser, M.S. (2012). Introduction to Environmental Science, Earth and Man. Pearson Education.	☐
Essential	McKinney, M.L. (2017). Environmental Science. Jones and Bartlett Publishers, Inc.	☒
Further	Davis, M.L. and Cornwell, D.A. (2012). Introduction to Environmental Engineering. McGraw Hill Education.	☐
Further	Allaby, M. (2000). Basics of Environmental Science. Taylor & Francis Ltd.	☐

Module Code	ACNA4001
Title	Fieldwork Studies
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To adopt a scientific foundation in fieldwork studies suitable for an undergraduate programme in environmental conservation / science.

LEARNING OUTCOMES

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

- Undertake elementary field surveys, IT exercises and to keep a field note-book.
- Systematically identify, summarise, interpret and discuss introductory knowledge and concepts to produce and present basic scientific reports using appropriate writing standards.
- Work effectively on your own and in small groups to build on personal development.

INDICATIVE CONTENT

- Conservation Issues: Habitat destruction, Alien species, Pollution.
- The Biosphere: geology, soils, earth physical resources, ecology, nutrient cycling, Earthquakes and Volcanoes.
- The Hydrosphere: Hydrology, Oceanography, Flooding and Tsunamis.
- The Atmosphere: Climate and Weather, Global warming and Climate Change, Air Quality.
- Measuring and monitoring the environment: revision of GCSE math and sciences.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACNA4001	
Module Title	Fieldwork Studies	
Classification	Reading List entry	Electronic*
Essential	Holden. J. (4 th ed.) (2017) An Introduction to Physical Geography and the Environment, 4th edition. Harlow: Pearson-Prentice Hall.	☒
Essential	Kneale, P. (2019) Study skills for Geography, Earth and Environmental Science students, 4th ed., London: Hodder	☒
Essential	Smithson, P., Addison, K. and Atkinson, K. (2008) Fundamentals of the Physical Environment. 4th ed., London: Routledge.	☐
Further	Clifford, N.J. French, S. and Valentine G. (2016) Key Methods in Geography (3rd ed.) London: Sage.	☒
Further	Gregory, K.J. (2000) The Changing Nature of Physical geography. London: Arnold.	☐
Further	Haslett, S.K. (2016) Coastal systems, 3rd edition. London: Routledge.	☐
Further	Example: Davies, HG & Hicks, G A (1998) Mathematics for Scientific & Technical students, Longman	☐

Module Code	ACHA4006
Title	Further Mathematics
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

- Differential Calculus
- The concept of calculus and the gradient at a point on curve
- Differentiation of basic functions
- Integral Calculus
- Integration of functions and the relationship with differential calculus
- Standard integrals
- Logarithms
- Solution of any triangle and angles of any magnitude (Sine/Cosine rule)
- Basic trigonometric identities
- Solution of basic trigonometric equations

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Exam	2 hours	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACHA4006	
Module Title	Further Mathematics	
Classification	Reading List entry	Electronic*
Essential	Smedley, R., Wiseman, G., Introducing Pure Mathematics (Oxford, 2001)	☐
Essential	Davies, H; Hicks, A, Mathematics for Scientific and Technical Students (1998)	☐
Essential	Stroud, K.A. - <i>Engineering Mathematics</i> , (Palgrave Macmillan, 2013)	☒
Further	Bird, J. O. and Ross, C. (2012) Mechanical Engineering Principles, Routledge	☐
Further	Bird, J, (2006) Higher Engineering Mathematics, Newnes	☐

Module Code	ACBA4008
Title	Further Science for Construction
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To develop students' knowledge and understanding of both properties and performance of construction materials for a range of situations.

LEARNING OUTCOMES

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

- Explore the characteristics, properties and use of common construction materials.
- Apply principles and solve scientific problems for a range of construction conditions.

INDICATIVE CONTENT

- External Fabric of the building.
- The Strength of Materials (timber, steel, reinforced concrete, soils)
- Tensile / Compressive/ Shear testing methods – use of laboratory equipment in experimentation.
- The relevance of strength to construction.
- Sustainable material choice.
- Relevance of material choice for comfort, energy efficiency and life cycle.
- Creating the internal environment
- Physics and the internal environment
- Controlling the internal environment – insulation and ventilation
- Noise nuisance – measurement and control
- New technologies for sustainable use of natural lighting and shading.
- Balancing natural light availability with artificial lighting systems.
- Blending the external environment with the internal, for user health and well-being.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Report	3000 words	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACBA4008	
Module Title	Further Science for Construction	
Classification	Reading List entry	Electronic*
Essential	Marotta, T. (2010) Basic Construction Materials, 8th Edition, Pearson	☐
Essential	McMullan, R. (2017) Environmental Science in Buildings, 8th Edition, Palgrave	☒

Module Code	ACHA4007
Title	Further Science for Engineering
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To provide an introduction to the fundamental principles of solid mechanics, fluid mechanics and thermal energy.

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

- Mechanics of materials - types and basic structures of materials. Direct stress and strain. Elasticity. Shear stress and strain. Miscellaneous simple problems, including factor of safety.
- Equations of linear motion
- Angular velocity and equations of motion
- Motion and friction - displacement, velocity and uniform acceleration. Newton's laws of motion. Torque and angular motion and acceleration. I values ($T = I\alpha$). Work, energy and power, including effects of friction. Basic vibrations - simple harmonic motion (spring - mass systems).
- Thermal energy - temperature scales. Phases and states. Vapours and gases. Specific heats and latent heats. Gases. Boyle's law, Charles' Law and Combined Gas Law $pV/T = c$ and $pV = mRT$.
- Fluids - concepts of viscosity. Hydrostatics - pressures in liquids. volumetric flow calculations and principles of continuity.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Report	1200 words	30%

Assessment Component 2

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Exam	1.5 hours	70%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACHA4007	
Module Title	Further Science for Engineering	
Classification	Reading List entry	Electronic*
Essential	Bolton, W. (2007) Engineering Science, Arnold	☐
Essential	McDonagh, I. and Waterworth, G. (2015) Engineering Science Volumes 1 and 2, Arnold	☒
Essential	McDonagh, I., Mechanical Science for Technicians Volume 1, Arnold	☐
Further	Bird, J. (2012) Science for Engineering, Routledge	☐
Further	Bird, J. O. and Ross, C.(2012) Mechanical Engineering Principles, Routledge	☐

Module Code	ACHA4008
Title	Integrating Project
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

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

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written assessment	2000 words	60%

Assessment Component 2

(Tick one)

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
Presentation or Demonstration	Approx 10 minutes	40%

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	60%
Practical	40%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACHA4008	
Module Title	Integrating Project	
Classification	Reading List entry	Electronic*
Essential	Larson, E.W. (2017) 7th Edition, Project Management. McGraw-Hill	☒
Further	Newton, R. (2016), Project Management Step by Step, FT Publishing International	☒
Further	Hughes, B. (2015), 5th Edition Project Management for IT-Related Projects, British Computer Society	☒
Further	Christopher, D (2013) Computing Projects, Pearson Education	☐
Further	Berndtsson, T (2012) Planning and Implementing your Project, Springer Verlag	☐
Further	Cottrell, S.(2011) Critical Thinking Skills: Developing Effective Analysis and Argument, Palgrave Macmillan	☐
Further	Collis, J., Hussey, R (2009) Business Research: a Practical Guide for Undergraduate and Postgraduate Students, Palgrave Macmillan	☐

Module Code	ACHA4009
Title	Introduction to Automotive Engineering
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To introduce students to the varied disciplines in the field of Automotive, Motorsport and Motorcycle Engineering
- To introduce CAD software and its applications to the automotive and motorsport sector

LEARNING OUTCOMES

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

- Show an appreciation for the varied disciplines required in the field of Automotive Engineering and associated pathways and to prove an understanding of the current state of the Automotive Industry and the requirements for more sustainable developments and advances in the field.
- Show a basic understanding of Computer Aided Design and be able to produce models and technical drawings using a piece of CAD Software.

INDICATIVE CONTENT

- Introduction to the Automotive, Motorsport and Motorcycle Sectors.
- Introduction to CAD software
- Challenges and legislative drivers for development in the industry
- Introduction to Engine Performance and Efficiency
- Introduction to Vehicle Handling and Dynamics
- Introduction to Data Acquisition and the importance of Metrology
- Introductory Aerodynamics & CFD
- Introductory CAE and Simulation
- Competitive Motorsport and the Automotive Industry.
- Sustainability, Green Technologies and Vehicle Life Cycles

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
CAD Assignment	2000 words	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	2000 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACHA4009	
Module Title	Introduction to Automotive Engineering	
Classification	Reading List entry	Electronic*
Essential	Cocco, G.(2005) Motorcycle Design and Technology, Giorgio NADA Editore	☐
Essential	Foale, T. (2002) Motorcycle Handling and Chassis Design, Tony Foale	☐
Essential	Hillier, V., and Coombes, P. (2004) Fundamentals of Motor Vehicle Technology, Stanley Thornes	☐
Essential	Lombard, M (2013) SolidWorks 2013 Bible, Wiley	☐
Further	Staniforth, A. (2006) Competition Car Suspension: A Practical Handbook, Haynes	☐
Further	Stone, R. (1999), Introduction to Internal Combustion Engines, Macmillan	☐

Further	Bolton, W. (2007) Engineering Science, Arnold	☐
Further	Leithman, S.(2009) Build Your Own Plug-In Hybrid Vehicle, McGraw Hill	☐
Further	Onwubolu, G.(2013) Computer-aided engineering design with SolidWorks	☐
Further	Society of Automotive Engineering, (2019) Journal of Automotive Engineering, SAE	☒

Module Code	ACCA4020
Title	Introduction to Computer Programming
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

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

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report (with associated coding)	3000 words equivalent	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA4020	
Module Title	Introduction to Computer Programming	
Classification	Reading List entry	Electronic*
Essential	McGrath, M (2018) C Programming In Easy Steps 5 th Edition	☒
Essential	Novikov, D (2019) <i>Python for Beginners: The Ultimate Beginners Guide to Python Programming With Step by Step Guidance and Hands-On Examples.</i>	☒
Further	Romano, F. (2018) <i>Learn Python Programming: The no-nonsense, beginner's guide to programming, data science, and web development with Python 3.7, 2nd Edition</i> , Packt Publishing	☒
Further	McGrath, M (2018) <i>Python in Easy Steps, 2nd Edition</i> , In Easy Steps Limited	☒

Module Code	ACCA4021
Title	Introduction to Computer Systems
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

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

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Exam	1 hour	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Assessment	1500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA4021	
Module Title	Introduction to Computer Systems	
Classification	Reading List entry	Electronic*
Essential	Bott, E, Stinson, T (2018) Windows 10 Inside Out, Microsoft Press	☒
Essential	Stallings, W (2012) Computer Organization and Architecture: Designing for Performance, Pearson Education	☐
Further	Patterson, D A (2016) Computer Organization and Design: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design), Morgan Kaufmann Publishers	☒
Further	Tanenbaum, A S, Bot, H, (2014) Modern Operating Systems, 4 th Edition, Prentice Hall	☐
Further	Tanenbaum, A (2013) Computer Networks, Prentice Hall	☐

Module Code	ACBA4009
Title	Introduction to Construction Technology
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- Explore the structural performance required for low-rise construction and be aware of the construction of both sub and super-structures

LEARNING OUTCOMES

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

- Investigate the different forms of construction for low-rise buildings
- Interpret the differences between sub and super-structures together with their methods of construction

INDICATIVE CONTENT

- Legislative control of construction.
- Site investigation techniques.
- Preparation for construction; site clearance, excavation, control of ground water, foundation design.
- The in-situ requirements for elements of a building, the characteristics, properties,
- Location, features and applications, and the interaction of different elements making up the sub-structure and superstructure. Use of sketching techniques.
- How buildings are designed and constructed, considering key performance requirements.
- Forms of construction; traditional, cross-wall, SIPS, timber, steel and concrete frames.
- Construction of floors at different levels with different materials
- Roofs, types, components, materials and performance.
- The challenges of designing for sustainability.
- Designing with maintenance in mind.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACBA4009	
Module Title	Introduction to Construction Technology	
Classification	Reading List entry	Electronic*
Essential	Chudley R and Greeno R (2016) The Building Construction Handbook 11 th Edition Pearson, London UK.	☒
Further	Riley M and Cotgrave A (2014) Construction Technology Part. 2: Industrial and Commercial Building (3rd Edition) Palgrave Macmillan, Basingstoke, UK.	☐

Module Code	ACDA4012
Title	Introduction to Electronics
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

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

LEARNING OUTCOMES

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

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

INDICATIVE CONTENT

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

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written assessment	1500 words	50%

Assessment Component 2

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Exam	1 hour	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACDA4012	
Module Title	Introduction to Electronics	
Classification	Reading List entry	Electronic*
Essential	Bird, J (2017) Electrical Circuit Theory and Technology 6 th Ed, Routledge	☒
Essential	Floyd, T L (2012) DC/AC Fundamentals: A Systems Approach, Prentice Hall	☐
Further	Sinclair, I., Dutton, J (2007) Practical Electronics Handbook, Newnes	☐

Module Code	ACMA4005
Title	Manufacturing and Materials
Date	14/05/2020
Level	4
Credits	20
Pre-Requisites	None

AIM(S)

- To enable the student to understand current manufacturing and design technologies including CAD, materials selection, manufacturing processes and rapid prototyping.

LEARNING OUTCOMES

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

- Select suitable manufacturing technologies for real parts.
- Demonstrate an understanding of material properties and selection.

INDICATIVE CONTENT

- CAD fundamentals.
- Introduction to material properties and selection.
- Introduction to manufacturing processes and selection.
- Introduction to engineering design principles.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written report	1500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACMA4005	
Module Title	Manufacturing and Materials	
Classification	Reading List entry	Electronic*
Essential	Kalpakjian, S. and Schmid, S. (2015) Manufacturing Processes for Engineering Materials (5 th Edition)	☒
Essential	Edwards, L. and Endean, M.(1990) Manufacturing with Materials, Butterworth Heinemann	☐
Essential	Pao, Y. C. (1984) Elements of Computer-aided Design and Manufacturing: CAD/CAM, Wiley	☐
Further	Bird, J. O. and Ross, C.(2012) Mechanical Engineering Principles, Routledge	☐
Further	Haigh, M. (1985) An Introduction to Computer-Aided Design and Manufacture, Blackwell Scientific.	☐