

## UK\_Spec Incorporated Engineer (IEng) Standard Mapping to GA Engineering (Design and Manufacture) at GCU

### Note:

If you select **Option 1 “Module”** then link in UK Spec Competences below – please refer to the table relevant to your stream:

- **Tables A.1 & A.2** - Computer Aided Engineering (CAE) Stream
- **Tables B.1 & B.2** - Electrical Power Engineering (EPE) Stream
- **Tables C.1 & C.2** - Control & Instrumentation (C&I) Stream

If you select **Option 2 “Programme”** then please refer to **Table D.1**, which applies to all streams.

You can only use “Programme” (Option 2) a maximum of twice per trimester and, for “Module” (Option 1), you should not use the same Competence against the same Module more than twice per trimester. For example, in Trimester A, Level 1 students can use Competence C1 with Mathematics 1 twice maximum per trimester and also with Engineering Science twice maximum; however, Mathematics 1 can be used with other competences that apply (e.g. C2, C3) up to a maximum of two times, and so on.

Use only Competences that align with Modules that you are studying in the given study year and Trimester. **In exceptional circumstances, Trimester A modules can be used in Trimester B, but only if all Trimester B modules are not applicable.**

Please refer to notes at the bottom of individual tables for other exceptions relating to Optional Modules etc.

**Table A.1 – Modules for Computer Aided Engineering (CAE) Stream**

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C1</b>	Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Engineering Design and Analysis 3 & 4 Simulation for Design & Manufacture Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Manufacture & Materials 3 Energy Conversion Technologies* Computer Aided Design 2 Renewable Energy Equipment Design# Honours Project
<b>C2</b>	Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Engineering Design and Analysis 3 & 4 Simulation for Design & Manufacture Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Energy Conversion Technologies* Computer Aided Design 2 Honours Project
<b>C3</b>	Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Engineering Design and Analysis 3 Computer Aided Engineering Simulation for Design & Manufacture Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Energy Conversion Technologies* Computer Aided Design 2 Design Process, Assembly & Manufacture# Honours Project
<b>C4</b>	Select and evaluate technical literature and other sources of information to address complex problems	Integrated Engineering Studies 2 & 3 Honours Project	Integrated Engineering Studies 2 & 3 Engineering Operations Management Honours Project

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C5</b>	Design solutions for complex problems that meet a combination of societal, user, business and customer needs, as appropriate.	Modern Engineering Practice Integrated Engineering Studies 2 & 3 Simulation for Design & Manufacture Honours Project	Modern Engineering Practice Integrated Engineering Studies 2 & 3 Engineering Operations Management Design Process, Assembly & Manufacture# Honours Project
<b>C6</b>	Apply an integrated or systems approach to the solution of complex problems	Engineering Design and Analysis 3 Integrated Engineering Studies 3 Simulation for Design & Manufacture Engineering Design and Analysis 4 Honours Project	Control & Instrumentation Systems Integrated Engineering Studies 3 Engineering Design and Analysis 2 Engineering Operations Management Energy Conversion Technologies* Computer Aided Design 2 Renewable Energy Equipment Design# Design Process, Assembly & Manufacture# Honours Project
<b>C7</b>	Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts	Integrated Engineering Studies 1, 2 & 3	Integrated Engineering Studies 1, 2 & 3 Design Process, Assembly & Manufacture#
<b>C8</b>	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct	Integrated Engineering Studies 1, 2 & 3 Honours Project	Integrated Engineering Studies 1, 2 & 3 Honours Project
<b>C9</b>	Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity	Honours Project	Engineering Operations Management Computer Aided Design 2 Honours Project
<b>C10</b>	Adopt a holistic and proportionate approach to the mitigation of security risks	Integrated Engineering Studies 1 Honours Project	Integrated Engineering Studies 1 Honours Project
<b>C11</b>	Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion	Modern Engineering Practice Integrated Engineering Studies 1 Integrated Engineering Studies 3	Modern Engineering Practice Integrated Engineering Studies 1 Integrated Engineering Studies 3

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C12</b>	Use practical laboratory and workshop skills to investigate complex problems	Modern Engineering Practice Thermodynamics and Fluid Mechanics Manufacture & Materials 2 Computer Aided Engineering Engineering Design and Analysis 3 Simulation for Design & Manufacture Honours Project	Modern Engineering Practice Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Manufacture & Materials 3 Computer Aided Design 2 Renewable Energy Equipment Design# Honours Project
<b>C13</b>	Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations	Modern Engineering Practice Manufacture & Materials 2 Computer Aided Engineering Simulation for Design & Manufacture Engineering Design and Analysis 4 Honours Project	Modern Engineering Practice Manufacture & Materials 3 Renewable Energy Equipment Design# Design Process, Assembly & Manufacture# Honours Project
<b>C14</b>	Discuss the role of quality management systems and continuous improvement in the context of complex problems	Simulation for Design & Manufacture	Manufacture & Materials 3 Engineering Operations Management
<b>C15</b>	Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights	Integrated Engineering Studies 1, 2 & 3 Simulation for Design & Manufacture Honours Project	Integrated Engineering Studies 1, 2 & 3 Engineering Operations Management Honours Project

	Competence	Trimester A Module Relevant to Workplace Application (or Programme requirement)	Trimester B Module Relevant to Workplace Application (or Programme requirement)
C16	Function effectively as an individual, and as a member or leader of a team	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Manufacture & Materials 2 Engineering Design and Analysis 3	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Engineering Design and Analysis 2
C17	Communicate effectively on complex engineering matters with technical and non-technical audiences	Integrated Engineering Studies 1, 2 & 3 Simulation for Design & Manufacture Honours Project	Integrated Engineering Studies 1, 2 & 3 Honours Project
C18	Plan and record self-learning and development as the foundation for lifelong learning/CPD	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Simulation for Design & Manufacture Honours Project	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Honours Project

Notes:

- Use only Competences that align with Modules that you are studying in the given study year and Trimester. **In exceptional circumstances, Trimester A modules can be used in Trimester B, but only if all Trimester B modules are not applicable.**
- Where indicated, level 1 students may use the Modern Engineering Practice module even if they have exemption and are not studying that module.
- \* Energy Conversion Technologies (ECT) is strictly a Trimester C module, but Level 3 students can use in their Trimester B logbook
- # Level 4 students should choose either Renewable Energy Equipment Design (REED) or Design Process, Assembly & Manufacture (DPAM), where indicated as per their chosen option (i.e. DPAM students cannot use REED and vice versa).

Table A.2 – Competences specific to Modules across all years for the **Computer Aided Engineering (CAE) Stream**. *Note: you can only use modules within your year of study and Trimester (as per Table A.1)*

YEAR	COURSES	Level	Trimester	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
YEAR 1	Mathematics 1 (M1H326674)	1	AB	✓	✓	✓															
	Mechanical Principles (M1H326679)	1	B	✓	✓	✓									✓						
	Electrical Principles (M1H626681)	1	B	✓	✓	✓									✓	✓					
	Modern Engineering Practice (M1H326682)	1	AB					✓							✓	✓	✓			✓	✓
	Engineering Science (M1H626688)	1	A	✓	✓	✓															
	Integrated Engineering Studies 1 (M1H130308)	1	ABC				✓				✓	✓		✓	✓			✓	✓	✓	✓
YEAR 2	Mathematics 2 (M2H326686)	2	AB	✓	✓	✓															
	Thermodynamics & Fluid Mechanics (M2H324808)	2	A	✓	✓	✓									✓						
	Manufacture & Materials 2 (M2H726030)	2	A												✓	✓				✓	
	Integrated Engineering Studies 2 (M2H330273)	2	ABC				✓	✓			✓	✓			✓				✓	✓	✓
	Control and Instrumentation Systems (M2H624806)	2	B	✓	✓	✓			✓						✓						
	Engineering Design and Analysis 2 (M2H724807)	2	B	✓	✓	✓				✓					✓					✓	
YEAR 3	Computer Aided Engineering (MHH124813)	4	A			✓									✓	✓					
	Manufacture & Materials 3 (M3H724815)	3	B	✓											✓	✓	✓				
	Engineering Design & Analysis 3 (M3H124814)	3	A	✓	✓	✓			✓						✓					✓	
	Energy Conversion Technologies (M3J923150 )	3	C	✓	✓	✓			✓												
	Integrated Engineering Studies 3 (M3H624797)	3	ABC				✓	✓	✓	✓	✓			✓				✓	✓	✓	✓
	Engineering Operations Management (M3H724811)	3	B				✓	✓	✓			✓					✓	✓			
YEAR 4	Honours Project (MHH624821)	4	ABC	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓
	Simulation for Design & Manufacture (MHH126676)	4	A	✓	✓	✓		✓	✓						✓	✓	✓	✓		✓	✓
	Engineering Design & Analysis 4 (MHH124819)	4	A	✓	✓				✓							✓					
	Computer Aided Design 2 (MHH127231)	4	B	✓	✓	✓			✓			✓			✓						
	Renewable Energy Equipment Design (MHH325992)	4	B	✓					✓						✓	✓					
	Design Process, Assembly and Manufacture (MHH325993)	4	B			✓		✓	✓	✓						✓					

**Table B.1 – Modules for Electrical Power Engineering (EPE) Stream**

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C1</b>	Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Analogue and Digital Electronics Control Engineering 3 Power Electronic Systems 3 Power Systems Analysis Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Electrical Distribution Systems Control & Instrumentation Systems Electrical Machines Energy Conversion Technologies* Control Engineering 4# Power System Protection and Automation# High Voltage and Condition Assessment Honours Project
<b>C2</b>	Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Analogue & Digital Electronics Control Engineering 3 Power Electronic Systems 3 Power Systems Analysis Renewable Power Integration Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Electrical Distribution Systems Control & Instrumentation Systems Energy Conversion Technologies* Electrical Machines Control Engineering 4# Power System Protection and Automation# High Voltage and Condition Assessment Honours Project
<b>C3</b>	Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed	As per C2	As per C2
<b>C4</b>	Select and evaluate technical literature and other sources of information to address complex problems	Integrated Engineering Studies 2 & 3 Power Electronic Systems 3 Renewable Power Integration Honours Project	Integrated Engineering Studies 2 & 3 Engineering Operations Management Electrical Machines High Voltage and Condition Assessment Honours Project

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C5</b>	Design solutions for complex problems that meet a combination of societal, user, business and customer needs, as appropriate.	Modern Engineering Practice Integrated Engineering Studies 2 & 3 Renewable Power Integration Honours Project	Modern Engineering Practice Integrated Engineering Studies 2 & 3 Engineering Operations Management Control Engineering 4 High Voltage and Condition Assessment Honours Project
<b>C6</b>	Apply an integrated or systems approach to the solution of complex problems	Engineering Design and Analysis 3 Integrated Engineering Studies 3 Control Engineering 3 Renewable Power Integration Power Systems Analysis Honours Project	Control & Instrumentation Systems Integrated Engineering Studies 3 Electrical Distribution Systems Engineering Operations Management Energy Conversion Technologies* Electrical Machines Control Engineering 4# Power System Protection and Automation# High Voltage and Condition Assessment Honours Project
<b>C7</b>	Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts	Integrated Engineering Studies 1, 2 & 3	Integrated Engineering Studies 1, 2 & 3
<b>C8</b>	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct	Integrated Engineering Studies 1, 2 & 3 Honours Project	Integrated Engineering Studies 1, 2 & 3 Honours Project
<b>C9</b>	Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity	High Voltage and Condition Assessment Renewable Power Integration Power Systems Analysis Honours Project	Engineering Operations Management Honours Project Power System Protection and Automation#
<b>C10</b>	Adopt a holistic and proportionate approach to the mitigation of security risks	Integrated Engineering Studies 1 Honours Project	Integrated Engineering Studies 1 Honours Project
<b>C11</b>	Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion	Modern Engineering Practice Integrated Engineering Studies 1 & 3	Modern Engineering Practice Integrated Engineering Studies 1 & 3

	Competence	Trimester A Module Relevant to Workplace Application (or Programme requirement)	Trimester B Module Relevant to Workplace Application (or Programme requirement)
C12	Use practical laboratory and workshop skills to investigate complex problems	Modern Engineering Practice Thermodynamics and Fluid Mechanics Analogue & Digital Electronics Control Engineering 3 Power Electronic Systems 3 Honours Project	Modern Engineering Practice Mechanical Principles Electrical Principles Control & Instrumentation Systems Electrical Distribution Systems Honours Project
C13	Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations	Modern Engineering Practice Honours Project	Modern Engineering Practice Control Engineering 4 <sup>#</sup> Power System Protection and Automation <sup>#</sup> Honours Project
C14	Discuss the role of quality management systems and continuous improvement in the context of complex problems		Engineering Operations Management High Voltage and Condition Assessment
C15	Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights	Integrated Engineering Studies 1, 2 & 3 Honours Project	Integrated Engineering Studies 1, 2 & 3 Engineering Operations Management Honours Project
C16	Function effectively as an individual, and as a member or leader of a team	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Power Electronic Systems 3	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3
C17	Communicate effectively on complex engineering matters with technical and non-technical audiences	Integrated Engineering Studies 1, 2 & 3 Power Systems Analysis Honours Project	Integrated Engineering Studies 1, 2 & 3 Honours Project Power System Protection and Automation <sup>#</sup>
C18	Plan and record self-learning and development as the foundation for lifelong learning/CPD	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Renewable Power Integration Honours Project	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Honours Project

**Notes:**

- Use only Competences that align with Modules that you are studying in the given study year and Trimester. **In exceptional circumstances, Trimester A modules can be used in Trimester B, but only if all Trimester B modules are not applicable.**
- Where indicated, level 1 students may use the Modern Engineering Practice module even if they have exemption and are not studying that module.
- \* Energy Conversion Technologies (ECT) is strictly a Trimester C module, but Level 3 students can use in their Trimester B logbook
- # Level 4 students should choose either Control 4 or Power System Protection and Automation (PSP&A), where indicated as per their chosen option (i.e. Control 4 students cannot use PSP&A and vice versa).

Table B.2 – Competences specific to Modules across all years for the **Electrical Power Engineering (EPE) Stream**. *Note: you can only use modules within your year of study and Trimester (as per Table B.1)*

YEAR	COURSES	Level	Trimester	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	
YEAR 1	Mathematics 1 (M1H326674)	1	AB	✓	✓	✓																
	Mechanical Principles (M1H326679)	1	B	✓	✓	✓									✓							
	Electrical Principles (M1H626681)	1	B	✓	✓	✓									✓	✓						
	Modern Engineering Practice (M1H326682)	1	AB					✓							✓	✓	✓			✓		✓
	Engineering Science (M1H626688)	1	A	✓	✓	✓																
	Integrated Engineering Studies 1 (M1H130308)	1	ABC								✓	✓		✓	✓			✓	✓	✓	✓	✓
YEAR 2	Mathematics 2 (M2H326686)	2	AB	✓	✓	✓																
	Thermodynamics & Fluid Mechanics (M2H324808)	2	A	✓	✓	✓									✓							
	Electrical Distribution Systems (M2H626266)	2	BC	✓	✓	✓			✓						✓							
	Analogue & Digital Electronics (M2H626267)	2	A	✓	✓	✓									✓							
	Integrated Engineering Studies 2 (M2H330273)	2	ABC				✓	✓			✓	✓						✓	✓	✓	✓	
	Control and Instrumentation Systems (M2H624806)	2	B	✓	✓	✓			✓						✓							
YEAR 3	Control Engineering 3 (M3H627229)	3	A	✓	✓	✓			✓						✓							
	Power Electronic Systems 3 (M3H623070)	3	A	✓	✓	✓	✓								✓				✓			
	Electrical Machines (M3H625943)	3	B	✓	✓	✓	✓		✓													
	Energy Conversion Technologies (M3J923150 )	3	C	✓	✓	✓			✓													
	Integrated Engineering Studies 3 (M3H624797)	3	ABC				✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	
	Engineering Operations Management (M3H724811)	3	B				✓	✓	✓			✓						✓	✓			
YEAR 4	Honours Project (MHH624821)	4	ABC	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓	
	Power Systems Analysis (MHH630298)	4	A	✓	✓	✓			✓			✓								✓		
	Renewable Power Integration (MHH626773)	4	A		✓	✓	✓	✓	✓			✓									✓	
	Power Systems Protection and Automation (MHH630295) (Option)	4	B	✓	✓	✓			✓			✓		✓		✓				✓		
	Control Engineering 4 (MHH622747) (Option)	4	B	✓	✓	✓		✓	✓							✓						
	HV and Condition Assessment (MHH625270)	4	B	✓	✓	✓	✓	✓	✓			✓						✓				

**Table C.1 – Modules for Control & Instrumentation (C&I) Stream**

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C1</b>	Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Analogue & Digital Electronics# Engineering Design and Analysis 3 Control Engineering 3 Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Energy Conversion Technologies* Instrumentation Control Engineering 4 Honours Project
<b>C2</b>	Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Analogue & Digital Electronics# Engineering Design and Analysis 3 Control Engineering 3 Applied Instrumentation Systems Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Energy Conversion Technologies* Instrumentation System Health Management Control Engineering 4 Honours Project
<b>C3</b>	Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed	Mathematics 1 & 2 Engineering Science Thermodynamics and Fluid Mechanics Analogue & Digital Electronics# Engineering Design and Analysis 3 Control Engineering 3 Computer Aided Engineering Applied Instrumentation Systems Honours Project	Mathematics 1 & 2 Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Energy Conversion Technologies* Instrumentation Control Engineering 4 Honours Project
<b>C4</b>	Select and evaluate technical literature and other sources of information to address complex problems	Integrated Engineering Studies 2 & 3 Honours Project	Integrated Engineering Studies 2 & 3 Engineering Operations Management Honours Project

	<b>Competence</b>	<b>Trimester A Module Relevant to Workplace Application (or Programme requirement)</b>	<b>Trimester B Module Relevant to Workplace Application (or Programme requirement)</b>
<b>C5</b>	Design solutions for complex problems that meet a combination of societal, user, business and customer needs, as appropriate.	Modern Engineering Practice Integrated Engineering Studies 2 & 3 Applied Instrumentation Systems Honours Project	Modern Engineering Practice Integrated Engineering Studies 2 & 3 Engineering Operations Management Control Engineering 4 Honours Project
<b>C6</b>	Apply an integrated or systems approach to the solution of complex problems	Engineering Design and Analysis 3 Integrated Engineering Studies 3 Control Engineering 3 Applied Instrumentation Systems Honours Project	Control & Instrumentation Systems Integrated Engineering Studies 3 Engineering Design and Analysis 2 Engineering Operations Management Energy Conversion Technologies* Instrumentation System Health Management Control Engineering 4 Honours Project
<b>C7</b>	Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts	Integrated Engineering Studies 1, 2 & 3	Integrated Engineering Studies 1, 2 & 3
<b>C8</b>	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct	Integrated Engineering Studies 1, 2 & 3 Honours Project	Integrated Engineering Studies 1, 2 & 3 Honours Project
<b>C9</b>	Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity	Honours Project	Engineering Operations Management Honours Project
<b>C10</b>	Adopt a holistic and proportionate approach to the mitigation of security risks	Integrated Engineering Studies 1 Honours Project	Integrated Engineering Studies 1 Honours Project
<b>C11</b>	Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion	Modern Engineering Practice Integrated Engineering Studies 1 & 3	Modern Engineering Practice Integrated Engineering Studies 1 & 3

<b>C12</b>	Use practical laboratory and workshop skills to investigate complex problems	Modern Engineering Practice Thermodynamics and Fluid Mechanics Manufacture & Materials 2 <sup>#</sup> Analogue & Digital Electronics <sup>#</sup> Engineering Design and Analysis 3 Control Engineering 3 Computer Aided Engineering Honours Project	Modern Engineering Practice Mechanical Principles Electrical Principles Control & Instrumentation Systems Engineering Design and Analysis 2 Instrumentation System Health Management Honours Project
<b>C13</b>	Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations	Modern Engineering Practice Manufacture & Materials 2 <sup>#</sup> Computer Aided Engineering Applied Instrumentation Systems Honours Project	Modern Engineering Practice Manufacture & Materials 3 Control Engineering 4 Honours Project
<b>C14</b>	Discuss the role of quality management systems and continuous improvement in the context of complex problems		Engineering Operations Management
<b>C15</b>	Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights	Integrated Engineering Studies 1, 2 & 3 Honours Project	Integrated Engineering Studies 1, 2 & 3 Engineering Operations Management Honours Project
<b>C16</b>	Function effectively as an individual, and as a member or leader of a team	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Manufacture & Materials 2 <sup>#</sup> Engineering Design and Analysis 3	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Engineering Design and Analysis 2 System Health Management
<b>C17</b>	Communicate effectively on complex engineering matters with technical and non-technical audiences	Integrated Engineering Studies 1, 2 & 3 Applied Instrumentation Systems Honours Project	Integrated Engineering Studies 1, 2 & 3 Honours Project
<b>C18</b>	Plan and record self-learning and development as the foundation for lifelong learning/CPD	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Honours Project	Modern Engineering Practice Integrated Engineering Studies 1, 2 & 3 Honours Project

**Notes:**

- Use only Competences that align with Modules that you are studying in the given study year and Trimester. **In exceptional circumstances, Trimester A modules can be used in Trimester B, but only if all Trimester B modules are not applicable.**
- Where indicated, level 1 students may use the Modern Engineering Practice module even if they have exemption and are not studying that module.
- \* Energy Conversion Technologies (ECT) is strictly a Trimester C module, but Level 3 students can use in their Trimester B logbook
- # Level 2 students should choose either Manufacture & Materials 2 (MM2) or Analogue & Digital Electronics (A&DE), where indicated as per their chosen option (i.e. MM2 students cannot use A&DE and vice versa).

Table C.2 – Competences specific to Modules across all years for the Control & Instrumentation (C&I) Stream. *Note: you can only use modules within your year of study and Trimester (as per Table C.1)*

YEAR	COURSES	Level	Trimester	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
YEAR 1	Mathematics 1 (M1H326674)	1	AB	✓	✓	✓															
	Mechanical Principles (M1H326679)	1	B	✓	✓	✓									✓						
	Electrical Principles (M1H626681)	1	B	✓	✓	✓									✓						
	Modern Engineering Practice (M1H326682)	1	AB					✓						✓	✓	✓			✓		✓
	Engineering Science (M1H626688)	1	A	✓	✓	✓															
	Integrated Engineering Studies 1 (M1H130308)	1	ABC				✓				✓	✓		✓	✓			✓	✓	✓	✓
YEAR 2	Mathematics 2 (M2H326686)	2	AB	✓	✓	✓															
	Thermodynamics & Fluid Mechanics (M2H324808)	2	A	✓	✓	✓									✓						
	Manufacture & Materials 2 (M2H726030)	2	A												✓	✓			✓		
	Analogue & Digital Electronics (M2H626267)	2	A	✓	✓	✓									✓						
	Integrated Engineering Studies 2 (M2H330273)	2	ABC				✓	✓			✓	✓			✓			✓	✓	✓	✓
	Control and Instrumentation Systems (M2H624806)	2	B	✓	✓	✓			✓						✓						
	Engineering Design and Analysis 2 (M2H724807)	2	B	✓	✓	✓				✓					✓				✓		
YEAR 3	Control Engineering 3 (M3H627229)	3	A	✓	✓	✓			✓						✓						
	Instrumentation (M3W226254)	3	B	✓	✓	✓			✓						✓						
	Engineering Design & Analysis 3 (M3H124814)	3	A	✓	✓	✓			✓						✓				✓		
	Energy Conversion Technologies (M3J923150 )	3	C	✓	✓	✓			✓												
	Integrated Engineering Studies 3 (M3H624797)	3	ABC				✓	✓	✓	✓	✓				✓			✓	✓	✓	✓
	Engineering Operations Management (M3H724811)	3	B				✓	✓	✓				✓				✓	✓			
YEAR 4	Honours Project (MHH624821)	4	ABC	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓
	Computer Aided Engineering (MHH113285)	4	A			✓									✓	✓					
	Applied Instrumentation Systems (MHW226260)	4	A		✓	✓		✓	✓							✓				✓	
	Control Engineering 4 (MHH622747)	4	B	✓	✓	✓		✓	✓							✓					
	System Health Management (MHW226259)	4	B		✓				✓						✓				✓		

Table D.1 – BEng Engineering (Design & Manufacture) Graduate Apprenticeship Programme Aims and UK SPEC codes

	<b>Programme Aim</b>	<b>UK SPEC Code</b>
1	To create in the student an ability to think clearly and logically	C2
2	To equip the student with a range of analytical methods for use in engineering applications	C3
3	To provide such principles and practice as will allow the student to acquire an understanding of engineering to cope adequately with technological change	C3
4	To develop the students' ability to contribute to the specification, design, testing, commissioning, modification, manufacture and maintenance of engineering artefacts and systems both generally and within the context of an employer's business	C5
5	To develop fully the student's abilities in the use of computer aided engineering and relevant aspects of information technology	C3
6	To make the student aware of the ethics, social, economic, and environmental impact of engineering	C8
7	To extend, enhance and improve the judgement of the student in decision making by extension of analytical, creative and intellectual skills	C2
8	To integrate the expertise of staff gained from research, consultancy and scholarly activity into the programme materials where appropriate	C5
9*	To develop the students' interpersonal skills to enable effective communication and team working and operate within project management roles	Communication (C17) Teamworking (C16)
10	To provide a broad education by an integrated study of vocational and academic disciplines	C6
11	To integrate the programme with the student's developing experiential learning and training as part of an apprenticeship with their employer	C6
12	To integrate a Work-Based Learning culture to deepen and broaden the academic understanding within the context of employer focussed activities	C6
<p><b>Notes:</b>            Choose only <u>one</u> Programme Aim and UK SPEC Code.            Only use Programme Aims a maximum of twice per trimester            * For Programme Aim #9, choose only <u>one</u> UK SPEC code; choose the one you feel is most appropriate between Communication and Teamworking</p>		