All Undergraduate and Integrated Masters Modules 2024/25

Please Read:

Below you will find the full name of each module, followed by the module acronym, which will be used regularly to refer to the module throughout the programme.

Please read the notes under each Stage block for instructions on selecting option modules for each stage of your programme.

The symbol # denotes a designated/core AI module & Δ denotes a designated/core Cyber module.

Please click on each of the modules for a link to the Student Module Catalogue, where you will find information on the module aims; learning outcomes; assessments; prerequisite modules; co-requisite modules and any prohibited module combinations.

BEng/BSc Computer Science Programmes

All modules listed are 20 credits (unless otherwise stated). There are 120 credits in a stage.

Stage 1

Semester 1 - Core	Semester 2 - Core
Software 1: Foundations of Programming for Computer Science (SOF1) COM00015C	**Software 2: Object Oriented Data Structures & Algorithms (SOF2)** COM00016C
Theory 1: Mathematical Foundations of Computer Science (THE1#) COM00013C	**Systems & Devices 1: Introduction to Computing Architectures (SYS1Δ)** COM00011C
Human-Computer Interaction (HCIN) COM00018C	**Theory 2: Formal Languages & Automata (THE2)** COM00014C

Stage 1: 6 modules, all core (120 credits).

Stage 2

Semester 1 - Core	Semester 2 - Core
Engineering 1: Software and Systems Engineering (ENG1) COM00019I	**Intelligent Systems: Machine Learning & Optimisation (IMLO#)** COM00026I
Systems & Devices 2: Operating Systems, Security & Networking (SYS2Δ)	**Data: Introduction to Data Science (DATA)** COM00028I

COM00029I	
Theory 3: Computability, Complexity & Logic (THE3) **COM00027I**	**Systems & Devices 3: Advanced Computer Systems (SYS3)** **COM00018I**

Stage 2: 6 modules, all core (120 credits).

Stage 3 (including students returning from placement year)

Semesters 1 - 2 - Core	
Project: Computer Science (40 credits, Semesters 1-2) (PRBX) **COM00015H**	
Semester 1 - Options	**Semester 2 - Options**
Network Security (NETS-H△) **COM00056H**	**Evolutionary and Adaptive computing (EVAC-H#)** **COM00037H**
Cryptography Theory & Practice (CTAP-H△) **COM00048H**	**Intelligent Systems:Probabilistic and Deep Learning (PADL-H#)** **COM00049H**
High-Integrity Systems Engineering (HINT-H) **COM00040H**	**Ethical Hacking, Analysis and Investigation (EHAC-H△)** **COM00064H**
High-Performance Parallel & Distributed Systems (HIPC-H) **COM00036H**	**Engineering 2: Automated Software Engineering (ENG2-H)** **COM00055H**
Qualitative Approaches to Investigating UX (QUAL-H) **COM00058H**	**Embedded Systems Design & Implementation (EMBS-H)** **COM00003H**
Research Methods in Computer Science (ROCS-H) **COM00066H**	~~**Computing by Graph Transformation (GRAT-H)**~~ ~~**COM00051H**~~
Computer Vision and Graphics (VICO-H#) **COM00038H**	~~**Assurance and Proof (PROF-H)**~~ ~~**COM00039H**~~
Autonomous Robotic Systems Engineering (AURO-H#) **COM00052H**	**AI Problem Solving with Search and Logic (AIPS-H#)** **COM00050H**
~~**Systems and Devices 4: Networking (SYS4△)**~~ ~~**COM00061H**~~ **(only available to students returning from placement)**	**Human Factors: Technology in Context (TECC-H)** **COM00054H**
~~**Software 3: Functional Programming (SOF3)**~~ ~~**COM00059H**~~ **(this module is not available to returning placement students)**	**Quantum Computation (QUCO-H)** **COM00042H**

	Player Experiences in Digital Games (PLEI-H) **COM00065H**
	Legal Practice, Technology & Computer Science (LPTC) **MODULE IS FULL**

Stage 3:

1) PRBX is core and students select a further 80 credits of optional modules (40 credits per semester).

2) ~~Only students returning from placement to Stage 3 can choose SYS4 (COM00061H).~~

3) Students wishing to take EHAC-H (COM00064H) **must** take this in conjunction with NETS-H (COM00056H) **and** CTAP-H (COM00048H). However students wanting to take NETS-H (COM00056H) or CTAP-H (COM00048H) do not need to take these modules in conjunction with other modules.

4) LPTC (LAW00062H) has a cap of 20 students and will be randomly allocated.

BSc Computer Science & Mathematics (Equal) Programmes

- **All modules listed are 20 credits (unless otherwise stated). There are 120 credits in a stage.**
- **Only CS based option modules are listed below (as Maths based options are chosen through the Department of Maths).**
- **Students need to take a minimum of 140 credits in each subject by the end of Stage 3 (please see the 'Stage 3' section below for further information on choosing options at that stage).**

Stage 1

Semester 1 - Core	Semester 2 - Core
Software 1: Foundations of Programming for Computer Science (SOF1) **COM00015C**	**Software 2: Object Oriented Data Structures & Algorithms (SOF2)** **COM00016C**
Foundations & Calculus (Maths) **MAT00012C**	**Theory 2: Formal Languages & Automata (THE2)** **COM00014C**
Introduction to Pure Mathematics (Maths) **MAT00013C**	**Multivariable Calculus and Matrices (Maths)** **MAT00014C**

Stage 1: 6 modules, all core (120 credits).

Stage 2

Semester 1 - Core	Semester 2 - Core
Engineering 1: Software and Systems Engineering (ENG1) COM00019I	**Groups, Rings & Fields (Maths)** MAT00046I
Theory 3: Computability, Complexity & Logic (THE3) COM00027I	**Linear Algebra (Maths)** MAT00050I
Metric Spaces (Maths) MAT00051I	**Semester 2 - Options**
	Intelligent Systems: Machine Learning & Optimisation (IMLO#) COM00026I
	Data: Introduction to Data Science (DATA) COM00028I

*Stage 2: 100 credits of core modules.

1) Students should choose between IMLO (COM00026I) or DATA (COM00028I) (both modules are 20 credits each).

Stage 3 (including students returning from placement year)

Semesters 1 - 2 - Options	
Project: Computer Science (40 credits, Semesters 1-2) (PRBX) COM00015H or **Extended Independent Maths Project (40 credits) (Maths)** MAT00105H	
Semester 1 - Options	Semester 2 - Options
Network Security (NETS-HΔ) COM00056H	**Evolutionary and Adaptive computing (EVAC-H#)** COM00037H
Cryptography Theory & Practice (CTAP-HΔ) COM00048H	**Intelligent Systems:Probabilistic and Deep Learning (PADL-H#)** COM00049H
High-Integrity Systems Engineering (HINT-H) COM00040H	**Ethical Hacking, Analysis and Investigation (EHAC-HΔ)** COM00064H
High-Performance Parallel & Distributed	**Engineering 2: Automated Software**

Systems (HIPC-H) **COM00036H**	**Engineering (ENG2-H)** **COM00055H**
Qualitative Approaches to Investigating UX (QUAL-H) **COM00058H**	**Embedded Systems Design & Implementation (EMBS-H)** **COM00003H**
Computer Vision and Graphics (VICO-H#) **COM00038H**	~~**Computing by Graph Transformation (GRAT-H)**~~ ~~**COM00051H**~~
Autonomous Robotic Systems Engineering (AURO-H#) **COM00052H**	~~**Assurance and Proof (PROF-H)**~~ ~~**COM00039H**~~
~~**Software 3: Functional Programming (SOF3)**~~ ~~**COM00059H**~~ ~~(this module is not available to returning placement students)~~	**AI Problem Solving with Search and Logic (AIPS-H#)** **COM00050H**
	Quantum Computation (QUCO-H) **COM00042H**
	Legal Practice, Technology & Computer Science (LPTC) **MODULE IS FULL**

*Stage 3:

1) Students should select PRBX or the Extended Maths Project (each 40 credits).

2) Students must then choose a further 40 credits of optional modules in each semester (80 in total), according to the following rules:

- If you choose the Computer Science Project (PRBX): For your remaining 80 credits, you have the option to choose 20 credits in CS and 60 credits in Maths OR 40 credits in CS and 40 credits in Maths.

- If you select the Extended Mathematics Project: For your remaining 80 credits, you have the option to choose 20 credits in Maths and 60 credits in CS OR 40 credits in Maths and 40 credits in CS.

3) Students wishing to take EHAC-H (COM00064H) **must** take this in conjunction with NETS-H (COM00056H) **and** CTAP-H (COM00048H). However students wanting to take NETS-H (COM00056H) or CTAP-H (COM00048H) do not need to take these modules in conjunction with other modules.

4) LPTC (LAW00062H) has a cap of 20 students and will be randomly allocated.

MEng (Hons) Computer Science Programmes (incl. MEng AI and MEng Cyber Security)

All modules listed are 20 credits (unless otherwise stated). There are 120 credits in a stage.

Stage 1

Semester 1 - Core	Semester 2 - Core
Software 1: Foundations of Programming for Computer Science (SOF1) **COM00015C**	**Software 2: Object Oriented Data Structures & Algorithms (SOF2)** **COM00016C**
Theory 1: Mathematical Foundations of Computer Science (THE1#) **COM00013C**	**Systems & Devices 1: Introduction to Computing Architectures (SYS1∆)** **COM00011C**
Human-Computer Interaction (HCIN) **COM00018C**	**Theory 2: Formal Languages & Automata (THE2)** **COM00014C**

Stage 1: 6 modules, all core (120 credits).

Stage 2

Semester 1 - Core	Semester 2 - Core
Engineering 1: Software and Systems Engineering (ENG1) **COM00019I**	**Intelligent Systems: Machine Learning & Optimisation (IMLO#)** **COM00026I**
Systems & Devices 2: Operating Systems, Security & Networking (SYS2∆) **COM00029I**	**Data: Introduction to Data Science (DATA)** **COM00028I**
Theory 3: Computability, Complexity & Logic (THE3) **COM00027I**	**Systems & Devices 3: Advanced Computer Systems (SYS3)** **COM00018I**

Stage 2: 6 modules, all core (120 credits).

Stage 3 (including students returning from placement year)

Semesters 1 - 2 - Core	
Project: Computer Science (40 credits, Semesters 1-2) (PRBX) **COM00015H**	
Semester 1 - Options	Semester 2 - Options

Network Security (NETS-HΔ) **COM00056H**	**Evolutionary and Adaptive computing (EVAC-H#)** **COM00037H**
Cryptography Theory & Practice (CTAP-HΔ) **COM00048H**	**Intelligent Systems:Probabilistic and Deep Learning (PADL-H#)** **COM00049H**
High-Integrity Systems Engineering (HINT-H) **COM00040H**	**Ethical Hacking, Analysis and Investigation (EHAC-HΔ)** **COM00064H**
High-Performance Parallel & Distributed Systems (HIPC-H) **COM00036H**	**Engineering 2: Automated Software Engineering (ENG2-H)** **COM00055H**
Qualitative Approaches to Investigating UX (QUAL-H) **COM00058H**	**Embedded Systems Design & Implementation (EMBS-H)** **COM00003H**
Research Methods in Computer Science (ROCS-H) **COM00066H**	~~**Computing by Graph Transformation (GRAT-H)**~~ ~~**COM00051H**~~
Computer Vision and Graphics (VICO-H#) **COM00038H**	~~**Assurance and Proof (PROF-H)**~~ ~~**COM00039H**~~
Autonomous Robotic Systems Engineering (AURO-H#) **COM00052H**	**AI Problem Solving with Search and Logic (AIPS-H#)** **COM00050H**
~~**Systems and Devices 4: Networking (SYS4Δ)**~~ ~~**COM00061H**~~ **(only available to students returning from placement)**	**Human Factors: Technology in Context (TECC-H)** **COM00054H**
~~**Software 3: Functional Programming (SOF3)**~~ ~~**COM00059H**~~ **(this module is ~~not available~~ to returning placement students)**	**Quantum Computation (QUCO-H)** **COM00042H**
	Player Experiences in Digital Games (PLEI-H) **COM00065H**
	Legal Practice, Technology & Computer Science (LPTC) **MODULE IS FULL**

Stage 3:

1) PRBX is core and students select a further 80 credits of optional modules (40 credits per semester).

2) MEng AI - Students must select at least **two** AI designated 20 credit optional modules (**#**).

3) MEng Cyber - Students must select at least **two** Cyber designated 20 credit optional modules (Δ).

4) Students wishing to take EHAC-H (COM00064H) **must** take this in conjunction with NETS-H (COM00056H) **and** CTAP-H (COM00048H). However students wanting to take NETS-H (COM00056H) or CTAP-H (COM00048H) do not need to take these modules in conjunction with other modules.

5) ~~Only students returning from placement to Stage 3 can choose SYS4 (COM00061H).~~

6) LPTC (LAW00062H) has a cap of 20 students and will be randomly allocated.

Stage 4

Semesters 1 - 2 - Options	
Group Project (Integrated Masters) (40 credits - both Semesters) (GPIG) **COM00138M** ~~or~~ ~~**Advanced Project: Computer Science (40 credits - both Semesters) (PR4M)**~~ ~~**COM00178M**~~	
Semester 1 - Options	**Semester 2 - Options**
Network Security (NETS-MΔ) **COM00188M**	**Evolutionary and Adaptive Computing (EVAC-M#)** **COM00177M**
Cryptography Theory and Practice (CTAP-MΔ) **COM00183M**	**Intelligent Systems: Probabilistic and Deep Learning (PADL-M#)** **COM00184M**
High-Integrity Systems Engineering (HINT-M) **COM00173M**	**Ethical Hacking, Analysis and Investigation (EHAC-MΔ)** **COM00182M**
High-Performance Parallel & Distributed Systems (HIPC-M) **COM00174M**	**Engineering 2: Automated Software Engineering (ENG2-M)** **COM00187M**
Qualitative Approaches to Investigating UX (QUAL-M) **COM00181M**	**Embedded Systems Design & Implementation (EMBS-M)** **COM00175M**
Research Methods in Computer Science (ROCS-M) **COM00180M**	~~**Computing by Graph Transformation (GRAT-M)**~~ ~~**COM00185M**~~
Computer Vision and Graphics (VICO-M#) **COM00167M**	~~**Assurance and Proof (PROF-M)**~~ ~~**COM00170M**~~

Autonomous and Robotic Systems Engineering (AURO-M#) **COM00186M**	**AI Problem Solving with Search and Logic (AIPS-M#)** **COM00191M**
	Human Factors: Technology in Context (TECC-M) **COM00189M**
	Player Experiences in Digital Games (PLEI-M) **COM00190M**
	Quantum Computation (QUCO-M) **COM00168M**

Stage 4:

1) Students will take GPIG as their core project module and then a further 80 credits of optional modules (40 credits in each semester).

2) MEng AI - Students must select at least one AI designated 20 credit module (**#**).

3) MEng Cyber - Students must select at least one Cyber designated 20 credit module (Δ).

4) Students may not take the M-level version of modules previously taken at H-level.

MMath (Hons) Maths & Computer Science Programmes

- **All modules listed are 20 credits (unless otherwise stated). There are 120 credits in a stage.**
- **Only CS based option modules are listed below (as Maths based options are chosen through the Department of Maths).**
- **Students need to take 60 credits of option modules in each subject in Stage 3 (ensuring 180 credits in each subject overall by the end of Stage 3). Please see the 'Stage 4' section below for guidance on choosing option modules at stage 4.**

Stage 1

Semester 1 - Core	Semester 2 - Core
Software 1: Foundations of Programming for Computer Science (SOF1) **COM00015C**	**Software 2: Object Oriented Data Structures & Algorithms (SOF2)** **COM00016C**
Foundations & Calculus (Maths) **MAT00012C**	**Theory 2: Formal Languages & Automata (THE2)** **COM00014C**
Introduction to Pure Mathematics (Maths) **MAT00013C**	**Multivariable Calculus and Matrices (Maths)** **MAT00014C**

Stage 1: 6 modules, all core (120 credits).

Stage 2

Semester 1 - Core	Semester 2 - Core
Engineering 1: Software and Systems Engineering (ENG1) **COM00019I**	**Groups, Rings & Fields (Maths)** **MAT00046I**
Theory 3: Computability, Complexity & Logic (THE3) **COM00027I**	**Linear Algebra (Maths)** **MAT00050I**
Metric Spaces (Maths) **MAT00051I**	Semester 2 - Options
	Intelligent Systems: Machine Learning & Optimisation (IMLO#) **COM00026I**
	Data: Introduction to Data Science (DATA) **COM00028I**

Stage 2: 100 credits of core modules.

1) Students should choose between IMLO or DATA (both modules are 20 credits each).

Stage 3 (including students returning from placement year)

Semester 1 - Options	Semester 2 - Options
Network Security (NETS-H∆) **COM00056H**	**Evolutionary and Adaptive computing (EVAC-H#)** **COM00037H**
Cryptography Theory & Practice (CTAP-H∆) **COM00048H**	**Intelligent Systems:Probabilistic and Deep Learning (PADL-H#)** **COM00049H**
High-Integrity Systems Engineering (HINT-H) **COM00040H**	**Ethical Hacking, Analysis and Investigation (EHAC-H∆)** **COM00064H**
High-Performance Parallel & Distributed Systems (HIPC-H) **COM00036H**	**Engineering 2: Automated Software Engineering (ENG2-H)** **COM00055H**
Qualitative Approaches to Investigating UX (QUAL-H) **COM00058H**	**Embedded Systems Design & Implementation (EMBS-H)** **COM00003H**
Computer Vision and Graphics (VICO-H#)	~~Computing by Graph Transformation~~

COM00038H	**(GRAT-H)** ~~COM00051H~~
Autonomous Robotic Systems Engineering (AURO-H#) COM00052H	~~**Assurance and Proof (PROF-H)**~~ ~~COM00039H~~
~~**Software 3: Functional Programming (SOF3)**~~ ~~COM00059H~~ **(this module is ~~not available~~ to returning placement students)**	**AI Problem Solving with Search and Logic (AIPS-H#)** COM00050H
	Quantum Computation (QUCO-H) COM00042H
	Legal Practice, Technology & Computer Science (LPTC) **MODULE IS FULL**

Stage 3:

1) Students should select 60 credits of option modules in each semester.

2) Students must take 60 credits of Mathematics modules and 60 credits of Computer Science modules (from either semester).

3) Students wishing to take EHAC-H (COM00064H) **must** take this in conjunction with NETS-H (COM00056H) **and** CTAP-H (COM00048H). However students wanting to take NETS-H (COM00056H) or CTAP-H (COM00048H) do not need to take these modules in conjunction with other modules.

4) LPTC (LAW00062H) has a cap of 20 students and will be randomly allocated.

5) For students who are intending to do a Final Year Project in Mathematics, it is recommended that they take the MMath Group Project module (20 credits, semester 2) as preparation (please refer to the Department of Maths option module choices).

Stage 4

Semesters 1 - 2: Options (students must choose one of these)	
Extended Independent Project in Mathematics (40 credits) MAT00117M _or_ **Individual Project - Maths & Computer Science (40 credits) (PRIN)** COM00079M ~~_or_~~ ~~**Advanced Project: Computer Science (40 credits) (PR4M)**~~ ~~COM00178M~~	
Semester 1 - Options	**Semester 2 - Options**

Network Security (NETS-MΔ)	**Evolutionary and Adaptive Computing**

COM00188M	**(EVAC-M#)** **COM00177M**
Cryptography Theory and Practice (CTAP-MΔ) **COM00183M**	**Intelligent Systems: Probabilistic and Deep Learning (PADL-M#)** **COM00184M**
High-Integrity Systems Engineering (HINT-M) **COM00173M**	**Ethical Hacking, Analysis and Investigation (EHAC-MΔ)** **COM00182M**
High-Performance Parallel & Distributed Systems (HIPC-M) **COM00174M**	**Engineering 2: Automated Software Engineering (ENG2-M)** **COM00187M**
Qualitative Approaches to Investigating UX (QUAL-M) **COM00181M**	**Embedded Systems Design & Implementation (EMBS-M)** **COM00175M**
Research Methods in Computer Science (ROCS-M) **COM00180M**	~~**Computing by Graph Transformation (GRAT-M)**~~ ~~**COM00185M**~~
Computer Vision and Graphics (VICO-M#) **COM00167M**	~~**Assurance and Proof (PROF-M)**~~ ~~**COM00170M**~~
Autonomous and Robotic Systems Engineering (AURO-M#) **COM00186M**	**AI Problem Solving with Search and Logic (AIPS-M#)** **COM00191M**
	Quantum Computation (QUCO-M) **COM00168M**

Stage 4:

1) Students should select either the Extended Independent Project in Mathematics, PRIN ~~or PR4M~~. (each 40 credits).

2) Students must then choose a further 40 credits of optional modules in each semester (80 in total), according to the following rules:

- If you choose the Computer Science Project (PRIN ~~or PR4M~~): For your remaining 80 credits, you have the option to choose 20 credits in CS and 60 credits in Maths OR 40 credits in CS and 40 credits in Maths.

- If you select the Extended Mathematics Project: For your remaining 80 credits, you have the option to choose 20 credits in Maths and 60 credits in CS OR 40 credits in Maths and 40 credits in CS.

3) Students may not take the M-level version of modules previously taken at H-level.