Computer Systems Engineering MEng (Hons) options 2017-2018

You will be automatically enrolled on these nine course units which total 120 credits.

Level 1 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits
COMP10120	First Year Team Project	20
COMP11120	Mathematical Techniques for Computer Science	20
COMP11212	Fundamentals of Computation	10
COMP12111	Fundamentals of Computer Engineering	10
COMP14112	Fundamentals of Artificial Intelligence	10
COMP15111	Fundamentals of Computer Architecture	10
COMP16121	Object Oriented Programming with Java 1	20
COMP16212	Object Oriented Programming with Java 2	10
COMP18112	Fundamentals of Distributed Systems	10

Level 2 options

You will be automatically enrolled on these seven course units which total <u>90 credits</u>

You need to select a minimum of one course unit totalling <u>10 credits</u> or a maximum of two course units totalling <u>20 credits</u> from Option Pool 1. You may select a minimum of zero course units or a maximum of one course unit totalling <u>10 credits</u> from Option Pool 2. You may choose a maximum of <u>10 credits</u> of external units from External Option Pool 1 and a maximum of <u>10 credits</u> of external units from External Option Pool 2.

You can choose up to <u>20 credits</u> of optional course units that are external to the Department. You can choose any Level 1 or 2 options for which you meet any pre-requisites and fits with your timetable, these may be:

- Business and Management course units: https://www.ambs.ughandbook.manchester.ac.uk/non-ambs-students/
- University College course units
- Language course units: https://www.alc.manchester.ac.uk/study/university-language-centre-leap-courses/course-information/leap-courses/courses-for-all/
- HSTM20282 Information Visions https://www.manchester.ac.uk/study/undergraduate/courses/2021/00485/bsc-biology-with-science-and-society/course-details/HSTM20282#course-unit-details

Please note: to enrol on some external course units (such as Language) will require permission from the associated School/Department.

To select any external course units outside of the list given above will require permission from the 2nd Year Tutor.

If you take a <u>20 credit</u> whole year course unit you are not permitted to drop this unit when course unit selection reopens at the start of semester 2.

You must ensure your credits are balanced over the academic year (<u>60 credits</u> in each semester).

This programme requires 2 themes to be completed from the following list.

* Computer Architecture (COMP25111, COMP25212 & COMP35112)
* System-on-Chip (COMP22111 & COMP32211)

Level 2 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits	Theme
COMP22111	Processor Microarchitecture	10	System-on-Chip
COMP22712	Microcontrollers	10	None
COMP23111	Fundamentals of Databases	10	Web and Distributed Systems
COMP23311	Software Engineering 1	10	Agile Methods
COMP23412	Software Engineering 2	10	Software Engineering
COMP25111	Operating Systems	10	Computer Architecture

COMP25212	System Architecture	10	Computer Architecture
COMP26120	Algorithms and Imperative Programming	20	Computer Languages
COMP28512	Mobile Systems	10	Mobile Computing and Networks

Level 2 - option pool 1

From this option pool choose 10 credits.

Code	Title	Credits	Theme
COMP21111	Logic and Modelling	10	Rigorous Development
COMP24111	Machine Learning and Optimisation	10	Learning and Search in Artificial Intelligence
COMP28411	Computer Networks	10	Mobile Computing and Networks
BMAN10011	Fundamentals of Management	10	None
BMAN10621B	Fundamentals of Financial Reporting	10	None
BMAN20811	Managing Business Operations	10	None
BMAN20821	New Product Development and Innovation	10	None
BMAN21061	Introduction to Management Information Systems	10	None
UCIL10221	Science and the Modern World	10	None
UCIL20001	Leadership of Learning	10	None
UCIL20021	Leadership in Action	10	None
UCIL20031	Leadership in Action Online Unit	10	None
UCIL20181	Science, the Media and the Public	10	None
UCIL20331	From Cholera to Aids: A Global History of Epidemics	10	None
UCIL21301	Communicating with Confidence	10	None
UCIL22301	Curating Culture	10	None
UCIL22501	Global Citizenship and Sustainability	10	None

Level 2 - option pool 2

From this option pool choose 10 credits.

Code	Title	Credits	Theme
COMP24412	Symbolic AI	10	Natural Language, Representation and Reasoning
COMP27112	Computer Graphics and Image Processing	10	Visual Computing
COMP28112	Distributed Computing	10	Web and Distributed Systems
BMAN10252	Fundamentals of Technological Change	10	None
BMAN10552	Fundamentals of Finance	10	None
BMAN10612	Business Economics	10	None
BMAN10632	Fundamentals of Accounting	10	None
BMAN20242	Introduction to Corporate Finance & Financial Instruments	10	None
BMAN20792	Technology Strategy & Innovation 1	10	None
BMAN20832	Marketing	10	None
BMAN20842	Organisations and Emploment	10	None
BMAN21012	Global Contexts of Business and Management	10	None
UCIL20022	Leadership in Action	10	None
UCIL20032	Leadership in Action Online Unit	10	None
UCIL20092	The Crisis of Nature: Issues in Environmental History	10	None
UCIL20102	Multilingual Manchester	10	None
UCIL20282	The Information Age	10	None
UCIL21002	Leadership of Learning	10	None
UCIL21102	Diverse Britain in a Globalising World	10	None
UCIL21202	Bioethics: Contemporary Issues in Science and Biomedicine	10	None
UCIL21302	Communicating with Confidence	10	None
UCIL21402	Innovation for a Sustainable Society	10	None
UCIL21802	Body, Health and Well-Being	10	None
UCIL21902	Humanitarian Challenges in an Unequal World	10	None
UCIL24002	The Art of Enterprise	10	None
UCIL25002	The Digital Society	10	None
UCIL29002	Physics & The Grand Challenges of Today	10	None

Level 3 options

You will be automatically enrolled on five course units, including the Third Year Project course unit, totalling <u>80 credits.</u>

You need to select two courses units totalling <u>20 credits</u> from Option Pool 1. You need to select two courses units totalling <u>20 credits</u> from Option Pool 2.
This programme requires 2 themes to be completed from the following list.

* Computer Architecture (COMP25111, COMP25212 & COMP35112)
* System-on-Chip (COMP22111 & COMP32211)

Level 3 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits	Theme
COMP30040	3rd Year Project (Single Honours 40 Credits)	40	None
COMP32211	Implementing System-on-Chip Designs	10	System-on-Chip
COMP35112	Chip Multiprocessors	10	Computer Architecture
MCEL30031	Enterprise Management for Computer Scientists	10	None
MCEL30032	Managing Finance in Enterprises for Computer Scientists	10	None

Level 3 - option pool 1

From this option pool choose a maximum of 20 credits
and a minimum of 10 credits.

Code	Title	Credits	Theme
COMP31111	Verified Development	10	Rigorous Development
COMP33511	User Experience	10	Interactive Systems Design
COMP33711	Agile Software Engineering	10	Agile Methods
COMP36111	Advanced Algorithms 1	10	Programming and Algorithms
COMP37111	Advanced Computer Graphics	10	Visual Computing
COMP38411	Cryptography and Network Security	10	Mobile Computing and Networks

Level 3 - option pool 2

From this option pool choose a maximum of 20 credits
and a minimum of 10 credits.

Code	Title	Credits	Theme
COMP33812	Software Evolution	10	Agile Methods
COMP34412	Natural Language Systems	10	Natural Language, Representation and Reasoning
COMP36212	Advanced Algorithms 2	10	Programming and Algorithms
COMP36512	Compilers	10	Computer Languages
COMP37212	Computer Vision	10	Visual Computing
COMP32412	The Internet of Things: Architectures and Applications	10	Web and Distributed Systems

Level 3 - option pool 3

From this option pool choose a maximum of 40 credits
and a minimum of 0 credits.

Code	Title	Credits	Theme
COMP34120	AI and Games	20	Learning and Search in Artificial Intelligence
COMP38120	Documents, Services and Data on the Web	20	Web and Distributed Systems

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You will be automatically enrolled on the Summer Industrial Project and
MCEL 40042: Business Feasibility Study which totals <u>40 credits</u>

You need to select a minimum of one course unit totalling <u>15 credits</u> or a maximum of two course units totalling <u>30 credits</u> from Option Pool 1. You need to select a minimum of one course unit totalling <u>15 credits</u> or a maximum of two course units totalling <u>30 credits</u> from Option Pool 2. You need to select a minimum of one course unit totalling <u>15 credits</u> or a maximum of two course units totalling <u>30 credits</u> from Option Pool 3. You need to select a minimum of one course unit totalling <u>15 credits</u> or a maximum of two course units totalling <u>30 credits</u> from Option Pool 4. You need to select one course unit totalling <u>15 credits</u> from Option Pool 5.

Level 4 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits
COMP40901	UG MEng Industrial Project	25
MCEL40042	Business Feasibility Study	15

Level 4 - option pool 1

From this option pool choose a maximum of 30 credits
and a minimum of 15 credits.

Code	Title	Credits
COMP60411	Modelling data on the web	15
COMP60611	Parallel Programs and their Performance	15

COMP60711	Data Engineering	15
COMP61011	Foundations of Machine Learning	15
COMP61411	Cryptography	15

Level 4 - option pool 2

From this option pool choose a maximum of 30 credits and a minimum of 15 credits.

Code	Title	Credits
COMP60621	Designing for Parallelism and Future Multi-core Computing	15
COMP61021	Modelling and visualization of high-dimensional data	15
COMP61421	Cyber Security	15
COMP62421	Querying Data on the Web	15

Level 4 - option pool 3

From this option pool choose a maximum of 30 credits and a minimum of 0 credits.

Code	Title	Credits
COMP60332	Automated Reasoning and Verification	15
COMP60532	Principles of Digital Biology	15
COMP61232	Mobile and Energy Efficient Systems	15
COMP61332	Text Mining	15
COMP62532	Component-based Software Development	15

Level 4 - option pool 4

From this option pool choose a maximum of 30 credits and a minimum of 0 credits.

Code	Title	Credits
COMP60542	Introduction to Health Informatics	15
COMP61242	Mobile Communications	15
COMP61342	Computer Vision	15

Level 4 - option pool 5

From this option pool choose 15 credits.

Code	Title	Credits
BMAN60092	Risk, Performance and Decision Analysis	10
BMAN60111	IS Strategy and Enterprise Systems	15
BMAN60422	Data Analytics for Business Decision Making	15
BMAN70391	Managing Projects	15
BMAN71652	Information and Knowledge Management	15
BMAN73271	Decision Behaviour, Analysis and Support	15
MCEL63402	Essential Risk Management for Business	15