Computer Systems Engineering wIE BEng (Hons) options 2021-2022

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
COMP15111	Fundamentals of Computer Architecture	10
COMP13212	Data Science	10
COMP15212	Operating Systems	10
COMP16321	Introduction to Programming 1	20
COMP16412	Introduction to Programming 2	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
COMP23311	Software Engineering 1	10	Agile Methods
COMP23412	Software Engineering 2	10	Agile Methods
COMP25212	System Architecture	10	Computer Architecture
COMP26120	Algorithms and Data Structures	20	Computer Languages

COMP26020	Programming Languages & Paradigms	20	None

Level 2 - option pool 1

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

Code	Title	Credits	Theme
COMP21111	Logic and Modelling	10	Rigorous Development
COMP23111	Database Systems	10	Web and Distributed Systems
COMP24011	Introduction to AI	10	None

Level 2 - option pool 2

From this option pool choose a maximum of 10 credits
and a minimum of 0 credits.

Code	Title	Credits	Theme
COMP24112	Machine Learning	10	None
COMP24412	Knowledge-based AI	10	Natural Language, Representation and Reasoning
COMP27112	Introduction to Visual Computing	10	Visual Computing
COMP28112	Distributed Systems	10	Web and Distributed Systems

Level 3 options

You will be automatically enrolled on three course units, including the Third Year Project course unit, totalling <u>60 credits.</u>

You need to select a minimum of one course unit totalling <u>10 credits</u> or a maximum of three courses totalling 30 credits from Option Pool 1. You need to select a minimum of one course totalling <u>10 credits</u> or a maximum of three courses totalling 30 credits 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 may choose a maximum of <u>20 credits</u> of BMAN30010. Please note that as this is a year-long course unit if you take this in semester one you must continue in semester 2.

You can also choose up to <u>20 credits</u> of optional course units that are external to the Department. You can choose any Level 2 or 3 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 3rd Year Tutor.

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 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

Level 3 - option pool 1

From this option pool choose a maximum of 30 credits

and a minimum of 10 credits.

Code	Title	Credits	Theme
COMP31311	Giving meaning to programs	10	None
COMP33511	User Experience	10	Interactive Systems Design
COMP34111	AI & Games	10	None
COMP34711	Natural Language Processing	10	None
COMP36111	Algorithms and Complexity	10	Programming and Algorithms
COMP37111	Graphics and Virtual Environments	10	Visual Computing
COMP38311	Advanced Distributed Systems	10	None

Level 3 - option pool 2

From this option pool choose a maximum of 30 credits
and a minimum of 10 credits.

Code	Title	Credits	Theme
COMP33312	Agile Software Pipelines	10	None
COMP34812	Natural Language Understanding	10	None
COMP36212	Mathematical Systems and Computation	10	Programming and Algorithms
COMP37212	Computer Vision	10	Visual Computing
COMP38412	Cyber Security	10	Mobile Computing and Networks
COMP32412	The Internet of Things: Architectures and Applications	10	Web and Distributed Systems
COMP34212	Cognitive Robotics	10	None