Computer Science wIE MEng (Hons) options 2022-2023

120 compulsory units

Level 1 - compulsory units

All of the units in this pool are mandatory.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP10120</td>
<td>First Year Team Project</td>
<td>20</td>
</tr>
<tr>
<td>COMP11120</td>
<td>Mathematical Techniques for Computer Science</td>
<td>20</td>
</tr>
<tr>
<td>COMP11212</td>
<td>Fundamentals of Computation</td>
<td>10</td>
</tr>
<tr>
<td>COMP12111</td>
<td>Fundamentals of Computer Engineering</td>
<td>10</td>
</tr>
<tr>
<td>COMP15111</td>
<td>Fundamentals of Computer Architecture</td>
<td>10</td>
</tr>
<tr>
<td>COMP13212</td>
<td>Data Science</td>
<td>10</td>
</tr>
<tr>
<td>COMP15212</td>
<td>Operating Systems</td>
<td>10</td>
</tr>
<tr>
<td>COMP16321</td>
<td>Introduction to Programming 1</td>
<td>20</td>
</tr>
<tr>
<td>COMP16412</td>
<td>Introduction to Programming 2</td>
<td>10</td>
</tr>
</tbody>
</table>

Level 2 options

MANDATORY UNITS - 60 CREDITS

OPTIONAL UNITS - 60 CREDITS

Out of the remaining <u>60 credits</u> of free choice:

OPTION POOL 1 - MINIMUM <u>20 CREDITS</u> AND MAXIMUM <u>30 CREDITS</u>

OPTION POOL 2 - MINIMUM <u>20 CREDITS</u> AND MAXIMUM <u>30 CREDITS</u>

A MINIMUM OF <u>40 CREDITS MUST BE COMP UNITS</u>

The minimum number of credits selected from both Option Pool 1 and Option Pool 2 is <u>40</u>, the maximum is <u>60 credits</u>.

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

You can also choose up to 20 credits 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 <a href="/ugt/index.php#tutors">2nd Year Tutor</a>.

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

Level 2 - compulsory units

All of the units in this pool are mandatory.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP23311</td>
<td>Software Engineering 1</td>
<td>10</td>
<td>Agile Methods</td>
</tr>
<tr>
<td>COMP23412</td>
<td>Software Engineering 2</td>
<td>10</td>
<td>Agile Methods</td>
</tr>
<tr>
<td>COMP26120</td>
<td>Algorithms and Data Structures</td>
<td>20</td>
<td>Computer Languages</td>
</tr>
<tr>
<td>COMP26020</td>
<td>Programming Languages &amp; Paradigms</td>
<td>20</td>
<td>None</td>
</tr>
</tbody>
</table>

Level 2 - option pool 1
From this option pool choose a maximum of 30 credits and a minimum of 20 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP21111</td>
<td>Logic and Modelling</td>
<td>10</td>
<td>Rigorous Development</td>
</tr>
<tr>
<td>COMP22111</td>
<td>Processor Microarchitecture</td>
<td>10</td>
<td>System-on-Chip</td>
</tr>
<tr>
<td>COMP23111</td>
<td>Database Systems</td>
<td>10</td>
<td>Web and Distributed Systems</td>
</tr>
<tr>
<td>COMP24011</td>
<td>Introduction to AI</td>
<td>10</td>
<td>None</td>
</tr>
</tbody>
</table>

**Level 2 - option pool 2**

From this option pool choose a maximum of 30 credits and a minimum of 20 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP22712</td>
<td>Microcontrollers</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP24112</td>
<td>Machine Learning</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP24412</td>
<td>Knowledge-based AI</td>
<td>10</td>
<td>Natural Language, Representation and Reasoning</td>
</tr>
<tr>
<td>COMP27112</td>
<td>System Architecture</td>
<td>10</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>COMP28112</td>
<td>Introduction to Visual Computing</td>
<td>10</td>
<td>Visual Computing</td>
</tr>
<tr>
<td>COMP28112</td>
<td>Distributed Systems</td>
<td>10</td>
<td>Web and Distributed Systems</td>
</tr>
</tbody>
</table>

**Level 3 options**

- **MANDATORY UNITS** - <u>60 CREDITS</u>
- **OPTIONAL UNITS** - <u>60 CREDITS</u>

Out of the remaining <u>60 credits</u> of free choice:

- **OPTION POOL 1** - MINIMUM AND MAXIMUM <u>30 CREDITS</u>
- **OPTION POOL 2** - MINIMUM AND MAXIMUM <u>30 CREDITS</u>

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

**Level 3 - compulsory units**

All of the units in this pool are mandatory.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP30040</td>
<td>3rd Year Project (Single Honours 40 Credits)</td>
<td>40</td>
<td>None</td>
</tr>
<tr>
<td>MCEL30031</td>
<td>Enterprise Management for Computer Scientists</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>MCEL30032</td>
<td>Managing Finance in Enterprises for Computer Scientists</td>
<td>10</td>
<td>None</td>
</tr>
</tbody>
</table>

**Level 3 - option pool 1**

From this option pool choose 30 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP31311</td>
<td>Giving meaning to programs</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP32211</td>
<td>Implementing System-on-Chip Designs</td>
<td>10</td>
<td>System-on-Chip</td>
</tr>
<tr>
<td>COMP33511</td>
<td>User Experience</td>
<td>10</td>
<td>Interactive Systems Design</td>
</tr>
<tr>
<td>COMP34111</td>
<td>AI &amp; Games</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP34711</td>
<td>Natural Language Processing</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP36111</td>
<td>Algorithms and Complexity</td>
<td>10</td>
<td>Programming and Algorithms</td>
</tr>
<tr>
<td>COMP37111</td>
<td>Graphics and Virtual Environments</td>
<td>10</td>
<td>Visual Computing</td>
</tr>
<tr>
<td>COMP38311</td>
<td>Advanced Distributed Systems</td>
<td>10</td>
<td>None</td>
</tr>
</tbody>
</table>

**Level 3 - option pool 2**

From this option pool choose 30 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP33312</td>
<td>Agile Software Pipelines</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP34812</td>
<td>Natural Language Understanding</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP35112</td>
<td>Chip Multiprocessors</td>
<td>10</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>COMP36212</td>
<td>Mathematical Systems and Computation</td>
<td>10</td>
<td>Programming and Algorithms</td>
</tr>
<tr>
<td>COMP37212</td>
<td>Computer Vision</td>
<td>10</td>
<td>Visual Computing</td>
</tr>
<tr>
<td>COMP38412</td>
<td>Cyber Security</td>
<td>10</td>
<td>Mobile Computing and Networks</td>
</tr>
<tr>
<td>COMP39112</td>
<td>The Internet of Things: Architectures and Applications</td>
<td>10</td>
<td>Web and Distributed Systems</td>
</tr>
<tr>
<td>COMP34212</td>
<td>Cognitive Robotics</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP34312</td>
<td>Mathematical Topics in Machine Learning</td>
<td>10</td>
<td>None</td>
</tr>
</tbody>
</table>
You should aim to do 45 or 60 credits in each of semester 1 and semester 2.

Pools 1 to 4 map to periods 1 to 4 in the PGT timetable. You must pick exactly one module from Pool 5 avoiding timetable clashes.

Mandatory units - 40 credits
Optional units - 90 credits

**Level 4 - compulsory units**
All of the units in this pool are mandatory.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP49001</td>
<td>UG MEng Industrial Project</td>
<td>25</td>
</tr>
<tr>
<td>MCEL40042</td>
<td>Business Feasibility Study</td>
<td>15</td>
</tr>
</tbody>
</table>

**Level 4 - option pool 1**
From this option pool choose a maximum of 30 credits and a minimum of 15 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP60411</td>
<td>Modelling data on the web</td>
<td>15</td>
</tr>
<tr>
<td>COMP60711</td>
<td>Data Engineering</td>
<td>15</td>
</tr>
<tr>
<td>COMP61011</td>
<td>Foundations of Machine Learning</td>
<td>15</td>
</tr>
<tr>
<td>COMP61411</td>
<td>Cryptography</td>
<td>15</td>
</tr>
</tbody>
</table>

**Level 4 - option pool 2**
From this option pool choose a maximum of 30 credits and a minimum of 15 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP61021</td>
<td>Representation Learning</td>
<td>15</td>
</tr>
<tr>
<td>COMP61421</td>
<td>Cyber Security</td>
<td>15</td>
</tr>
<tr>
<td>COMP62421</td>
<td>Querying Data on the Web</td>
<td>15</td>
</tr>
<tr>
<td>COMP62521</td>
<td>Agile and Test-Driven Development</td>
<td>15</td>
</tr>
</tbody>
</table>

**Level 4 - option pool 3**
From this option pool choose a maximum of 30 credits and a minimum of 0 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP60332</td>
<td>Automated Reasoning and Verification</td>
<td>15</td>
</tr>
<tr>
<td>COMP60532</td>
<td>Principles of Digital Biology</td>
<td>15</td>
</tr>
<tr>
<td>COMP61332</td>
<td>Text Mining</td>
<td>15</td>
</tr>
<tr>
<td>COMP62532</td>
<td>Component-based Software Developpment</td>
<td>15</td>
</tr>
</tbody>
</table>

**Level 4 - option pool 4**
From this option pool choose a maximum of 30 credits and a minimum of 0 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP60542</td>
<td>Introduction to Health Informatics</td>
<td>15</td>
</tr>
<tr>
<td>COMP61342</td>
<td>Cognitive Robotics and Computer Vision</td>
<td>15</td>
</tr>
<tr>
<td>COMP63342</td>
<td>Software Security</td>
<td>15</td>
</tr>
</tbody>
</table>

**Level 4 - option pool 5**
From this option pool choose 15 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMAN60422</td>
<td>Data Analytics for Business Decision Making</td>
<td>15</td>
</tr>
<tr>
<td>BMAN70391</td>
<td>Strategic Project Organising</td>
<td>15</td>
</tr>
<tr>
<td>BMAN71652</td>
<td>Information and Knowledge Management</td>
<td>15</td>
</tr>
<tr>
<td>BMAN73271</td>
<td>Decision Behaviour, Analysis and Support</td>
<td>15</td>
</tr>
</tbody>
</table>