Artificial Intelligence MEng (Hons) options 2022-2023

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 - 90 CREDITS

OPTIONAL UNITS - 30 CREDITS

Out of the remaining 30 credits of free choice:

OPTION POOL 1 - MINIMUM 10 CREDITS AND A MAXIMUM OF 20 CREDITS

OPTION POOL 2 - MINIMUM 0 CREDITS AND A MAXIMUM OF 10 CREDITS

The minimum number of credits selected from both Option Pool 1 and Option Pool 2 is 10 and the maximum is 30.

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.aghanbook.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.

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

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

* Learning and Search in Artificial Intelligence (COMP34120)
* Natural Language, Representation and Reasoning (COMP24412 & COMP34412)
* Visual Computing (COMP27112, COMP37111 & COMP37212)

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>
</tbody>
</table>
COMP24112  Machine Learning  10  None
COMP24412  Knowledge-based AI  10  Natural Language, Representation and Reasoning
COMP26120  Algorithms and Data Structures  20  Computer Languages
COMP24011  Introduction to AI  10  None
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.

<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>
</tbody>
</table>

**Level 2 - option pool 2**
From this option pool choose a maximum of 10 credits and a minimum of 0 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>COMP25212</td>
<td>System Architecture</td>
<td>10</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>COMP27112</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** - 60 CREDITS (FROM COMPULSORY POOL)

**OPTIONAL UNITS**  - 60 CREDITS

**OPTION POOL 1**  - MINIMUM 10 CREDITS AND MAXIMUM 30 CREDITS

**OPTION POOL 2**  - flexible amount of credits

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

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

- Learning and Search in Artificial Intelligence (COMP34120)
- Natural Language, Representation and Reasoning (COMP24412 & COMP34412)
- Visual Computing (COMP27112, COMP37111 & COMP37212)

**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 a maximum of 30 credits and a minimum of 10 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<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>COMP34812</td>
<td>Natural Language Understanding</td>
<td>10</td>
<td>None</td>
</tr>
</tbody>
</table>

Due to COMP34612 not running this year, it has been decided that this pool will allow up to 30 credits to be taken.

**Level 3 - 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>
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<th>Credits</th>
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</tr>
</thead>
</table>

School of Computer Science
A flexible amount of credits can be chosen as long as there is an equal split across both semesters.

### Level 3 - option pool 3

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>COMP33312</td>
<td>Agile Software Pipelines</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>COMP32412</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>

A flexible amount of credits can be chosen as long as there is an equal split across both semesters.

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 (6 course units)

### 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>COMP40901</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>
</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>