Computer Science (Human Computer Interaction) BSc (Hons) 2020-2021

Summary

<table>
<thead>
<tr>
<th>UCAS code</th>
<th>Award</th>
<th>Title</th>
<th>Duration</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>I140</td>
<td>BSc</td>
<td>Computer Science (Human Computer Interaction) BSc (Hons)</td>
<td>3 years</td>
<td>FT</td>
</tr>
</tbody>
</table>

Schools

- Computer Science

Faculty

- Engineering and Physical Sciences

Awarding Institution

- University of Manchester

Programme Accreditation

Relevant QAA benchmark(s)

- Computing
Aims and intended learning outcomes

Our programmes aim to:

1) enable graduates to exhibit a high level of practical and theoretical skills over a broad range of Computer Science together with a knowledge of currently available techniques and technologies in Human Computer Interaction.

2) explore the principles that support developments in a rapidly changing subject.

3) provide opportunities for students to understand the wide range of research challenges facing Computer Science and Human Computer Interaction, as well as the breadth and depth of research undertaken in this top-rated school, so they are prepared to embark on research here or elsewhere.

4) develop competent professionals able to play a leading part in many different commercial, industrial and academic activities and adapt rapidly to changing technology.

5) meet industry demand for high calibre graduates who will take a lead in continuing technological change.

6) prepare students for the social, organisational and professional context in which they will be working.

7) In addition, the with Industrial Experience programmes aim to: give extensive practical experience of an industrial or business environment where students are able to apply and develop their skills, both technical and personal.

8) In addition, the MEng programmes aim to: prepare high fliers for professional practice in Computer Science by enhanced depth and breadth of study together with increased emphasis on industrial relevance through industrially related group projects.

Intended learning outcomes

Knowledge & understanding

A1 Know and understand the essential mathematics relevant to computer science.

A2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface techniques.

A3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication.

A4 Recognise and appreciate the professional and ethical responsibilities of the practising computer professional, including understanding the need for quality.

A5 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

A6 Apply their knowledge of computing in a commercial or industrial context.

A7 Show a critical understanding of the broad context within which Computer Science resides, including issues such as quality, reliability, enterprise, employment law, accounting and health and safety.

A8 Have a comprehensive knowledge and critical awareness of selected specialist fields at the forefront of computer science, studied at masters level.

Intellectual (thinking) skills

B1 Solve a wide range of problems related to the analysis, design and construction of computer systems.

B2 Design and implement a software or hardware system of significant size.

B3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

B4 Solve computer science problems with pressing commercial or industrial constraints.

B5 Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.
Practical skills
C1 Plan and undertake a major individual project
C2 Prepare and deliver coherent and structured verbal and written technical reports
C3 Give technical presentations suitable for the time, place and audience
C4 Use the scientific literature effectively and make discriminating use of Web resources
C5 Design, write and debug computer programs in appropriate languages
C6 Use appropriate computer-based design support tools
C7 Apply computer science skills in a commercial or industrial environment
C8 Demonstrate initiative taking, innovation and self-management in an industrially related group project
C9 Integrate previously acquired skills and apply them to new, demanding situations

Transferable skills
D1 Display an integrated approach to the deployment of communication skills
D2 Use IT skills and display mature computer literacy
D3 Work effectively with and for others
D4 Strike the balance between self-reliance and seeking help when necessary in new situations
D5 Display personal responsibility by working to multiple deadlines in complex activities
D6 Employ discrete and continuous mathematical skills as appropriate
D7 Demonstrate significantly enhanced group working abilities
D8 Further develop career plans and personal objectives
D9 Communicate effectively with non-specialist as well as computer scientist professionals at a range of levels
D10 Undertake a range of technical roles within a team and be able to display leadership
Teaching, learning and assessment methods

Learning and Teaching on all our programmes aims to combine an understanding of fundamental CS and HCI principles, development of strong practical skills and the group-working, learning and communication skills that are essential for any computing professional.

Course units which involve practical elements all have associated laboratory exercises, usually in timetabled sessions with staff and demonstrator support. Most labs operate a system of face-to-face marking in the lab so that students receive immediate feedback on their work. Units without labs all have regular coursework exercises to support skills development and feedback.

Most units are lecture based, with lab or coursework exercises used to reinforce and enhance knowledge and skills first encountered in lectures. The first year team project deviates significantly from this model and takes an Enquiry Based Learning approach. This unit aims to encourage students to be more actively engaged with, and responsible for, their own learning, to develop skills in problem solving, communication, independent learning, and group work, and to signal the importance we attach to independent learning. This approach is followed up in the second year with the workshop based approach used in the compulsory Software Engineering unit, which also contains a major group working component.

The choice of units offered to students on our programmes is very broad, but they also require depth in study into Human Computer Interaction. The first and second years are reasonably core and include units from Life Sciences, Psychology, and Social Science (specifically Social Statistics). The final years allows more choice. It is intended that by the end of the BSc the students will have been given a deep education in HCI and that if the student chooses to take the MEng year, they will be introduced to a number of specialist domains, or be able to pursue aspects already introduced to a higher level.

All students undertake an individual 3rd year project, supervised by a member of academic task, which usually involves the development of significant software or hardware product. Assessment of this unit involves presentations of plans and results and a major written report.

Assessment in almost all units is a combination of lab/coursework and examination.

Learning, Teaching and Assessment of intended learning outcomes

Knowledge and Understanding

<table>
<thead>
<tr>
<th>Learning and Teaching Processes</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures (A1, A2, A3, A4, A5, A6, A7)</td>
<td>Unseen written examinations (A1, A2, A3, A4)</td>
</tr>
<tr>
<td>Laboratory sessions (A2, A3)</td>
<td>Marked tutorial exercises (A1, A2, A3, A4)</td>
</tr>
<tr>
<td>Personal tutorials (A1, A2, A3, A4, A7)</td>
<td>Laboratory reports (A2, A3)</td>
</tr>
<tr>
<td>Problem solving classes (A1, A2, A3, A4)</td>
<td>Project reports (individual and group) (A3, A4, A5, A6, A7)</td>
</tr>
<tr>
<td>Problem-based learning (A2, A3, A4, A5, A6, A7)</td>
<td>Oral presentations (individual and group) (A3, A4, A5, A6, A7)</td>
</tr>
<tr>
<td>Projects (A3, A4, A5, A6, A7)</td>
<td></td>
</tr>
<tr>
<td>Industrial seminars (A4, A5, A6, A7)</td>
<td></td>
</tr>
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</table>

Intellectual Skills

<table>
<thead>
<tr>
<th>Learning and Teaching Processes</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures (B1, B2, B4, B5)</td>
<td>Unseen written examinations (B1, B2, B4)</td>
</tr>
<tr>
<td>Laboratory sessions (B1, B2)</td>
<td>Marked tutorial exercises (B1, B2)</td>
</tr>
<tr>
<td>Personal tutorials (B1, B2, B4)</td>
<td>Laboratory reports (B1, B2)</td>
</tr>
<tr>
<td>Problem solving classes (B1, B2, B4)</td>
<td>Project reports (individual and group) (B1, B2, B3, B4, B5)</td>
</tr>
<tr>
<td>Problem-based learning (B1, B2, B4)</td>
<td>Oral presentations (individual and group) (B1, B2, B3, B4, B5)</td>
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<tr>
<td>Projects (B1, B2, B3, B4, B5)</td>
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Practical Skills

<table>
<thead>
<tr>
<th>Learning and Teaching Processes</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures (C4, C6)</td>
<td>Laboratory reports (C1, C2, C3, C4, C5, C6, C7)</td>
</tr>
<tr>
<td>Laboratory sessions (C1, C2, C3, C4, C5, C6, C7)</td>
<td>Project reports (individual and group) (C3, C4, C5, C6)</td>
</tr>
<tr>
<td>Projects (C3, C4, C5, C6, C9)</td>
<td>Oral presentations (individual and group) (C6, C8, C9)</td>
</tr>
<tr>
<td>Industrial placement (C8, C9)</td>
<td>Industrial placement reports (C8, C9)</td>
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## Transferable skills

<table>
<thead>
<tr>
<th>Learning and Teaching Processes</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures (D3, D4, D5, D7)</td>
<td>Laboratory reports (D1, D3, D5, D6)</td>
</tr>
<tr>
<td>Laboratory sessions (D1, D3, D5, D6)</td>
<td>Essays (D2, D3)</td>
</tr>
<tr>
<td>Personal tutorials (D1, D2, D3, D4, D7)</td>
<td>Project reports (individual and group) (D1, D2, D3, D4, D5, D6, D7)</td>
</tr>
<tr>
<td>Problem solving classes (D4)</td>
<td>Oral presentations (individual and group) (D1, D3, D6, D7, D8)</td>
</tr>
<tr>
<td>Problem-based learning (D1, D2, D3, D4, D5, D6)</td>
<td>Industrial placement reports (D8)</td>
</tr>
<tr>
<td>Projects (D1, D2, D3, D4, D5, D6, D7)</td>
<td></td>
</tr>
<tr>
<td>Industrial placement (D8)</td>
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Programme structure

120 credits of core 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>COMP15111</td>
<td>Fundamentals of Computer Architecture</td>
<td>10</td>
</tr>
<tr>
<td>BIOL10832</td>
<td>Excitable Cells</td>
<td>10</td>
</tr>
<tr>
<td>COMP13212</td>
<td>Data Science</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>
<tr>
<td>PSYC10100</td>
<td>Research Methods</td>
<td>20</td>
</tr>
<tr>
<td>PSYC10431</td>
<td>Introduction to Cognition</td>
<td>5</td>
</tr>
<tr>
<td>PSYC11222</td>
<td>Brain and Behaviour</td>
<td>10</td>
</tr>
<tr>
<td>PSYC11322</td>
<td>Sensation &amp; Perception</td>
<td>5</td>
</tr>
</tbody>
</table>

**Level 2 options**
You have 90 credits of compulsory course units listed in the table "compulsory units" below.

Out of the remaining 30 credits of free choice:

You must choose at least 30 credits of other optional course units; at least 10 credits from option pool 1 below and up to 10 credits from option pool 2.

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 should try and balance your credits over the academic year as best as possible.

**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>
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</thead>
<tbody>
<tr>
<td>COMP23111</td>
<td>Database Systems</td>
<td>10</td>
<td>Web and Distributed Systems</td>
</tr>
<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>COMP28112</td>
<td>Distributed Systems</td>
<td>10</td>
<td>Web and Distributed Systems</td>
</tr>
<tr>
<td>BIOL22332</td>
<td>Motor Systems for Human Computer Interaction</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>BIOL22341</td>
<td>Sensory Systems for Human Computer Interaction</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>PSYC21112</td>
<td>Perception &amp; Action</td>
<td>5</td>
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<tr>
<td>PSYC21122</td>
<td>Cognitive Neuroscience</td>
<td>10</td>
<td>None</td>
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<tr>
<td>PSYC21181</td>
<td>Cognition</td>
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<td>None</td>
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<tr>
<td>SOST20022</td>
<td>Essentials of Survey Design &amp; Analysis</td>
<td>20</td>
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</table>

**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>
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<tbody>
<tr>
<td>BIOL21261</td>
<td>Endocrinology</td>
<td>10</td>
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<tr>
<td>BIOL21321</td>
<td>Membrane Excitability</td>
<td>10</td>
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<tr>
<td>BIOL21451</td>
<td>How to Make a Brain</td>
<td>10</td>
<td>None</td>
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<tr>
<td>COMP28011</td>
<td>Introduction to AI</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP26020</td>
<td>Programming Languages &amp; Paradigms</td>
<td>20</td>
<td>None</td>
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<tr>
<td>PSYC21061</td>
<td>Statistics and Data Analysis</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>SOST20041</td>
<td>Market Research</td>
<td>10</td>
<td>None</td>
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</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>
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<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>COMP25212</td>
<td>System Architecture</td>
<td>10</td>
<td>Computer Architecture</td>
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</tbody>
</table>
Level 3 options

You have 80 credits of compulsory course units listed in the table "compulsory units" below.

Out of the remaining 40 credits of free choice:

You must choose a minimum of 10 credits of optional COMP course units from option pools 1 and 2 below.

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>
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<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP30040</td>
<td>Third Year Project Laboratory</td>
<td>40</td>
<td>None</td>
</tr>
<tr>
<td>COMP33511</td>
<td>User Experience</td>
<td>10</td>
<td>Interactive Systems Design</td>
</tr>
<tr>
<td>COMP33712</td>
<td>Agile Software Engineering</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>SOST30022</td>
<td>Advanced Social Network Analysis</td>
<td>20</td>
<td>None</td>
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</tbody>
</table>

Level 3 - option pool 1

From this option pool choose 20 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP34412</td>
<td>Natural Language Systems</td>
<td>10</td>
<td>Natural Language, Representation and Reasoning</td>
</tr>
<tr>
<td>COMP35112</td>
<td>Chip Multiprocessors</td>
<td>10</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>COMP36511</td>
<td>Compilers</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP37711</td>
<td>Advanced Computer Graphics</td>
<td>10</td>
<td>Visual Computing</td>
</tr>
<tr>
<td>COMP38411</td>
<td>Cryptography and System Security</td>
<td>10</td>
<td>Mobile Computing and Networks</td>
</tr>
<tr>
<td>COMP392412</td>
<td>The Internet of Things: Architectures and Applications</td>
<td>10</td>
<td>Web and Distributed Systems</td>
</tr>
<tr>
<td>COMP39212</td>
<td>Cognitive Robotics</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>COMP38211</td>
<td>Documents and Data on the Web</td>
<td>10</td>
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</tr>
</tbody>
</table>

Level 3 - option pool 2

From this option pool choose 20 credits.

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BIOL21451</td>
<td>How to Make a Brain</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>BIOL31681</td>
<td>Clocks, Sleep &amp; the Rhythms of Life</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>BIOL31692</td>
<td>Learning, Memory &amp; Cognition</td>
<td>10</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>
<tr>
<td>PSYC30242</td>
<td>Organisational Psychology</td>
<td>20</td>
<td>None</td>
</tr>
<tr>
<td>PSYC31242</td>
<td>Understanding Dementia: Brain &amp; Behaviour</td>
<td>20</td>
<td>None</td>
</tr>
<tr>
<td>PSYC37111</td>
<td>Emotion</td>
<td>20</td>
<td>None</td>
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<tr>
<td>SOAN30811</td>
<td>Anthropology of Vision, Memory and the Senses</td>
<td>20</td>
<td>None</td>
</tr>
<tr>
<td>SOST30031</td>
<td>Modelling Social Inequality</td>
<td>20</td>
<td>None</td>
</tr>
</tbody>
</table>

Code | Title                                      | C/O | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | B1 | B2 | B3 | B4 | B5 | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 | D14 | D15 | D16 |
Mechanisms for programme revision

Course units are reviewed annually by the Undergraduate Committee, as part of the Annual Review process, taking into account the results and comments from Course Unit Evaluation Questionnaires. Input is also received from the Teaching Assessment Panel, which has a responsibility for monitoring teaching quality in the School; similar processes are followed in the other participating Schools.

Programmes have been reviewed regularly by groups created specifically for this purpose; the last major review resulted in a new programme portfolio design which started in the first year in 2008-9. The responsibility for leadership of programme review is now in the hands of the Director of Teaching Strategy (currently Dr Steve Pettifer) who chairs a School Teaching Strategy Committee. On the commencement of each new review, input will be sought from all participating Schools.