

BSc (Hons) Computer Science

Programme Specification



1. Programme title	BSc (Hons) Computer Science BSc (Hons) Computer Science with FY
2. Awarding institution	Middlesex University
3. Teaching institution	Middlesex University
4. Details of accreditation by professional/statutory/regulatory body	N/A
5. Final qualification	BSc Honours, BSc, DipHE and CertHE
6. Year of validation	2018/19
Year of amendment	2019/20
7. Language of study	English
8. Mode of study	Full Time/Part Time/Thick Sandwich

9. Criteria for admission to the programme

Entry requirements are in accordance with the University regulations. We accept students from a range of backgrounds. Most students educated in the UK will have studied A-levels, AVCEs or an accredited Access Course. To enter a degree programme you would be expected to have achieved a specified number of UCAS tariff points, agreed annually and made available via the University Admissions web site or on application.

All candidates should normally possess at least grade C in GCSE maths and English Language, or equivalent.

Mature applicants with relevant work experience are also welcome to apply.

International students who have not been taught in English must show evidence of proven ability in English such as TOEFL grade 550 or IELTS grade 6.0. The University provides pre-sessional English language courses throughout the year for candidates who do not meet the English requirements. For further information, visit the learning resources website at: <https://unihub.mdx.ac.uk/student-life/your-voice/your-middlesex-your-impact/library-and-learning-resources>

University policies supporting students with disabilities apply, as described in the University Regulations, 'Information for students with disabilities'.

10. Aims of the programme

The programme aims to:

- Provide students with a thorough grounding in the practical and theoretical fundamentals of Computer Science.
- Develop knowledge and skills that are relevant to current requirements of industry.

Access to campus-based facilities will depend on Covid-19 related restrictions in place at the time, and in some instances online facilities may be used instead.

11. Programme outcomes*

A. Knowledge and understanding

On completion of this programme the successful student will have knowledge and understanding of:

1. A range of underlying theories relevant to computer science.
2. The process of systems development.
3. The interaction between technology and society, and the role of computer professionals within this.
4. A range of specialised topics within Computer Science.

Teaching/learning methods

Students gain knowledge and understanding through

- Lectures and tutorials.
- Guided research.
- Supervised lab work.
- Case studies.

Assessment methods

Students' knowledge and understanding is assessed by

- Practical demonstrations.
- Reports and essays.
- Presentations.
- Individual and group work.
- On-line quizzes.
- Unseen examinations.

Due to COVID-19 face to face sessions are going to be conducted online during the 2020/21 academic year.

All sessions will be recorded. The recorded sessions will be available for students who are unable to attend.

B. Skills

Teaching/learning methods

Students learn cognitive skills through

<p>On completion of this programme the successful student will be able to:</p> <ol style="list-style-type: none"> 1. Apply sound principles to the construction and maintenance of computer-related artefacts. 2. Verify and validate computer-based systems. 3. Apply appropriate theories to the design and evaluation of systems. 4. Adapt and apply their knowledge and skills to mastering new technical areas. 	<ul style="list-style-type: none"> • Lectures and tutorials. • Guided research. • Supervised lab work. • Case studies. <p>Assessment methods Students' cognitive skills are assessed by</p> <ul style="list-style-type: none"> • Practical demonstrations. • Reports and essays. • Presentations. • Individual and group work. • On-line quizzes. • Unseen examinations <p>Due to COVID-19 face to face sessions are going to be conducted online during the 2020/21 academic year.</p> <p>All sessions will be recorded. The recorded sessions will be available for students who are unable to attend.</p> <p>Given the current situation (Covid -19), a robot emulator has been developed to support students to learn and demonstrate the physical computing part of this course.</p>
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<p>12. Programme structure (levels, modules, credits and progression requirements)</p>
<p>12. 1 Overall structure of the programme</p>

BSc Computer Science with Foundation Year

Compulsory

Optional

Foundation Year

SAT0100
SMART

MSO0200
Foundation
Mathematics

SAT0400
Computing and Digital
Technology

SAT0300
Foundation project

BSc (Hons) Computer Science

Compulsory

Optional

Year 1

CST1110
Programming

30 credit

CST1120
First Year Project

30 credit

CST1130
Foundations of
Computer Science

30 credit

CST1140
Systems and
Architecture

30 credit

Year 2

CST2110
Object-Oriented
Programming

30 credit

CST2120
Web Applications and
Databases

30 credit

CST2550
Software Engineering
Management and
Development

30 credit

CST2550
Operating Systems
and Computer
Networks

30 credit

CST2400 Industrial Placement Year (120 credit)

Year 3

CST3990
UG Individual Project

30 credit

CST3562
Enterprise
Networking and
Automation

30 credit

CST3120
Teaching Computing
in the Secondary
School

30 credit

CST3130
Advanced Web
Development with Big
Data

30 credit

PDE3413
Systems Engineering
for Robotics

30 credit

CST3150
Computer Graphics

30 credit

CST3180
UX Design

30 credit

CST3140
Novel Interaction
Technologies

30 credit

CST3110
Testing and
Verification

30 credit

CST3185
Open Source
Software

30 credit

CST3170
Artificial Intelligence

30 credit

CST3160
Designing Secure
Systems

30 credit

CST3145
Web-Based Mobile
App Development

30 credit

12.2 Levels and modules

Starting in academic year 2010/11 the University is changing the way it references modules to state the level of study in which these are delivered. This is to comply with the national Framework for Higher Education Qualifications. This implementation will be a gradual process whilst records are updated. Therefore, the old coding is bracketed below.

Level 3 (0)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>SAT0100 SMART SAT0300 Foundation Project SAT0400 Computing and Digital Technology MSO0200 Foundation Mathematics</p>		<p>Students are normally expected to achieve 120 credits at level 3 to progress to level 4</p>
Level 4 (1)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>CST1110 Programming CST1120 First Year Project CST1130 Foundations of Computer Science CST1140 Systems and Architecture</p>		<p>Students are normally expected to achieve 120 credits at level 4 to progress to level 5</p>
Level 5 (2)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>CST2110 Object-Oriented Programming CST2120 Web Applications and Databases CST2550 Software Engineering Management and Development CST2555 Operating Systems and Computer Networks</p>	<p>The following is optional placement module:</p> <p>CST2400 Industrial Placement (one year)</p>	<p>Students are normally expected to achieve 240 credits at levels 4 & 5 to progress to level 6.</p>
Level 6 (3)		

COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>CST3990 UG Individual Project</p>	<p>Students must also choose 3 modules from the following*:</p> <p>CST3110 Testing and Verification</p> <p>CST3120 Teaching Computing in the Secondary School</p> <p>CST3130 Advanced Web Development with Big Data</p> <p>CST3140 Novel Interaction Technologies</p> <p>CST3150 Computer Graphics</p> <p>CST3160 Designing Secure Systems</p> <p>CST3170 Artificial Intelligence</p> <p>CST3180 UX Design</p> <p>CST3185 Open Source Software</p> <p>PDE3413 Systems Engineering for Robotics</p> <p>CST3562 Enterprise Networking and Automation</p> <p>CST3145 Web-Based Mobile App Development</p>	<p>CST3120 requires students to attend a secondary school, due to Covid-19, this module is suspended.</p>

12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)

Module level	Module code
CST3990	UG Individual Project

13. Curriculum map

See attached.

14. Information about assessment regulations

Information on the University's formal assessment regulations, including details of how award classifications are determined, can be found in the University Regulations available online at <http://www.mdx.ac.uk/regulations/>.

Grades are awarded on the standard University scale of 1–20, with Grade 1 being the highest.

For additional information on assessment and how learning outcomes are assessed please refer to the individual module narratives for this programme.

15. Placement opportunities, requirements and support

Students will be encouraged to apply for placements in Year 3 of the programme. This is not compulsory, however they will be supported in terms of the searching for placements, generating CVs, interview technique. The Faculty of Science and Technology works with a number of employers to run specific information sessions describing the opportunities and application procedures.

Placements will be dependent on employer availability taking into account any Covid-19 related restrictions.

16. Future careers (if applicable)

Students who graduate with a good honours degree in Computer Science from Middlesex University will be well placed to follow a career path in a computer based industry or to go on to further study. Industrial careers include: IT management; software engineering; software architecture; hardware and software designer; web-developer; database management and administration.

17. Particular support for learning (if applicable)

Students will be supported throughout their programme of study in Computer Science by academic experts in the appropriate fields. In addition, students will be supported by a Learning Resource Centre that works closely with academics in order to offer the most up-to-date resources. All of the modules on Computer Science are supported by a team of Graduate Teaching Assistants and Technical Tutors who work with academic colleagues to ensure that labs are resourced, materials are available and feedback is provided. In the case of the First Year, the GTAs and TTs will be used to ensure that feedback is available throughout the lab sessions (these will be online during the 2020/21 academic year due to Covid-19) for all students without unreasonable delay

18. JACS code (or other relevant coding system)

G400

19. Relevant QAA subject benchmark group(s)

Computing

20. Reference points

The following reference points were used in designing this programme:

- QAA Computing subject benchmark statements, Computing (February, 2016) (https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-computing-16.pdf?sfvrsn=26e1f781_12)
- QAA Quality Code for Higher Education (February, 2015) (<https://www.qaa.ac.uk/quality-code/the-existing-uk-quality-code>)
- BCS The Chartered Institute for IT guidelines on course accreditation (May, 2018) (<https://www.bcs.org/category/7066>)

- Standard for Chartered IT Professional (<https://www.bcs.org/upload/pdf/chartered-it-professional-standard.pdf>)
- Skills Framework for the Information Age (SFIA) (<https://www.sfia-online.org/en>)
- Association for Computing Machinery (ACM) and Association for Information Systems (AIS) Global Competency Model for Graduate Degree Programs in Information Systems (May, 2017) (<https://www.acm.org/binaries/content/assets/education/msis2016.pdf>)
- Descriptors defining levels in the European Qualifications Framework (EQF) (<https://ec.europa.eu/ploteus/en/content/descriptors-page>)
- European e-Competence Framework (<http://www.ecompetences.eu>)
- Middlesex University Regulations (2018/19) (<https://www.mdx.ac.uk/about-us/policies/university-regulations>)
- Middlesex University Learning and Quality Enhancement Handbook (section 3) (<https://www.mdx.ac.uk/about-us/policies/academic-quality/handbook/lqe-handbook-section-3>)
- Middlesex University Policies (<https://www.mdx.ac.uk/about-us/policies>)
- Middlesex University Public Policy Statements (<https://www.mdx.ac.uk/about-us/policies/public-policy-statements>)

21. Other information

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if s/he takes full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the student programme handbook and the University Regulations.

Curriculum map for BSc (Hons) *Computer Science*

This section shows the highest level at which programme outcomes are to be achieved by all graduates, and maps programme learning outcomes against the modules in which they are assessed.

Programme learning outcomes

Knowledge and understanding	
A1	A range of underlying theories relevant to computer science.
A2	The process of systems development.
A3	The interaction between technology and society and the role of computer professionals within this.
A4	A range of specialized topics within Computer Science.
Skills	
B1	Apply sound principles to the construction and maintenance of computer-related artifacts.
B2	Verify and validate computer-related systems.
B3	Apply appropriate theories to the design and evaluation of systems.
B4	Adapt and critically apply their knowledge and skills to mastering new technical areas.

Programme outcomes															
A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	
Highest level achieved by all graduates															
6	6	6	6	-	-	-	6	6	6	6	-	-	-	-	

Module Title	Module Code by Level	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8
		SMART	SAT0100	-	-	-	-				-	-	-	-		
Foundation Mathematics	MSO0200	-	-	-	-				-	-	-	-				
Computing and Digital Technology	SAT0400	-	-	-	-				-	-	-	-				
Foundation project	SAT0300	-	-	-	-				-	-	-	-				
Programming	CST1110	✓			✓				✓			✓				
First Year Project	CST1120		✓	✓						✓						
Foundations of Computer Science	CST1130	✓									✓					
Systems and Architecture	CST1140	✓										✓				
Object-Oriented Programming	CST2110		✓	✓					✓	✓	✓	✓				
Web Applications and Databases	CST2120	✓		✓	✓				✓		✓	✓				
Software Engineering Management and Development	CST2550	✓	✓		✓				✓		✓	✓				
Operating Systems and Computer Networks	CST2555	✓	✓						✓			✓				
Industrial Placement (120 credits)	CST2400	✓	✓	✓	✓				✓	✓	✓	✓				
Testing and Verification	CST3110	✓			✓				✓	✓		✓				
Teaching Computing in the Secondary School	CST3120			✓								✓				
Advanced Web Development with Big Data	CST3130	✓	✓	✓	✓				✓	✓	✓	✓				
Novel Interaction Technologies	CST3140	✓		✓	✓				✓		✓	✓				
Computer Graphics	CST3150	✓			✓				✓		✓	✓				
Designing Secure Systems	CST3160	✓	✓	✓	✓				✓			✓				
Artificial Intelligence	CST3170	✓			✓				✓	✓		✓				
UX Design	CST3180	✓	✓	✓	✓				✓		✓	✓				
Open Source Software	CST3185	✓		✓	✓				✓			✓				
Systems Engineering for Robotics	PDE3413	✓			✓				✓	✓		✓				
Enterprise Networking and Automation	CST3562	✓			✓				✓	✓		✓				
Web-Based Mobile App Development	CST3145	✓	✓	✓	✓				✓	✓	✓	✓				
UG Individual Project	CST3990		✓	✓					✓	✓	✓	✓				