

BSc (Hons) Computer Science

Programme Specification

1. Programme title	BSc (Hons) Computer Science BSc (Hons) Computer Science with Foundation Year
2. Awarding institution	Middlesex University
3a. Teaching institution	Middlesex University: Hendon
3b. Language of study	English
4a. Valid intake dates	September / January
4b. Mode of study	FT/PT/TKSW
4c. Delivery method	<input checked="" type="checkbox"/> On-campus/Blended <input type="checkbox"/> Distance Education
5. Professional/Statutory/Regulatory body	N/A
6. Apprenticeship Standard	N/A
7. Final qualification(s) available	BSc (Hons) Computer Science BSc Computer Science DipHE Computer Science CertHE Computer Science
8. Academic year effective from	2024/2025

9. Criteria for admission to the programme
<p>Students should have the equivalent of 112–128 UCAS points including GCSE Grade 4/C in English and Mathematics to gain entry to level 4. Please refer to the programme specification for the Foundation Year for criteria for admission to the BSc Computer Science with Foundation Year programme.</p> <p>Middlesex University has a flexible and personalised approach to admissions and we accept applications from students with a wide range of qualifications and a combination of qualifications. Please check our general entry requirements page (available at</p>

<https://www.mdx.ac.uk/study-with-us/undergraduate/entry-requirements-for-undergraduates>) to see how these points can be achieved from our acceptable level 3 qualifications and the combinations, which are welcomed by Middlesex University, including GCSE requirements.

If you have achieved a qualification such as a foundation degree or HND, or have gained credit at another university, you may be able to enter the programme in year two (level 5) or three (level 6). For further information please visit our Transfer students page (available at <https://www.mdx.ac.uk/study-with-us/undergraduate/how-to-apply-for-undergraduate-courses>). For direct entry to levels 5 and 6 students are required to pass the equivalent of 120 credits specified in the programme at levels 4 and 5, respectively. Applicants will be expected to demonstrate the programme learning outcomes have been met at these levels.

Applications from mature candidates without formal qualifications are welcomed, provided they can demonstrate appropriate levels of relevant ability and experience. Recognition of Prior Learning (RPL) is permitted. Mature applicants with relevant work experience are welcome to apply for direct entry at levels 3, 4 and 5. These applicants are required to submit a portfolio of work experience to show evidence of achieving relevant learning outcomes, and these will vary depending on both the programme and level the student is applying for. Evidence should comprise the applicant's own work and may include documents they have written, procedures they have designed, proposals they have drafted, electronic resources, photographs, video etc. or information gathered from others about you such as statements from employers, certificates of in-house courses completed.

Individual applicants may wish to claim certain number of credits against their learning that may have taken place outside education or through training that is not assessed as part of an education system. Typically, these applicants would possess knowledge and skills that may have been acquired at the workplace through practice but may not be supported by formal qualifications. Applicants may also hold academic, vocational or professional qualifications that may be aligned to certain modules of the programme at an appropriate level. Typically, such qualifications are supported by evidence in the form of certification. Each of these cases is considered individually with the scope to assess whether applicants should be allowed in the programme with specific credit that would count towards the end qualification, to an appropriate point of the programme. As each case is treated individually, applicants should seek support from the programme team towards their application with Recognition of Prior Experiential Learning or Recognition of Prior Certificated Learning.

International students who have not been taught in the English medium must show evidence of proven ability in English such as IELTS grade 6.0 (with a minimum of 5.5 in all sections).

For students studying the programme at ACBT only, a Sri Lanka GCE 'O' level English, grade C or above or a Sri Lanka 'A' level English, grade A-C will be accepted as meeting

the English language entry requirements. The University provides pre-sessional English language courses throughout the year for candidates who do not meet the English requirements. University policies supporting students with disabilities apply, as described in the University Regulations. For further information, visit the learning resources web site at: <http://unihub.mdx.ac.uk/support>.

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

Further guidance may be obtained from the Programme Leader or Director of Programme.

10. Aims of the programme

The programme aims to provide students with a thorough grounding in the practical and theoretical fundamentals of Computer Science and help student to develop knowledge and skills that are relevant to current requirements of industry.

Through inclusive practice-led learning, the programme aims to instil in students the capacity to evaluate and deploy a wide range of computer systems in diverse application domains, along with the ability to adapt and critically apply their knowledge and skills to master new technical areas. Through a well-rounded curriculum and diverse studying pathways, students will gain proficiency in programming languages, algorithms, data structures, and software engineering principles whilst undertaking tasks within a professional, legal, and ethical framework, addressing aspects such as data management, security, equality, diversity, inclusion (EDI), and sustainability.

The programme emphasises the importance of practical application through hands-on projects, internships, and collaborative initiatives. At Middlesex University, our dedicated programme team will seek to support your learning with key concept videos, research-based learning materials as well as authentic assessments, through which the programme aims to ensure graduates are not only well-versed in theoretical concepts but also possess the practical skills needed to thrive in the workspace and further studies.

11. Programme outcomes*

A. Knowledge and understanding

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

1. Essential theories, concepts, principles and practices relating to computer science and computer applications.
2. Criteria of quality and performance in the selection and application of tools and techniques within various scenarios related to Computer Science.
3. The effective use of various techniques, tools, and integrated development environments for developing and deploying computer-based information systems.

4. Suitable methodologies and task execution within a professional, legal, and ethical framework – including data management and use, security, equality, diversity and inclusion (EDI) and sustainability within the field of computer science.

Teaching/learning methods

The teaching and learning methods within the BSc Computer Science programme have been designed to provide students a structured academic journey through:

- Interactive Concept Discussion Sessions (ICDS) illustrating theories, concepts and principles through case studies, examples, and scenarios.
- Practice-led learning activities.
- Brief video recordings covering key concepts.
- Supervised practical, laboratory work.
- Guided individual and group research.
- Open-ended practical assignments.
- Online collaborative environments.
- Supervised laboratories and practical exercises.
- Critical thinking and problem-solving activities.
- Individual and group coursework assignments.
- Online drop-in sessions.
- Student presentations.
- Technical reports.
- Reflective reports.
- Project work.

These activities are complimented by dedicated sessions to support employability with academic advising sessions, talks given by invited speakers from industry (including alumni), workshops from the university employability service and internal speakers (e.g. the Learning Enhancement Team, International Mobility, etc) which aim to support students in contextualising their technical knowledge and understanding.

All module-specific learning materials are available for students on online virtual learning environment (VLE) to access anytime. This is furthered through recorded key-concept short videos explaining fundamental concepts as well as printed and digital versions of handouts and booklets.

Assessment methods

Students' knowledge and understanding is assessed by:

- Student Observable Behaviours (SOBs)
- Reflective and technical reports
- Individual and group presentations
- Online quizzes
- Individual and group coursework assignments
- Lab exercises
- Lab tests
- Coding and commenting
- Modelling of systems
- Assessing case studies
- Computer applications

- Design exercises
- Appropriate use of case tools for analysis and design

Feedback is given in different ways - written, online, and verbal.

B. Skills

On completion of this programme the successful student will be able to:

1. Apply detailed judgement, critical thinking, and problem-solving skills to solve both well-specified and loosely defined problems, to create appropriate computational artefacts.
2. Demonstrate the ability to undertake problem identification, analysis and design, development, testing, integration and deployment of a complex computing system and any associated artefacts.
3. Show the ability to work as a member of a team, successfully communicate, manage tasks, and plan projects with minimum guidance.
4. Communicate data, ideas plans, and solutions that resonate with diverse audiences including specialists and non-specialists' audiences through effective written and spoken communication, as well as suitable presentation methods.
5. Evaluate and deploy a wide range of computer systems in diverse application domains.
6. Adapt and apply their knowledge and skills to mastering new technical areas through self-paced study and research.

Teaching/learning methods

Students gain skills through:

- Supervised practical work.
- Critical thinking and problem-solving activities.
- Practical application of concepts, principles and models to specific case studies and scenario.
- Supervised seminars.
- Use of case tools for analysis and design.
- Individual and group coursework assignments.
- Individual and group presentations.
- Supervised tutorials and seminars.
- Individual and group project work
- Formative and summative assessment, and feedback on assignments.
- Online collaborative tools.
- Coding and commenting.
- Workshop and seminars conducted by Library and Learning Support staff.

Assessment methods

The assessment of students' skills in the BSc Computer Science programme involves a diverse range of methods. These include:

- Practical artefact demonstrations.
- Student Observable Behaviours (SOBs).
- Project work.
- Practical laboratory tests.

- Online quizzes.
- Assessing Case Studies.
- Group and individual assignments.
- Technical and Reflective reports.
- Individual and group presentations.
- Lab, seminar and workshop activities.
- Project milestones.
- Coding and commenting.
- Individual and group work.
- Computer-based in class assessment.

Formative feedback is an integral part of the assessment process and is consistently provided along the module activities. This comprehensive approach ensures that students not only demonstrate theoretical understanding in modules, but also enhance their transferable skills along the programme, such as effective communication, teamwork, and adaptability.

12. Programme structure (levels, modules, credits and progression requirements)

12. 1 Overall structure of the programme

Full Time Pathway

Year 1

- Semester 1: Programming (CST1110, 30 credits), Design and Development of Applications (CST1122, 30 credits)
- Semester 2: Foundations of Computing (CST1133, 30 credits), Systems and Architecture (CST1140, 30 credits)

Year 2

- Semester 1: Object-Oriented Programming (CST2110, 30 credits), Web Applications and Databases (CST2120, 30 credits)
- Semester 2: Software Engineering Management and Development (CST2550, 30 credits), Operating Systems and Computer Networks (CST2555, 30 credits)

Industrial Placement (Optional): Supervised Industrial Placement (CST3500, 120 credits)

Year 3 (Post-Placement or Final Year)

- Semester 1 (Optional Modules - Select 2): Testing and Verification (CST3110, 30 credits), Full Stack Development (CST3344, 30 credits), UX Design (CST3160, 30 credits), Artificial Intelligence (CST3170, 30 credits), Business Intelligence (CST3340, 30 credits)
- Semester 2 (Mandatory Modules): UG Individual Project (CST3930, 30 credits), Advanced Topics in Data Science and Artificial Intelligence (CST3133, 30 credits)

Important note: Specific optional modules will only be offered if at least 15 students registered.

Students commencing the programme in January, will take the Year 1, Semester 2 modules first and then take CST1110 and CST1122 in Semester 3 (April – July). Years 2 and 3 will be as set out above.

Part Time Pathway

Year 1

- Semester 1: Programming (CST1110, 30 credits)
- Semester 2: Foundations of Computing (CST1133, 30 credits)

Year 2

- Semester 1: Design and Development of Applications (CST1122, 30 credits)
- Semester 2: Systems and Architecture (CST1140, 30 credits)

Year 3

- Semester 1: Object-Oriented Programming (CST2110, 30 credits)
- Semester 2: Software Engineering Management and Development (CST2550, 30 credits)

Year 4

- Semester 1: Web Applications and Databases (CST2120, 30 credits)
- Semester 2: Operating Systems and Computer Networks (CST2555, 30 credits)

Year 5

- Semester 1 (Optional Modules - Select 1): Testing and Verification (CST3110, 30 credits), UX Design (CST3160, 30 credits), Full Stack Development (CST3344, 30 credits), Business Intelligence (CST3340, 30 credits), Artificial Intelligence (CST3170, 30 credits)
- Semester 2 (Mandatory): Advanced Topics in Data Science and Artificial Intelligence (CST3133, 30 credits)

Year 6

- Semester 1 (Optional Modules - Select 1): Semester 1 (Optional Modules - Select 1): Testing and Verification (CST3110, 30 credits), UX Design (CST3160, 30 credits), Full Stack Development (CST3344, 30 credits), Business Intelligence (CST3340, 30 credits), Artificial Intelligence (CST3170, 30 credits)
- Semester 2 (Mandatory): UG Individual Project (CST3930, 30 credits)
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Important note: Specific optional modules will only be offered if at least 15 students registered.

The above represents an indicative part-time programme structure only.

12.2 Levels and modules

Please refer to the programme specification for the Foundation Year for the modules to be taken during the foundation year of the [BSc \(Hons\) Computer Science with Foundation Year](#) programme.

Level 4

COMPULSORY

Students must take all of the following:

- **CST1110** Programming
- **CST1122** Design and development of applications
- **CST1133** Foundations of Computing
- **CST1140** Systems and Architecture

OPTIONAL

N/A

PROGRESSION REQUIREMENTS

Students must pass at least 90 credits to progress to Level 5. To achieve Honours, failed credit will need to be repeated.

Level 5

COMPULSORY

Students must take all of the following:

- **CST2110** Object-Oriented Programming
- **CST2120** Web Applications and Databases
- **CST2550** Software Engineering Management and Development
- **CST2555** Operating Systems and Computer Networks

OPTIONAL

The following is optional placement module:

- **CST3500** Supervised Industrial Placement (one year)

PROGRESSION REQUIREMENTS

Students must have passed at least 210 credits to progress to Level 6. To achieve Honours, failed credit will need to be repeated.

Level 6

COMPULSORY

Students must take all of the following:

- **CST3990** Advanced Topics in Data Science and Artificial Intelligence
- **CST3133** UG Individual Project

OPTIONAL

Students must also choose 2 modules from the following*:

- **CST3110** Testing and Verification
- **CST3170** Artificial Intelligence

- **CST3180** UX Design
- **CST3144** Full Stack Development
- **CST3340** Business Intelligence

PROGRESSION REQUIREMENTS

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*Optional modules will only run if at least 15 students have registered.

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

Module level	Module code
Level 6	CST3990

13. 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 <https://www.mdx.ac.uk/about-us/policies>

14. Placement opportunities, requirements and support (if applicable)

All Undergraduate students have the opportunity to undertake an Industrial Placement. Industrial Placements are highly encouraged by the Faculty and the University. Placements give students valuable experience, which enhances their future career prospects. Students who undertake a placement year normally achieve better results in their final year. Please note the following:

- The placement provides a year's experience as an appropriately paid graduate trainee.
- Industrial placement is conditional on the successful completion of all modules at Levels 4 and 5. Students need 240 credits before they are able to embark on an industrial placement.
- Obtaining a placement is co-ordinated through the Employability and Careers Centre, and by a dedicated team of placement officers for the Faculty of Science and Technology.
- For undergraduate programmes, students wishing to undertake a placement position must register for the placement module.
- Each placement will be assigned to an industrial tutor who will visit the student during their placement.
- On graduation the degree will be qualified with the term "having followed an approved sandwich programme".
- Students who complete the Supervised Industrial Placement module on TKS mode will receive an additional qualification referred to as a Diploma of Industrial Studies.

Note: The placement option is not available to direct-entry students in their final year.

15. Future careers / progression

All programmes in the Faculty of Science and Technology – their curricula and learning outcomes – have been designed with an emphasis on currency and relevance to future employment. Professional development and employability skills are embedded into teaching, learning and assessment at all levels of the programme.

The majority of graduates are employed in IT posts relevant to the subject area and many others pursue further postgraduate study or research.

Employer links with the Faculty are encouraged in the following ways:

- By inviting practitioners from industry as guest speakers.
- Through links with companies where students are employed as part of their Industrial placement.
- Through links with alumni, both in the UK and overseas.

Graduates from BSc Computer Science have followed career paths in roles such as IT manager; software engineer; software architect; hardware and software designer; web-developer; data scientists, database management and administrator.

16. Particular support for learning

The Faculty's Teaching and Learning Strategy is aligned with that of the University as a whole in seeking to develop learner autonomy and resource-based learning. In particular, support of the students' learning experience, the following is provided:

- All new students go through an induction programme, and some have early diagnostic numeric and literacy testing before starting their programme.
- The Learning Enhancement Team provides workshops and one to one support for those students needing additional support in academic writing, presentation skills and numeracy. Such seminars, and workshops are embedded into specific modules across all levels of the programme.
- Students are allocated a personal email account, and secure networked computer storage for student's University-related files and documents.
- Soft copies of all module handbooks are provided on the University's Virtual Learning Environment (VLE). Extensive web-based learning materials are provided to support learning in all modules.
- Extensive library facilities are available on and off campus, with e-resources accessible through the VLE. Virtual learning is provided via the MyLearning pages. Seminars and workshops by Library and Learning Support staff are embedded into specific modules across all levels of the programme.
- Students can access advice and support on a wide range of issues from the online support services, and specific advice and support from the Faculty's Progression and Support Team.
- As part of our holistic support framework, our program provides academic advising designed to support students throughout their academic endeavours. In the later stages of their studies, for example, we offer targeted support for final year projects and research in a range of disciplines to ensure that students receive individualised support to succeed academically.
- High-quality specialist laboratories, equipped with industry standard software and hardware, are provided for formal teaching as well as student self-study.

- Research activities of academic staff feed into the teaching programme, which can provide individual students with ad-hoc opportunities to work with academics on some aspects of their research.

Middlesex University encourages and supports students with disabilities. Some practical aspects of Faculty of Science and Technology programmes may present challenges to students with particular disabilities. You are encouraged to visit our campuses at any time to evaluate facilities and talk in confidence about your needs. If we know your individual needs, we'll be able to provide for them more easily. For further information contact the Disability Support Service (email: disability@mdx.ac.uk).

17. HECos code(s)	100366
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18. Relevant QAA subject benchmark(s)	Computing (March, 2022)
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19. Reference points	
The following reference points were used in designing this programme:	
<ul style="list-style-type: none"> • QAA Computing subject benchmark statement, Computing (March, 2022) (https://www.qaa.ac.uk/quality-code/subject-benchmark-statements/computing) • QAA Quality Code for Higher Education (May, 2018) (https://www.qaa.ac.uk/quality-code) • British Computer Society (BCS) guidelines on course accreditation (April, 2022) (https://www.bcs.org/media/1209/accreditation-guidelines.pdf) • Certifications for IT Professionals (https://www.bcs.org/qualifications-and-certifications/certifications-for-professionals/) • Skills Framework for the Information Age (SFIA) (https://sfia-online.org/en) • Association for Computing Machinery (ACM) and Association for Information Systems (AIS) Curriculum Guidelines for Undergraduate Degree Programmes in Information Systems (2010) (https://www.acm.org/binaries/content/assets/education/curricula-recommendations/is-2010-acm-final.pdf) • Association for Computing Machinery (ACM) overview report on Computing Curricula, (December, 2020) (https://www.acm.org/education/curricula-recommendations) • Association for Computing Machinery (ACM) and Association for Information Systems (AIS) Global Competency Model for Graduate Degree Programmes in Information Systems (May, 2017) (https://www.acm.org/binaries/content/assets/education/msis2016.pdf) • Descriptors defining levels in the European Qualifications Framework (EQF) that is now known as Europass (https://europa.eu/europass/en) • European e-Competence Framework that is now known as IT Professionalism Europe (https://itprofessionalism.org/) • DigiCompEdu Framework (https://joint-research-centre.ec.europa.eu/digcompedu/digcompedu-framework_en) • Middlesex University Regulations (https://www.mdx.ac.uk/about-us/policies) • Middlesex University Learning and Quality Enhancement Handbook (section 3) (https://www.mdx.ac.uk/about-us/policies/academic-quality/handbook) 	

- Middlesex University Policies (<https://www.mdx.ac.uk/about-us/policies>)
Middlesex University 2031 Learning Framework

20. Other information

N/A

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 they take full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the rest of your 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	Essential theories, concepts, principles and practices relating to computer science and computer applications.
A2	Criteria of quality and performance in the selection and application of tools and techniques within various scenarios related to Computer Science.
A3	The effective use of various techniques, tools, and integrated development environments for developing and deploying computer-based information systems
A4	Suitable methodologies and task execution within a professional, legal, and ethical framework – including data management and use, security, equality, diversity and inclusion (EDI) and sustainability within the field of computer science.
Skills	
B1	Apply detailed judgement, critical thinking and problem-solving skills to solve both well-specified and loosely defined problems, to create appropriate computational artefacts.
B2	Demonstrate the ability to undertake problem identification, analysis and design, development, testing, integration and deployment of a complex computing system and any associated artefacts.
B3	Show the ability to work as a member of a team, successfully communicate, manage tasks, and plan projects with minimum guidance.
B4	Communicate data, ideas plans, and solutions that resonate with diverse audiences including specialists and non-specialists' audiences through effective written and spoken communication, as well as suitable presentation methods.
B5	Evaluate and deploy a wide range of computer systems in diverse application domains.
B6	Adapt and critically apply their knowledge and skills to mastering new technical areas through self-paced study and research.

Programme outcomes									
A1	A2	A3	A4	B1	B2	B3	B4	B5	B6
Highest level achieved by all graduates									
6	6	6	6	6	6	6	6	6	6

Module Title	Module Code by Level	A1	A2	A3	A4	B1	B2	B3	B4	B5	B6
Programming	CST1110	✓		✓	✓			✓		✓	
Design and development of applications	CST1122	✓	✓			✓		✓	✓	✓	✓
Foundations of Computing	CST1133	✓	✓			✓	✓				✓
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		✓		✓	✓		✓			
Supervised Industrial Placement (120 credits)	CST3500	✓	✓	✓	✓	✓	✓	✓	✓		
Testing and Verification	CST3110	✓	✓	✓	✓	✓	✓	✓	✓		
Artificial Intelligence	CST3170		✓		✓		✓				✓
UX Design	CST3180	✓	✓		✓	✓	✓		✓	✓	✓
Full Stack Development	CST3144	✓		✓			✓		✓	✓	
Business Intelligence	CST3340		✓	✓	✓	✓	✓	✓	✓		
Advanced Topics in Data Science and Artificial Intelligence (Compulsory)	CST3133	✓	✓		✓	✓		✓	✓		
UG Individual Project (Compulsory)	CST3990	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓