



MSc in Computer Science (Software Development) Programme Specification

Programme Title and Award	MSc in Computer Science (Software Development)		
Programme Level	Level 7	HECoS Code	100366 100374
Relevant QAA Benchmark Statements	Computing (Master's)	Programme Code	NHCSSDMF NHCSSDMP
Awarding Body	NCH at Northeastern Limited	Language of Instruction	English
Teaching institution	New College of the Humanities	Date approved	September 2020
Mode of study	Full Time Part Time	Duration of Study	1 Year (FT) 2 Years (PT)

PROGRAMME SUMMARY

This programme is designed to prepare students for a career in computing science, with a particular focus on software engineering: the design, analysis, development, and maintenance of software on emerging platforms (e.g. Web, mobile phones) and application domains (e.g. data analytics, machine learning). The programme is suitable for students who want to step into a career in software development.

Students will have the opportunity to: (i) master the fundamentals of programme design, best programming practices (e.g. for testing), algorithms and data structures; (ii) learn how to program front-end applications, via specialised courses on Web and mobile application development, as well as back-end applications, via specialised courses on databases and scalable distributed systems; and (iii) master the fundamentals of machine learning algorithms, a crucial component of many modern applications that students can learn to integrate into their own. Finally, (iv) students will have the opportunity to concentrate their aforementioned learning outcomes to an individual software development project, producing an original piece of software on an application domain of their choice to enhance their portfolio.

PROGRAMME INTEGRATION

The programme comprises of eight 15-credit taught courses as well as a 60-credit individual software development project. The eight taught courses provide a solid foundation of the tools, methods and techniques that any graduate software developer needs to master and that are applicable in many career settings. The software development project (60 credits) is a sustained piece of independent work on an agreed topic of the student's choice.

The programme is designed and delivered so as to integrate component parts into a whole that ensures students graduate with both the breadth of modern software engineering skills and knowledge, and the depth of delivering specialised software artefacts.

FULL TIME PROGRAMME STRUCTURE

MICHAELMAS TERM

NCHCS760 Programming Design Paradigm (15 credits)

NCHCS761 Algorithms (15 credits)

NCHCS762 Database Management Systems (15 credits)

Begin NCHCS768 MSc Software Development Individual Project (60 credits)

HILARY TERM

NCHCS763 Foundations of Software Engineering (15 credits)

NCHCS764 Web Development (15 credits)

NCHCS765 Mobile Application Development (15 credits)

Continue NCHCS768 MSc Software Development Individual Project (60 credits)

TRINITY TERM

NCHCS766 Foundations of Artificial Intelligence (15 credits)

NCHCS767 Building Scalable Distributed Systems (15 credits)

Complete NCHCS768 MSc Software Development Individual Project (60 credits)

PART TIME PROGRAMME STRUCTURE

YEAR ONE

Michaelmas Term

NCHCS760 Programming Design Paradigm (15 credits)

NCHCS761 Algorithms (15 credits)

Hilary Term

NCHCS763 Foundations of Software Engineering (15 credits)

NCHCS764 Web Development (15 credits)

Trinity Term

NCHCS766 Foundations of Artificial Intelligence (15 credits)

NCHCS767 Building Scalable Distributed Systems (15 credits)

YEAR TWO

Michaelmas Term

NCHCS762 Database Management Systems (15 credits)

Begin NCHCS768 MSc Software Development Individual Project (60 credits)

Hilary Term

NCHCS765 Mobile Application Development (15 credits)

Continue NCHCS768 MSc Software Development Individual Project (60 credits)

Trinity Term

Complete NCHCS768 MSc Software Development Individual Project (60 credits)

ENTRANCE REQUIREMENTS

Entry requirements - normally, an upper second-class honours undergraduate degree (or equivalent) in computing science or related engineering discipline; but each applicant will be assessed on an individual basis. The College is happy to consider applicants who have been out of education for a while, who have equivalent professional experience, or similar.

English language requirements: IELTS 7.0, with a minimum 6.5 in each component.

RECOGNITION OF PRIOR LEARNING

Where a student wishes to apply for the recognition of prior learning on the basis of certificated or experiential learning, they should follow the College's [Recognition of Prior Learning and Credit Transfer Policy](#).

AIMS OF THE PROGRAMME

The programme aims to:

- Enable students to confidently apply key software engineering principles, algorithms and tools to solve computing problems of varying complexity, showing originality in the application of their knowledge.
- Develop students' skills of working in small teams and individually in software projects on emerging platforms and application domains demonstrating decision-making skills, using their initiative and taking responsibility.

The overall aim of the programme is to:

- Produce graduates who are proficient in the design, implementation and testing of software, utilising their independent learning skills to continue to advance their knowledge and skills in software engineering.

LEARNING OUTCOMES

KNOWLEDGE AND UNDERSTANDING

A student will be able to:

- K1d master the practical methodology of software development, knowing emerging trends, tools and technologies and how they can be applied in modern industrial applications
- K2d understand advanced aspects of the theory and practice of software engineering (from theory to practice)
- K3d evaluate technical, management and societal dimensions of computer software

SUBJECT SPECIFIC SKILLS

A student will be able to:

- S1d critically assess software problems and recognise the individual tools, libraries and techniques suitable for solving the problem and develop their interactions (including any missing component) to produce a software solution
- S2d become a sophisticated software developer, familiar with codes of ethics, codes of practice and relevant industrial standards specific to the specialism of each degree course
- S3d design and develop original software of varying levels of complexity in a variety of programming languages either individually or as part of a team

TRANSFERABLE AND PROFESSIONAL SKILLS

A student will be able to:

- T1d critically review and analyse key developments in a particular problem area, identify limitations and propose directions for further innovation
- T2d communicate effectively to both technical and non-technical audiences through oral presentations, software demonstrations and written reports
- T3d lead and/or participate in team projects: envision a technically sound solution to a computing problem, share it with peers, encourage them to participate, and deliver it in a timely matter according to specification
- T4d learn effectively and independently new topics and tools related to the courses of programme

All of the above learning outcomes are mapped to the relevant QAA Subject Benchmark threshold statements - see [Appendix A](#). For the exit awards see [Appendix B](#).

MAP OF COURSES TO PROGRAMME LEARNING OUTCOMES

COURSE TITLE	KNOWLEDGE AND UNDERSTANDING			SUBJECT-SPECIFIC SKILLS			TRANSFERABLE AND PROFESSIONAL SKILLS			
	K1d	K2d	K3d	S1d	S2d	S3d	T1d	T2d	T3d	T4d
Programming Design Paradigm	X	X	X	X	X	X	X	X	X	X
Algorithms	X	X	X	X	X	X	X	X	X	X
Database Management Systems	X	X	X	X	X	X	X	X	X	X
Foundations of Software Engineering	X	X	X	X	X	X	X	X	X	X
Web Development	X	X	X	X	X	X	X	X	X	X
Mobile Application Development	X	X	X	X	X	X	X	X	X	X
Foundations of Artificial Intelligence	X	X	X	X	X	X	X	X	X	X
Building Scalable Distributed Systems	X	X	X	X	X	X	X	X	X	X
MSc Software Development Individual Project	X	X	X	X	X	X	X	X	X	X

TEACHING AND LEARNING STRATEGIES**TEACHING METHODS**

- Seminars, including some with student presentations and lab sessions
- Small classes
- Individual coding-based tutorials
- Feedback on coding assignments and technical reports
- Student presentations
- Online discussion forums
- Individual project supervisions (which support both written and oral communication skills)
- (Structured) independent study and research

The College teaches in small groups and is committed to providing individual attention and guidance. Lectures and seminars include student interaction and dialogue. Each student will receive at least 400 contact hours (made up of around 240 hours of lectures, 160 hours of lab-based tutorials, and individual project supervision and support). As indicated below, students can participate in the Faculty's weekly research seminars and audit other lectures and seminars of their choice. Assessment, as indicated above, is in a variety of modes: exam, coursework essay, coding assignment, conference-style oral presentation with PowerPoint or handout, and a software engineering project with presentation.

LEARNING OPPORTUNITIES

The Faculty's regular research seminars offer a lively and varied menu of talks and discussions involving both internal and invited speakers. MSc Computer Science (Software Development) students are invited and encouraged to attend these in all three terms.

Students will also be encouraged to attend the broad programme of liberal-arts professorial lectures at the College given by our visiting professors such as Simon Blackburn, Daniel Dennett, Bettany Hughes, Sir Trevor Nunn, Steven Pinker, Sir Christopher Ricks, Peter Singer, and others.

INCLUSIVE TEACHING AND LEARNING

The College is deeply committed to widening participation, both through outreach activities and through a teaching environment that is inclusive towards a variety of backgrounds and learning styles. Faculty are engaged in the public dissemination of their discipline, visiting a wide range of schools, hosting open lectures, engaging with the media, and publishing in accessible formats.

The high staff-student ratio at the College is especially important to the faculty's ability to give individualised attention to students, and thus to be inclusive towards a variety of backgrounds and learning styles. The faculty facilitates a wide range of academic and social events in which academics and students are brought together.

The College will make reasonable adjustment for students with disabilities, in accordance with the recommendations of the Student Wellbeing Team. Where necessary, following consultation with the Student Wellbeing Team, alternative forms of assessment may be offered.

The variety of modes of assessment in this programme may render it more inclusive than those which assess in more uniform ways.

E-LEARNING

The College ensures students are supported outside of class contact time by means of a virtual learning environment (VLE), through which students access learning materials and communicate with fellow students and faculty. Students are enrolled onto their degree courses as well as onto the NCH Forum (dedicated to reviews of plays, books, films and other cultural activities for both students and staff alike). Students can additionally access past faculty lecture videos and general study information, on such topics as time-management skills and how to read effectively.

RESEARCH-LED PRACTICE-DRIVEN TEACHING

All of the College's faculty have been recruited on the basis of their research activity, as well as their talents in teaching, and are encouraged to remain active in their research field, partly by being given an individual annual research budget and regular sabbatical leave. The teaching has been developed and allocated on the basis of research interests and expertise. The faculty is committed to supporting a lively, open, and interactive teaching environment, in which research and teaching are mutually complementary.

ASSESSMENT

ASSESSMENT METHODS

- Examination (formative and summative)
- Project
- Presentation

[Appendix C](#) is the programme structure and assessment summary.

ASSESSMENT REGULATIONS

The College's Assessment Regulations for Taught Awards can be found [here](#).

STUDENT SUPPORT

DISABILITIES AND/OR SPECIFIC LEARNING DIFFICULTIES (SPLDS)

When students arrive, they are asked to complete a Student Disclosure Form where they can list any medical conditions, disabilities and/or SpLDs and make a note of who can have access to this information. This data is managed and securely stored by the College. During Freshers' Week a number of talks and events are held which are designed to support and inform students with regard to mental health, disabilities, safety and learning support.

The Student Wellbeing Team (SWT) meets with students soon after Freshers' Week to discuss their needs and help set up support systems both within the College (if appropriate) and externally. If requested by the student, the SWT will then arrange to meet with relevant academic staff to discuss the student's needs and the ways these might impact on their studies. If students request specific arrangements (for e.g. submission extensions, use of a laptop, special exam conditions, etc.) they are asked to submit approved medical documentation to Student and Academic Services.

If a student is undiagnosed but believes they may have an SpLD (e.g. Dyslexia) the SWT will help them to access support groups and assessment centres. If the assessment confirms an SpLD, the SWT will discuss further support options with the student and their tutors. The SWT is in contact with local dyslexia tutors for advice to the College or student referral. The College can help provide students with special learning equipment (e.g. coloured paper, reading pens, dictation software, etc.).

For more information, please click [here](#).

EMPLOYABILITY SKILLS

- Programming skills: deliver original, technically sound software solutions to computing problems using appropriate software development methods and techniques that adhere to the code of practice and industry standards of the particular problem area
- Leadership skills: engage in a peer review process to critically assess proposed solutions, providing constructive feedback on project design, management and evaluation
- Communication skills: communicate solutions via presentations, demonstrations or technical reports to both technical and non-technical audiences

CAREERS EDUCATION, INFORMATION AND GUIDANCE

Masters students will have access to the College's Careers Advisory Service. This includes employer receptions with representatives from a wide range of sectors and our electronic Careers Centre, containing features and functionality for careers guidance, interview advice and job searching.

In addition, Careers Advisers, supplemented with support from tutors, offer advice, often one-to-one, on securing a professional future tailored to students' skills and ambitions.

QUALITY EVALUATION AND ENHANCEMENT

AWARD STANDARDS

Every programme of study is developed by the Faculties, utilising their subject specialists and approved by the College's Academic Board.

REVIEW AND EVALUATION MECHANISMS

The College has robust procedures, as described in [AQF4 Programme and Course Approval and Modifications](#) and [AQF5 Annual Monitoring and Reporting](#), in place to assure the quality of the programme development, delivery, management, systematic monitoring and ongoing review and enhancement of all College programmes. Enhancements are made as necessary to ensure that systems remain effective and rigorous.

The College utilises constructive feedback from a variety of sources, internal and external, to inform its decision-making process to enhance the programme and student experiences. These feedback sources are listed below:

- Annual Course Reviews, written by the Course Leader, are prepared to enable the Course Leader to reflect on the course, using a variety of data and student/faculty feedback to enhance the course and support the Programme Director in writing the Annual Programme Review
- Annual Programme Reports, written by the Programme Director, are prepared in order to enhance individual programmes and to plan ahead
- Annual Examiner Reports are prepared by independent External Examiners, as appointed by the College, to confirm that a programme has been assessed in accordance with the approved documentation and that the student performance meets the appropriate academic standards
- Formal student feedback mechanisms consist of termly student representatives attending Faculty Meetings and Student-Staff Liaison Committee meetings; course satisfaction surveys; and annual programme satisfaction surveys
- Informal student feedback is also valued by the College and this can take the form of students talking to their Programme Director, Head of Faculty or professional staff.

ABOUT THIS DOCUMENT

Title: MSc Computer Science (Software Development) Programme Specification					
Approved by: Academic Board					
Version number	Date approved	Date published	Programme Director	Location	Proposed next review date
1.0	September 2020	September 2020	Alexandros Koliouis	NCH Academic Handbook; Programme Specifications & Handbooks; Postgraduate Programme Specifications	August 2025
Referenced documents	Recognition of Prior Learning and Credit Transfer Policy; Assessment Regulations for Taught Awards; Student Disclosure Form; AQF4 Programme and Course Approval and Modifications; and AQF5 Annual Monitoring and Reporting.				
External Reference Point(s)	QAA Subject Benchmark Statement Computing (Master's)				

DISCLAIMER

The College has checked the information provided in this Programme Specification and will aim to deliver this programme in keeping with this Programme Specification. However, changes to the programme may sometimes be required arising from annual monitoring, student feedback, and the review and update of courses and programmes. Where this activity leads to significant changes to courses and programmes there will be prior consultation with students and others, wherever possible, and the College will take all reasonable steps to minimise disruption to students. It is also possible that the College may not be able to offer a course or programme for reasons outside of its control, for example, due to the absence of a member of staff or low student registration numbers. Where this is the case, the College will aim to inform applicants and students as soon as possible, and where appropriate, will facilitate the transfer of affected students to another suitable programme.

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APPENDIX A - MAP TO QAA SUBJECT BENCHMARK COMPUTING (MASTER'S)

	Recommendation*	Learning Outcomes
5.1	<i>The study of computing at master's degree level is typically characterised by:</i>	
	an ability to evaluate the technical, societal and management dimensions of computer systems	K2, K3, S1
	a knowledge and understanding of advanced aspects of computer systems and their use	K2
	a combination of theory and practice, with practice being guided by theoretical considerations	K1
	a strong emphasis on the underlying discipline and/or applications	S2
	the mastery of the practical methodology of the relevant area of computing, whether for general application in software development or in specialised applications relating to the storing, processing and communication of information	K1
	an understanding of professional, legal, social, cultural and ethical issues related to computing and an awareness of societal and environmental impact.	K3
5.2	<i>Master's degree courses in computing/IT should seek to include the development of the following subject-specific skills:</i>	
	an ability to engage in a peer review process that involves the critical review of papers, software and proposals, coupled with positive advice for improvement and innovation	S1, T1
	competences at a systems level appropriate to the learning outcomes of the course: the ability to assess systems (which may include software, devices, people, and so on), to recognise the individual components and to understand their interaction, to improve systems, to replace them and to create them	S1, S2, S3
	familiarity with codes of ethics and codes of practice specific to the specialism of the degree course, relevant industrial standards and principles underpinning the development of high integrity systems (for safety, security, trust, privacy, and so on), while keeping in focus the benefits of, approaches to and opportunities offered by innovation	K1, S2
	translational skills which involve the necessary communication between technical and non-technical audiences	T2
5.3	<i>Master's degree courses in computing/IT should seek to include development of the following generic skills:</i>	
	those required for the creation of the lifelong learner, who can set goals and identify resources for the purpose of learning	T4, S1
	an ability to critically review the literature, which includes identifying all of the key developments in a particular area of study, critically analysing them and identifying limitations and avenues for further development or explanation	T1

	an ability to recognise and respond to opportunities for innovation	T3, S3
	leadership skills, which tend to be characterised by acquiring a vision (based on sound technical insights) coupled with the ability to encourage others to share in that vision and to ensure that this will not be to their detriment.	T3

APPENDIX B - EXIT AWARDS

POSTGRADUATE CERTIFICATE

4 x 15 credit Level 7 courses = 60 credits

POSTGRADUATE DIPLOMA

8 x 15 credit level 7 courses = 120 credits

APPENDIX C - PROGRAMME STRUCTURE AND ASSESSMENT SUMMARY

Code	Course Title	Credit	Type	Mode	Assessment Weighting % & Activity Type (code overleaf)					
					AE1	Activity type	AE2	Activity type	AE3	Activity type
FHEQ Level 7										
NCHCS760	Programming Design Paradigm	15	C	CD	50%	A	50%	A		
NCHCS761	Algorithms	15	C	CD	40%	Set	60%	Exam		
NCHCS762	Database Management Systems	15	C	CD	40%	P	60%	Exam		
NCHCS763	Foundations of Software Engineering	15	C	CD	50%	Set	50%	P		
NCHCS764	Web Development	15	C	CD	50%	Set	50%	P		
NCHCS765	Mobile Application Development	15	C	CD	50%	Set	50%	P		
NCHCS766	Foundations of Artificial Intelligence	15	C	CD	40%	P	60%	Exam		
NCHCS767	Building Scalable Distributed Systems	15	C	CD	50%	Set	50%	P		
NCHCS768	Software Development Individual Project	60	C	CD	30%	A	50%	Diss	20%	Oral

COURSE TYPE: C = Compulsory; O = Option.

COURSE MODE: CD = Campus Delivery; BK = Block Delivery; BL = Blended Learning; DL = Distance Learning and Self-Directed Learning; EL = E-Learning; EX = Experiential; PL = Placement; WB = Work Based Learning,

ASSESSMENT WEIGHTING: AE1 = Assessment Element 1; AE2 = Assessment Element 2; AE3 = Assessment Element 3; AE4 = Assessment Element 4

ASSESSMENT ACTIVITY TYPE

CODE

Written exam	Exam
Take home exam	TEx
Written assignment	A
Report	R
Dissertation	Diss
Portfolio	F
Project output (other than dissertation)	P
Oral assessment and presentation	Oral
Practical skills assessment	Pract
Set exercise	Set