New College of the Humanities

MSc Artificial Intelligence with a Human Face Programme Specification

Programme Title and Award	MSc Artificial Intelligence with a Human Face		
Programme Level	Level 7	HECoS Code	100366 100359 100314
Relevant QAA Benchmark Statements	Computing (Master's)	Programme Code	NCHAIHFMF NCHAIHFMP
Awarding Body	NCH at Northeastern Limited	Language of Instruction	English
Teaching institution	New College of the Humanities	Date approved	January 2021
Mode of study	Full Time Part Time	Duration of Study	1 Year (FT) 2 Years (PT)

PROGRAMME SUMMARY

The MSc Artificial Intelligence with a Human Face is a well-integrated programme of study with a targeted focus on Artificial Intelligence (AI), both in theory and in application. Intended for graduates of a wide range of disciplines, and presupposing no background in computing, it ensures students are equipped with relevant knowledge and skills, covering not only recent technical developments, but also broader ethical and theoretical considerations.

The programme allows students to progressively develop their understanding of the techniques of data science, machine learning, and natural language processing, alongside key concepts and methods of computer science, while honing their programming skills in e.g. Python and Java; and to simultaneously refine their thinking and communication skills, through humanities courses devoted to a consideration of key issues, both practical and theoretical, arising in connection with AI.

PROGRAMME INTEGRATION

The programme comprises both core and optional courses, totalling 120 credits, as well as a 60-credit MSc dissertation project. The coursework covers two subjects: computing and humanities.

Six 15-credit computing courses teach students the theory and application of computer and data science, especially in relation to Artificial Intelligence (AI). They are taught in pairs, one per term. The rationale for pairing them is that one course always complements the teaching of its counterpart. In Michaelmas, students learn the basics of programming (e.g. *if-then-else* statements, *for* loops and data collections), alongside the fundamentals of computing (e.g. logic operators, algorithm complexity and data structures, respectively). In Hilary, students learn how to ingest and transform data (e.g. numerical arrays, images or text), alongside how to design and structure programs. Finally, in Trinity students learn to develop machine learning applications at breadth and depth. We choose Natural Language Processing to study depth because it has a profound technical and societal impact nowadays and it is pertinent to humanics.

Two 15-credit humanities courses teach students to think carefully and communicate clearly about philosophical (ethical and other) issues arising in relation to computing, data usage, AI, and other emerging technologies.

The 60-credit individual project is a sustained piece of independent work on an agreed topic of the student's choice. It runs throughout the year so that students have ample time to focus their independent learning with the right guidance by their supervisor(s).

The programme is designed and delivered so as to integrate the above component parts into a whole that ensures students graduate with both a technical and theoretical understanding of AI and its applications, as well as a broad, contextual appreciation of its implications.

FULL TIME PROGRAMME STRUCTURE

MICHAELMAS TERM

NCHCS773 Discrete Structures (15 credits)

NCHAI758 Programming with Data (15 credits)

NCHAI749 AI and Data Ethics (15 credits)

Begin NCHAI781 MSc Dissertation Project (60 credits)

HILARY TERM

NCHCS774 Object-Oriented Design (15 credits)

NCHAI759 Foundations of Data Science (15 credits)

NCHAI750 Minds and Machines OR NCHPH757 Technology and Human Values (15 credits)

Continue NCHAI781 MSc Dissertation Project (60 credits)

TRINITY TERM

NCHAI771 Natural Language Processing (15 credits)

NCHAI772 Principles of Machine Learning (15 credits)

Complete NCHAI781 MSc Dissertation Project (60 credits)

PART TIME PROGRAMME STRUCTURE

YEAR ONE

MICHAELMAS TERM

NCHCS773 Discrete Structures (15 credits)

NCHAI758 Programming with Data (15 credits)

HILARY TERM

NCHCS774 Object-Oriented Design (15 credits)

NCHAI759 Foundations of Data Science (15 credits)

TRINITY TERM

NCHAI771 Natural Language Processing (15 credits)

NCHAI772 Principles of Machine Learning (15 credits)

YEAR TWO

MICHAELMAS TERM

NCHAI749 AI and Data Ethics (15 credits)

Begin NCHAI781 MSc Dissertation Project (60 credits)

HILARY TERM

NCHAI750 Minds and Machines OR NCHPH757 Technology and Human Values (15 credits)

Continue NCHAI781 MSc Dissertation Project (60 credits)

TRINITY TERM

Complete NCHAI781 MSc Dissertation Project (60 credits)

ENTRANCE REQUIREMENTS

Entry requirements - normally, an upper second-class honours undergraduate degree in any subject; but each applicant will be assessed on an individual basis. Crucially, no background in computer science or related engineering principle is required. A-level mathematics is desirable but not obligatory. 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:

- Produce graduates who are proficient in the design and implementation of data-oriented and machine learning applications using state-of-art software libraries, techniques and algorithms.
- Build strong foundations for understanding the data science techniques that underpin recent advances in machine learning and, in particular, natural language processing.
- Develop a critical understanding of how philosophical thinking can contribute to the beneficial development of AI and ethical use of data, engaging with related concepts, theories and arguments in the field.

LEARNING OUTCOMES

KNOWLEDGE AND UNDERSTANDING

A student will be able to:

K1d consistently produce correct, well-structured programs, guided by appropriate software engineering design principles and best programming practices (from theory to practice).

K2d demonstrate a fine grasp of modern dataset analysis tools, machine learning frameworks and their use the development of modern data applications.

K3d master practical programming skills to load and analyse data (e.g. numerical data, images or text corpora) and machine learning techniques to transform data into a suitable representation for a given task.

K4d demonstrate a comprehensive understanding and critical awareness of key philosophical issues (ethical, cultural, privacy or policy) surrounding data use, data processing, and AI.

SUBJECT-SPECIFIC SKILLS

A student will be able to:

S1d critically assess the design and implementation of data analytics and machine learning programs and propose ways to reuse or improve them (or their parts).

S2d identify the appropriate tools, software libraries and algorithms to develop and synthesise original programs that process a dataset.

S3d communicate with rigorous arguments to both technical and non-technical audiences the decisions made, or the results obtained, or both, in relation to the development and use of a data application, alongside any contemporary philosophical questions that surround it.

TRANSFERABLE AND PROFESSIONAL SKILLS

A student will be able to:

T1d continue to learn and innovate systematically and creatively as the fields of data science and machine learning progress rapidly with new datasets, new software libraries, new models, new algorithms, new arguments etc.

T2d produce original ideas on the design and implementation of a data application and share it with peers (in writing or orally) in a clear and persuasive manner.

T3d demonstrate initiative and ingenuity when working on a sustained piece of independent research, identifying ways to advance state of the art while delivering projects on time.

T4d understand the importance of embedding ethical considerations into the development of data applications.

All of the above learning outcomes are mapped to the relevant QAA Subject Benchmark threshold statements in Appendix C. For the exit awards see Appendix A.

MAP OF COURSES TO PROGRAMME LEARNING OUTCOMES

	KNOWLEDGE AND UNDERSTANDING				SUBJECT-SPECIFIC SKILLS			TRANSFERABLE AND PROFESSIONAL SKILLS			
COURSE TITLE	**K1 d**	**K2 d**	**K3 d**	**K4 d**	**S1 d**	**S2 d**	**S3 d**	**T1 d**	**T2 d**	**T3 d**	**T4 d**
Discrete Structures	X		X			X	X		X	X	
Programming with Data	X		X		X	X	X		X	X	
AI and Data Ethics				X			X	X		X	X
Object-Oriented Design	X	X	X		X	X	X	X	X	X	
Foundations of Data Science	X	X	X		X	X	X	X	X	X	
Minds and Machines				X			X	X		X	X
Technology and Human Values				X			X	X		X	X
Principles of Machine Learning	X	X	X		X	X	X	X	X	X	X
Natural Language Processing	X	X	X		X	X	X	X	X	X	X
MSc Dissertation Project	X	X	X	X	X	X	X	X	X	X	X

TEACHING AND LEARNING STRATEGIES

TEACHING METHODS

- Lectures and seminars
- Lab sessions
- Student presentations

- Collaborative group work
- Individual essay-based tutorials
- Feedback on formative essays
- Feedback on coding assignments and accompanying technical reports
- Office hours
- Online discussion forums
- Dissertation 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 always include student interaction and dialogue. Each student will receive approximately 220 contact hours: 124 hours of lectures and seminars, 90 hours of lab sessions, and 8 hours of individual tutorials and supervisions. A further 120 office hours are available to all students to arrange personalised tutorials or discuss other matters for computing courses. As indicated below, students can participate in the Faculty's regular research seminars (e.g. the meetings of the Cognitive Science Research Group) and, with the relevant faculty members' permission, audit other lectures and seminars of their choice. Assessment, as indicated above, is in a variety of modes: coursework essay, coding and/or written assignment, oral presentation with PowerPoint or handout, and dissertation with viva.

LEARNING OPPORTUNITIES

Students may wish to attend the regular meetings of the NCH Cognitive Science Research Group, in which issues in Computer Science, Philosophy, and Psychology are discussed; and they may also be able to participate in Northeastern's online Information Ethics Roundtable.

Students will also be encouraged to attend the broad programme of liberal-arts professorial lectures at the College given by our visiting professors.

INCLUSIVE TEACHING AND LEARNING

The faculty are deeply committed to widening participation in Artificial Intelligence, both through outreach activities and through a teaching environment that is inclusive towards a variety of backgrounds and learning styles.

The College is a part of the global network of Northeastern University, home to the Center for Inclusive Computing.

Members of the faculty are much 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 Support and Development Team. Where necessary, following consultation with the Student Support and Development 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, 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 are committed to supporting a lively, open, and interactive teaching environment, in which research and teaching are mutually complementary.

ASSESSMENT

ASSESSMENT METHODS

- Set exercises (including coding)
- Written assignments (including essays and coding)
- Dissertation
- Oral presentation

Appendix B 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)

Students are asked to complete a Student Disclosure Form, where they can list any medical conditions, disabilities and/or SpLDs and give consent to who can have access to this information. Students are asked to submit supporting documentation from a doctor, clinical or educational psychologist detailing the nature of their disability and the impact it is likely to have on their studies. More information can be found here. This data is managed and securely stored by Student Support and Development (SSD). 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.

SSD meet with students as soon as possible, and preferably before the start of the academic year, to discuss their needs and help set up support systems both within the College (if appropriate) and externally. If requested by the student, the SDD will then arrange to inform relevant faculty of the student's needs and any reasonable adjustments required.

If a student is undiagnosed but believes they may have a SpLDS (e.g. Dyslexia) the SDD will help them to access diagnostic services. If the assessment confirms a SpLDS, the SDD will discuss further support options with the student and their tutors. The SSD is in contact with local dyslexia tutors for advice 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

As Artificial Intelligence (AI) and its applications become increasingly prevalent in society, there is a growing recognition across a range of sectors of: (i) the need to integrate ethics in the field; and (ii) the value of diverse and interdisciplinary thinking in the field's development. The MSc AI with a Human Face programme teaches students a range of highly employable technical skills while answering to these needs:

- Programming skills: deliver original, technically sound software solutions to data-oriented problems using appropriate software development and machine learning methods and techniques that adhere to best practices and industry standards.
- Leadership skills: work independently and to deadlines; research related work and synthesize it creatively; and then engage with peers to critically assess a data-driven problem and provide constructive feedback on the design, management and evaluation of a solution.
- Communication skills: present, orally or in writing, technical solutions, their findings and opinions on their theoretical, societal and ethical implications in a clear and structured manner 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 Head of Faculty in writing the Annual Faculty 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 Artificial Intelligence with Human Face Programme Specification **Approved by: Academic Board**					
Version number	Date approved	Date published	Programme Director	Location	Proposed next review date
1.0	January 2021	March 2021	Dr Alexandros Koliousis	Academic Handbook/ Programme Specifications and Handbooks/Postgraduate Programme Specifications VLE	January 2026
Referenced documents	AQF7: Assessment Regulations for Taught Awards Recognition of Prior Learning and Credit Transfer Policy AQF4:Programme and Course Approval and Modifications AQF5: Annual Monitoring and Reporting				
External Reference Point(s)	Subject Benchmark Statement Computing (Master's)				

DISCLAIMER

The College has checked the information provided in this Programme Specification and will endeavour 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 endeavour 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 – 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 B - 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										
NCHCS773	Discrete Structures	15	C	CD	50%	Set	50%	Set		
NCHAI758	Programming with Data	15	C	CD	50%	Set	50%	Set		
NCHAI749	AI and Data Ethics	15	C	CD	30%	A	70%	A		
NCHCS774	Object-Oriented Design	15	C	CD	50%	Set	50%	Set		
NCHAI759	Foundations of Data Science	15	C	CD	50%	Set	50%	Set		
NCHAI750	Minds and Machines	15	O	CD	100%	A				
NCHPH757	Technology and Human Values	15	O	CD	100%	A				
NCHAI772	Principles of Machine Learning	15	C	CD	50%	Set	50%	Set		
NCHAI771	Natural Language Processing	15	C	CD	50%	Set	50%	Set		
NCHAI781	MSc Dissertation Project	60	C	CD	20%	A	60%	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

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

	Recommendation*	**Learning Outcomes**
5.1	*The study of computing at master's degree level is typically characterised by:*	
	an ability to evaluate the technical, societal and management dimensions of computer systems	K4, S3, T4
	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	K2, K3
	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	K3
	an understanding of professional, legal, social, cultural and ethical issues related to computing and an awareness of societal and environmental impact.	K4, T4
5.2	*Master's degree courses in computing/IT should seek to include the development of the following subject-specific skills:*	
	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
	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
	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	S3, T2
5.3	*Master's degree courses in computing/IT should seek to include development of the following generic skills:*	
	those required for the creation of the lifelong learner, who can set goals and identify resources for the purpose of learning	T1
	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, T3

	an ability to recognise and respond to opportunities for innovation	T3
	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.	T2