
CA3: Course Specification

PART A: About the Course (See Part B for other key information)

1. Qualification (award and title):

MSc Artificial Intelligence

2. Date of Approval (month and year):

Click here to enter text.

3. Delivery Partners, Sites and Recognition: *who delivers this course, where? Is it accredited by any professional bodies?*

Campuses/Partners	
University of West London RAK Branch Campus	

4. Course Description: *a short descriptive statement used for publicity (max. 250 words):*

Artificial intelligence (AI) and machine learning are redefining the way we live and work, allowing us to automate processes and enhance productivity. These new technologies create the need for skilled engineers with an understanding of their applications and intricacies. In its Industrial Strategy, the UK Government has outlined AI and data revolution as one of its four Grand Challenges, to ensure the UK leads the way for the industries of the future. By embedding AI across the UK, the Government aspires to drive the economic growth.

Undertaking this course allows you to be at the forefront of this ongoing technological revolution, equipping you with both theoretical and practical knowledge to work across disciplines and implement AI systems where they are needed. AI has broad application in a variety of industries. The inclusive nature of this degree will provide the students with the skills to meet the needs of the industries that are recognising the transformative potential of AI, from healthcare to manufacturing to the automotive industry.

As well as learning the technical skills, the students will have the chance to explore realistic applications through group and individual projects. We have contacts with major technology companies, perfect for opportunities within industry-initiated and healthcare-related projects. The course is directed by an Industrial Advisory Panel who meet twice a year to ensure that

it provides the right mix of hands-on skills and up-to-date knowledge suitable for to the wide variety of applications that this field addresses.

5. Course Structure Diagram: *a visual overview of the programme of study*

LEVEL 7 (September start – Full time)

Semester 1 September-January	Semester 2 January-May	Semester 3 May-August
CP7NEW Artificial Intelligence Core - 20 credits	CP7NEW Deep Learning Core - 20 credits	CP70017E Dissertation Core – 60 Credits
CP70066E Machine Learning Core - 20 credits	CP70011E Research Methods Core - 20 credits	
CP7NEW Responsible AI Core - 20 credits	OPTIONS: 20 credits Students choose 1 from: CP7NEW Computer Vision Core - 20 credits CP70065E Big Data Analytics Core - 20 credits	

6. Course Aims and Content by Level: *what is this course all about and how does the programme of study build and develop over time?*

<p>LEVEL 7</p> <p>Aims</p> <p>This course aims to enable the students to:</p> <ul style="list-style-type: none"> • Develop a systematic understanding of the AI domain • Provide deep knowledge of AI techniques and develop intellectual skills to create well-justified solutions • Develop a comprehensive understanding of the associated research and professional skills necessary in practice • Develop expertise to plan, design and implement appropriate AI solutions in practical scenarios
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- Gain substantial practical experience, and learn to prepare for the future challenges of AI
- Provide a solid foundation for applied research in artificial intelligence
- Prepare students for work in a rapidly evolving and technologically diverse environment

Contents

This course delivers intensive training in fundamentals of AI through a range of specialist modules that are all focused on several areas of AI technologies and applications, to ensure the students graduate with a focused body of knowledge in this area. The course will include 6 compulsory and 1 elective modules, which reflect the needs of business and industry. Taught through a unique combination of theoretical- and practical-based sessions, the students will cover subjects in reasoning, machine learning, neural networks and deep learning, agent architectures, alongside the broader data analytics approaches required for implementation in real-world systems.

The course will use standard and innovative technology-enhanced teaching and assessment methods to support different learning styles. Theories and fundamental of AI and machine learning will be taught in both lecture and workshop formats. Students are also supported in their learning and personal development through participation in industry and research seminars, group discussions and presentations, and coursework. Students will receive hands-on experience accessing equipment and facilities within the School of Computing and Engineering.

As well as learning the technical skills required for this rapidly growing area of artificial intelligence, the students will have the chance to explore realistic applications through group and individual projects. The School has contacts with major technology companies, perfect for opportunities within industry-initiated projects.

7. Course Contact Hours: *how much time should I commit to this course?*

Learning hours are determined by credits. One credit is worth 10 learning hours, so a 20 credit module is 200 learning hours, a 30 credit module is 300 hours etc. This is the amount of time you should be prepared to commit to each module.

Learning hours are divided into: taught or 'contact' hours, ie, the amount of time students spend in contact with academic staff, whether through face-to-face classes or online learning; and independent study, ie, the amount of time students are expected to spend on their own study and assessment preparation. Students also have one-to-one time with academic staff in personal tutorials.

8. Academic Staff:

Staff employed on UWL Academic contracts at Lecturer level have a minimum requirement to have a higher degree in an appropriate discipline and a teaching qualification (PG Cert or Academic Professional Apprenticeship) and/or HEA Fellowship. Senior Lecturers have a similar minimum level and in addition should either hold a PhD or be registered on a doctorate programme. Associate Professor and Professor levels are required to have a PhD. All staff on Academic contracts at UWL are required to undertake teaching. Hourly paid teaching staff are also used across UWL and these colleagues bring a wide range of professional, specialist and industry experience to the teaching of our students. The University has made an explicit commitment to supporting the professional development of its staff through the programme of continuing professional development (CPD) managed and delivered by the ExPERT Academy.

9. Course Learning Outcomes: *what can I expect to achieve on this course?*

	Level 7
Knowledge and understanding	<p>Upon completion of this course, the students will be able to:</p> <ul style="list-style-type: none"> A1. Show a comprehensive familiarity with the objectives and functions of modern AI A2. Demonstrate a systematic knowledge and understanding of the fundamental concepts of AI A3. Categorise an AI problem based on its characteristics and its constraints. A4. Provide a comprehensive understanding of all the activities necessary to synthesise solutions to tasks in AI A5. Demonstrate mastery and practical knowledge of established methods and approaches to AI
	<p>CP7NEW: Artificial Intelligence CP70066E: Machine Learning CP7NEW: Deep Learning CP70011E: Research Methods CP7NEW: Computer Vision CP70065E: Big Data Analytics CP7NEW: Responsible AI</p>
Intellectual/Cognitive skills	<p>Upon completion of this course, the students will be able to:</p> <ul style="list-style-type: none"> B1. Show a critical awareness of current issues and process that apply to the modelling, design, implementation, planning and control of AI systems

	<p>B2. Formulate strategies to utilize techniques that are applicable to their own research or advanced scholarship and be able to synthesise key results to draw well-argued conclusions that can be presented in a form suitable for publication</p> <p>B3. Demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level;</p> <p>B4. Use initiative, creativity and innovation in the identification and solutions to problems arising in the development of AI systems.</p> <p>B5. Have acquired experience in evaluating and discussing published work;</p> <p>B6. Exercise appropriate engineering judgement in decision-making processes.</p>
	<p>CP7NEW: Artificial Intelligence CP70066E: Machine Learning CP7NEW: Deep Learning CP70011E: Research Methods CP7NEW: Computer Vision CP70065E: Big Data Analytics</p>
<p>Subject practical skills</p>	<p>Upon completion of this course, the students will be able to:</p> <p>C1. Distinguish by critical analysis the appropriate tools and technologies that underpin an AI system.</p> <p>C2. Apply AI techniques for problem solving.</p> <p>C3. Demonstrate practical experience by implementing and experimenting with the learnt AI algorithms.</p> <p>C4. Account for their professional code of conduct, particularly with respect to current ethical, legal and quality frameworks that apply within the AI industry</p>
	<p>CP7NEW: Artificial Intelligence CP70066E: Machine Learning CP7NEW: Deep Learning CP70011E: Research Methods CP7NEW: Computer Vision</p>

	CP70065E: Big Data Analytics CP7NEW: Responsible AI CP70017E: Dissertation
Transferable skills	Upon completion of this course, the students will be able to: D1. Exercise initiative and personal responsibility D2. Make decisions in complex and unpredictable situations D3. Show the independent learning ability required for continued professional development by demonstrable evidence in the production of a dissertation planned, managed and delivered in timely fashion D4. Reflect on personal practice and apply conclusions drawn from that reflection to subsequent practice
	CP70011E: Research Methods CP7NEW: Responsible AI CP70017E: Dissertation

10. Learning, Teaching and Assessment Strategies: *how will I learn, how will my learning be assessed, and why are these the most appropriate methods?*

Level 7

General strategy

The underlying philosophical approach to teaching and learning on this course is consistent with that of the university. Design of the modules make up the course as assessment and practice driven: assessment driven in that they are designed from learning outcomes and assessment upwards; practice driven, in that the courses reflect industry practice and research taking place in the field of Artificial Intelligence.

As would be expected at Masters level, there is an appropriate balance of theory and practice, and in order to be successful you will need to demonstrate high levels of analytical, critical and reflective skills alongside a professional level of practical skills and knowledge.

Teaching methods include:

- lectures,
- whole group information-giving sessions,
- workshops,
- tutorials
- case studies
- practical work
- blended e-learning and
- group critiques

Case Studies

Many of the case studies reflect real-world software applications that practitioners would encounter in industry. Some modules such as Research Methods require students to select a research paper in an appropriate area of the subject and to produce a critique thereby providing an opportunity for students to specialize and be up-to-date with emerging trends. The industry-focused nature of the course also means that many if not all the modules will receive at least one invited talk from an IT practitioner in the relevant subject area

Practical work

The practical work will reflect real-world techniques that practitioners would encounter in industry. For example modules such as Machine Learning and Deep Learning have been developed to provide hands-on experience for developing AI models.

Teaching and learning on the course is underpinned by the research and development activities of the course team. The vast majority of teaching staff hold PhDs. Several members are Professors / Associate Professors.

The industry-focused nature of the course also means that there shall be at least one invited talk from an expert in the relevant subject area. For example, areas where our Industry advisors have indicated an interest include: Deep Learning Institute (NVIDIA), Data Warehousing (Oracle); Heathrow Airport Innovation Unit ; User-Centred Design (Siemens); Amazon Web Services (AWS).

Blended E-Learning

University of West London uses the E-Learning Platform – Blackboard – <http://online.uwl.ac.uk>. The School of Computing and Engineering is particularly interested in the application of blended learning models within the University. Additionally through the Blackboard system we use Turnitin, which is an e-assessment tool for electronic submission and plagiarism detection. It can also be used for electronic marking and electronic feedback. On these courses the use of Blackboard will comprise the following:

- Delivery and availability of materials – from module study guides, lecture notes and other materials
- Use of discussion forums and peer working to establish a cohesive learning community
- Subject support via email response.
- Electronic submission of written material, plagiarism detection and electronic feedback on major pieces of work

Assessment Strategy

Assessment is designed, where possible to simulate the variety of tasks that graduates from the course may encounter in relevant employment. Assessments contain clear goals that are relevant to in-job requirements. Through our Industry Consultative Committee our assessment strategy is continuously revised so it remains current and in line with industry expectations.

Graduates from this course will be employed in a variety of roles such as Data Scientist, Robotics Programmer, Machine Learning Researcher, Data Mining Analyst, and Software Engineer. In these roles, graduates will be expected to produce deliverables such as Program code and Technical product evaluations. Therefore, the assessment strategy supports the student with providing them appropriate experience.

Where necessary other academic assessment devices (such as a formal examination, defence of the proposal etc.) are also used.

The timings of all the assessments for the course are shown in the module study guides for each of the modules.

Module tutors are the assessors in the majority of cases, however peer and self-assessment are both used where appropriate.

Assessment types include:

- systems analysis and design and the production of appropriate artefacts
- presentations to tutors and peers
- development of design specifications
- research seminars
- critiques of own and peer work
- closed book examination
- annotated bibliography
- defence of a proposal

- written proposal
- major implementation project
- examinations

The assessment material for each module will be distributed to the students at the commencement of the module. This material will include a complete set of requirements and dates for completion as well as a marking scheme and associated performance criteria.

Assessment details for each module are recorded with the modules themselves.

During the delivery of each module students will receive feedback on their performance on class exercises. These exercises will not normally be graded for assessment purposes. However, the work completed during these exercises may form part of the work to be handed in for the module assessment at the completion of the module.

The overall assessment schedule is therefore governed by the fact that assessments' specifications are presented to the students at the start of each module and the assessed work is required to be completed by the end of the module. Modules also have feedback points stated in the Module Study Guides, where feedback will be given on particular interim assessment products.

Students are advised to take advantage of this formative assessment rather than be tempted to start on the assessment only at the end of the module.

11. Formal and Informal Links with External Organisations/Industrial Partners:
what opportunities are there for me to interact with professional contacts?

The School of Computing and Engineering is in constant contact with industry. This course benefits from these contacts and other ongoing engagements through knowledge transfer projects. In addition, to the committee above, our ongoing industrial projects provide academics and students for rich and new insights on the development and implementation of new knowledge in Artificial Intelligence and Machine Learning.

12. Admissions Criteria: *what qualifications and experience do I need to get onto the course?*

<ul style="list-style-type: none"> • UCAS Tariff (UG only) • Subject-specific requirements • Additional information 	<p>A degree (at least 2:2) in a computing subject, business or an engineering degree with a significant level of computing. Applicants with other qualifications will be considered, provided they can demonstrate significant, relevant work experience and the ability to benefit fully from the course. The key considerations for admissions in these cases will be focused on length of service in specified and relevant roles to the course, cogent motivations in line with a career plan and demonstration of transferable skills applicable to this course.</p>
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	The process of application for such applicants will be considered on an individual basis: first their motivation statement will be assessed in terms of the above considerations and more information will be required about these if needed. Second, if still necessary after the first assessment, the applicant will be invited for an interview. Some optional modules may not be available to students without a first degree in computing.
Arrangements for Recognition of Prior Learning	Recognition of Prior Learning is not applicable.

13. Student Support Arrangements: *what kinds of academic and pastoral support and advice are available?*

STUDENT SUPPORT
<p>Throughout their course of study, each student will have access to a variety of sources of support depending on individual circumstances and needs. Apart from the University-wide support framework, which encompasses the course leaders, the module leaders, the personal tutors, in-course learning skills development and Personal Development Planning (PDP), all students will have at their disposal a variety of different support systems which depend on the nature of the course.</p> <p>The development of learning skills includes such techniques and activities as critical appraisal, reflection, literature searching, information technology, peer review, group work, presentation, research, practice/professional skills, note-taking, writing skills, electronic information retrieval, communication skills and independent study at home. These skills will be an integral part of learning courses.</p> <p>Students are expected to participate in an induction. This will introduce them to the requirements of their course of study and will provide an opportunity to receive all the relevant course documentation, visit the Library and meet and discuss requirements and expectations of their planned learning experience with the course team.</p> <p>The following student support services are available for students:</p> <ul style="list-style-type: none"> • Careers and Employment Services • Advice Team • Accommodation Team • Counselling • Students' Union <p>The Engagement Service is available to all UWL students working at any level and on any course. The Service offers easily accessible support so that students can reach their full potential.</p> <p>Academic Support Opportunities include:</p> <ul style="list-style-type: none"> • Daily Academic Drop-in Support • Academic Skills workshops • Peer Mentor Pairing

- Maths Support

Daily Academic Drop-in Support

The Drop-in Support Sessions offer daily opportunities for students to seek guidance and academic support with no appointment required. The Drop-in Support sessions provide students with an easily available space and opportunity to seek solutions and gain personal academic advice whenever needed. Students attend to both overcome challenges and to build on their success. Many report that attending a drop-in has helped to dramatically reduce their anxiety and raise their confidence.

Academic Skills Workshops

The Academic Skills workshops are delivered throughout the year, helping students to develop skills relevant to their degree. Some aspects of a student's course may be challenging, or the student may have been out of education for some time. The workshops have been developed so that they include a theoretical element followed by an hour of supported practical study, where the theory can be applied, and questions asked. Examples of workshops include: Essay Writing, Time Management and Organising Your Studies, Report Writing, How to Write Critically, Group Work and Presentation Skills.

Peer Mentoring

Peer mentoring offers students the opportunity to be paired with another student, studying within the same academic school, who can support them by sharing their own experiences of the course and UWL. Students can request a mentor and it has been shown to be one of the best ways to help students acclimatise to university life and maximise their student experience, academically and socially. Students are paired with a peer mentor who can share their experience and provide another perspective on the School, the subject area and the course through regular meetings.

As student's progress through their course they can also volunteer to be peer mentors and support other students. Peer mentoring is highly valued by many employers and is a highly rewarding experience for all involved.

Maths Support

UWL students face varied maths challenges on their courses so UWL has enhanced the support available. A Maths specialist offers sessions to students from across the University. Support sessions are available 1:1 or in groups and allow students to ask further questions relating to the taught material during lectures, to bridge their gaps in knowledge and cement their understanding of mathematical concepts, numeracy and statistics.

Further course specific information:

Induction: To prepare students for the MSc course and to introduce students to the University, an induction will be run for each intake. This will include an introduction to:

- a) the course, providing an opportunity to receive all the relevant course documentation,
- b) University and course specific regulations
- c) the library and library services
- d) the requirements and expectations of students and staff throughout the course

e) student support services

Arrangements for the support of postgraduate students will be contained in the relevant Course Handbook.

UWL support roles:

Students are treated like any others and have full access to the assigned university facilities.

Course leader: Academic lead with overall responsibility for the higher education course, including quality assurance, teaching, learning, assessment, preparation of modules results for exam board, coordination for end point assessment.

Module leaders: who are the first point of contact for the operation of modules

Personal tutor: The UWL personal tutor scheme applies to all students. A personal tutor offers pastoral support and guidance on matters relating to the student's academic progression and choices, understanding assessment and feedback, translating feedback into tangible actions to take forward to the next assignment, producing academic development plans and other matters arising.

14. Assessment Matrix: a list of all the assessments on the course, along with how much they count for and where they come in the year.

Module Title and Code	Core /Optional (write C or O)	Credit	Assessment Type (choose from the dropdown list)	Weighting (%)	Overall pass mark	Minimum percentage (PSRBs and Apprenticeships only)	Apprenticeships Only: contributes to 'End-Point Assessment' (write YES or NO)	Submission: Week Number (indicative)
Level 7:								
Artificial Intelligence CP7NEW	C	20	<i>Written assignment</i>	50	50			11
			<i>Written examination</i>	50	50			13
Machine Learning CP70066E	C	20	<i>Written assignment</i>	100	50			13
Deep Learning CP7NEW	C	20	<i>Written assignment</i>	100	50			13
Research Methods CP70011E	C	20	<i>Written assignment</i>	100	50			13
Dissertation CP70017E	C	60	<i>Written assignment</i>	100	50			14

Module Title and Code	Core /Optional (write C or O)	Credit	Assessment Type (choose from the dropdown list)	Weighting (%)	Overall pass mark	Minimum percentage (PSRBs and Apprenticeships only)	Apprenticeships Only: contributes to 'End-Point Assessment' (write YES or NO)	Submission: Week Number (indicative)
Big Data Analytics CP70065E	O	20	Written assignment	40	50			7
			Written assignment	60	50			14
Computer Vision CP7NEW	O	20	Written assignment	100	50			13
Responsible AI CP7NEW	C	20	Written assignment	100	50			13

15. External Examiner Arrangements: *who checks the standards and quality of the course?*

External examiners are attached to all modules as per the university regulations. They are responsible for assessing the quality of the programme and the consistency of standards across all levels.

External examiners are selected on the basis of their subject expertise and are subject to scrutiny by a division of the University's Academic and Quality Control Department – External Examiner's Advisory Committee (EEAC).

PART B: Key Information

1.	Awarding Institution	University of West London
2.	UWL School/College	SCE
3.	Subject Area within School/College	Computing
4.	Academic Partners and type of arrangement	University of West London RAK Branch Campus
5.	Course recognised by	NA
6.	Sites of delivery	University of West London RAK Branch Campus
7.	Modes and duration of delivery	Full time (12 months)
8.	Sequencing	<i>September only start</i>
9.	Final enrollable award(s)	MSc Artificial Intelligence
10.	Level of final award	7

11.	Credit for final award (CATS and ECTS)	MSc = 180 CATS/90 ECTS		
12.	Exit awards and credits	Postgraduate Certificate in Artificial Intelligence (60 credits) Postgraduate Diploma in Artificial Intelligence (120 credits)		
13.	UCAS code(s) (UG programmes)			
14.	QAA Subject Benchmarking Statement	Masters Degree in Computing 2011 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-masters-degree-computing.pdf?sfvrsn=c490f681_16		
15.	Apprenticeship Standard title and code	NA		
16.	Course-specific Regulations	UWL Standard Regulations apply		
17.	Language of study	English		
18.	Original approval Date		Last Revision Date	

PART C: Record of Approved Amendments

Use the following table to list all amendments made to the programme between approval/review events. Add rows as necessary.

Approved Amendments to Course Specification since original approval/last review					
Course Specification Title	Module Level and title	Brief Outline of Amendment	Approval by School/College Quality Committee	Approval effective from	Student cohort affected
<i>Specify award titles/routes affected by change</i>			<i>Date and meeting minute</i>		<i>e.g. students entering Level 5 from AY2018</i>