COURSE SPECIFICATION

Course Aim and Title	BSc (Hons) Artificial Intelligence
Intermediate Awards Available	BSc, DipHE, CertHE, University Certificate
Teaching Institution(s)	Ain Shams University, Cairo, Egypt
Alternative Teaching Institutions (for local arrangements see final section of this specification)	N/A
UEL Academic School	Architecture, Computing and Engineering
UCAS Code	N/A
Professional Body Accreditation	N/A
Relevant QAA Benchmark Statements	Computing
Additional Versions of this Course	N/A
Date Specification Last Updated	July 2020

Course Aims and Learning Outcomes

This Course is designed to give you the opportunity to:

- Provide the students with the ability to make a critical evaluation of the theories, techniques, tools and systems used in this field and associated areas of artificial intelligence.
- Prepare students to specialize in artificial intelligence and knowledge engineering, as well as the development of computational and engineering models of complex cognitive and social behaviours.
- Provide students with selected specialized areas of study so that they can experience the frontiers of practice and research in information technology.
- Prepare students for research in the fields of computer science and artificial intelligence.

What you will learn:

Knowledge

- Understand the current and underlying technologies that support computer processing and inter-computer communication.
- Understand the underlying mathematical foundations of computing, including logic, discrete mathematics, computability, and complexity.
- Recognize the principles and techniques of several application areas

informed by the research directions of artificial intelligence.

- Show a critical understanding of the principles of artificial intelligence, genetic algorithms, intelligent autonomous robotics, computer vision and game theory.
- Demonstrate basic knowledge and understanding of a core of analysis, algebra, statistics, electronics, physics, and formal languages.
- Know the tools, practices and methodologies used in the specification, design, implementation, and critical evaluation of artificial intelligence.
- Develop an understanding of the theory, practice and trends of more advanced computing topics.
- Recognize the legal, ethical, and social responsibility of computer scientists.

Thinking skills

- Make decisions on appropriate modelling and design of computer-based systems and intelligent machines for the purposes of comprehension, communication and prediction.
- Analyze criteria and specifications appropriate to specific problems and plan strategies for their solution.
- Analyze the extent to which a computer-based system or intelligent machine meets the criteria defined for its current use and future development.
- Deploy appropriate theory, practices and tools for the evaluation of computer-based systems.
- Identify relevance of the professional, moral and ethical issues involved in the exploitation of computer technology.
- Perform critical evaluation of alternative designs and solution techniques for a wide range of problems.
- Assess current research work and undertake independent research.
- Evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem.

Subject-Based Practical skills

- Design programs of varying levels of complexity using a number of different programming languages and paradigms, for example object-oriented programming, logic programming, functional programming and imperative programming.
- Use many computing tools and techniques, such as database, web-based and graphic tools and genetic algorithms, intelligent robotics and pattern recognition.
- Analyse computing problems and devise appropriate solutions to them.
- Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.
- Apply quantitative analysis techniques appropriately and effectively
- Use mathematics for solving problems and modeling solution.
- Deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the

whole process involved in the effective deployment of computers to solve practical problems.
- Operate computing equipment effectively, taking into account its logical and physical properties.

Skills for life and work (general skills)
- Collaborate effectively within multidisciplinary team.
- Work in stressful environment and within constraints.
- Prepare technical reports to a professional standard.
- Lead and motivate individuals.
- Work both individually and as part of a team to develop and deliver quality software artifacts.
- Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.
- Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for lifelong learning.
- Demonstrate critical thinking.
- Show analytical thinking and the ability to solve problems.

Learning and Teaching

Knowledge is developed through
- Guided reading
- Attending lectures / guest presentations
- Knowledge-based activities with feedback
- Online discussions and activities
- Preparation for examinations and timed controlled assignments

Thinking skills are developed through
- Reflective activities with feedback
- Tutorial activities and discussions.
- Online discussions and activities
- Preparation of coursework assignments

Practical skills are developed through
- IT activities with feedback
- Research skills-based activities with feedback
- Seminar preparation and presentations
- Applying technical regulations to given scenarios
- Application to real life and simulated case studies

Skills for life and work (general skills) are developed through
- The demands of the study medium

- Planning activities with feedback
- Project and team work
- Using specialist ICT and software

Assessment

The assessment methods to achieve the different learning outcomes are as follows:

Knowledge is assessed by

- Project work
- Coursework
- Reports
- Examinations
- Individual oral presentations

Thinking skills are assessed by

- Project work
- Coursework
- Time controlled assessments
- Individual oral presentations

Practical skills are assessed by

- Project work
- Practical reports
- Portfolio completion
- Timed controlled assessments

Skills for life and work (general skills) are assessed by

- Project work
- Group work
- Coursework

Students with disabilities and/or particular learning needs should discuss assessments with the course leader to ensure they are able to fully engage with all assessment within the course.

Work or Study Placements

We encourage full time students to seek work experience during their academic course, especially during the summer vacations period.

Course Structure

The Course follows the British system: One academic year covers 120 credits.
All courses are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

3 Equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree course.
4 Equivalent in standard to the first year of a full-time undergraduate degree course.
5 Equivalent in standard to the second year of a full-time undergraduate degree course.
6 Equivalent in standard to the third year of a full-time undergraduate degree course.
7 Equivalent in standard to a Masters degree.

Courses are made up of modules that are each credit weighted.

The course structure of this course:
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Level	Module Code	Module Title	Credit Weighting	Core/Option	Available by Distance Learning? Y/N
4	AS4001	Fundamentals of Programming	20	Core	N
4	AS4002	Mathematics for Computer Scientists	20	Core	N
4	AS4003	Digital Design and Computer Architecture	20	Core	N
4	AS4005	Mental Wealth: Professional Life 1 (Database Systems and Reports)	20	Core	N
4	AS4041	Statistics and Algorithms Design	20	Core	N
4	AS4042	Software Engineering & Human-Computer Interaction	20	Core	N

5	AS5006	Computer Networks and Operating Systems	20	Core	N
5	AS5043	Mental Wealth: Professional Life 2 (Computer Ethics and Parallel Programming)	20	Core	N
5	AS5044	Cognitive Sciences	20	Core	N
5	AS5045	Artificial Intelligence and Machine Learning	20	Core	N
5	AS5046	Computer Graphics and Image Processing	20	Core	N
5	AS5047	Internet of Things and Cloud Security	20	Core	N
6	AS6048	Robotics Vision and Learning	20	Core	N
6	AS6049	Numerical Methods and AI Robotics	20	Core	N
6	AS6050	Game Theory and Reasoning	20	Core	N
6	AS6051	Advanced AI Analytics	20	Core	N
6	AS6020	Mental Wealth: Professional Life 3 (Project)	40	Core	N

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, in order to create the best learning experience.

Additional details about the course module structure:

A core module for a course is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a course is a module selected from a range of modules available on the course.

The overall credit-rating of this course is 360 credits. If for some reason you are unable to achieve this credit you may be entitled to an intermediate award, the level of the award will depend on the amount of credit you have accumulated.

Course Specific Regulations

N/A

Typical Duration

This is a full-time study course. The minimum allowed study duration is 3 Years / 6 terms.

Further Information

More information about this course is available from:

- The ASU web site (http://cis.asu.edu.eg/).
- The course handbook.
- Module study guides.
- For further information, contact the CHP via email: (CHP@cis.asu.edu.eg)

All faculty of Computer and information sciences, Ain Shams University courses are subject to thorough course approval procedures and quality check by the National Authority for Quality Assurance and Accreditation in Education (NAQAAE) before we allow them to commence. We also constantly monitor, review and enhance our courses by listening to student and employer views and the views of external examiners and advisors.

Additional costs:

- Tuition fees, set per 120 credits, are specified yearly by the University administration based on the recommendation of the course administration council and the approval of the council of the faculty of Computer and Information Sciences.
- The student will sign a pledge to abide by the educational service charges proposed by the faculty, and approved by the university, with the commitment of timely payment of fees from admission until graduation.
- Tuition fees are paid every year (the first semester of each year) based on 120 credits registered by the student.
- The educational service fees for the Summer semester are determined separately.

Alternative Locations of Delivery

N/A