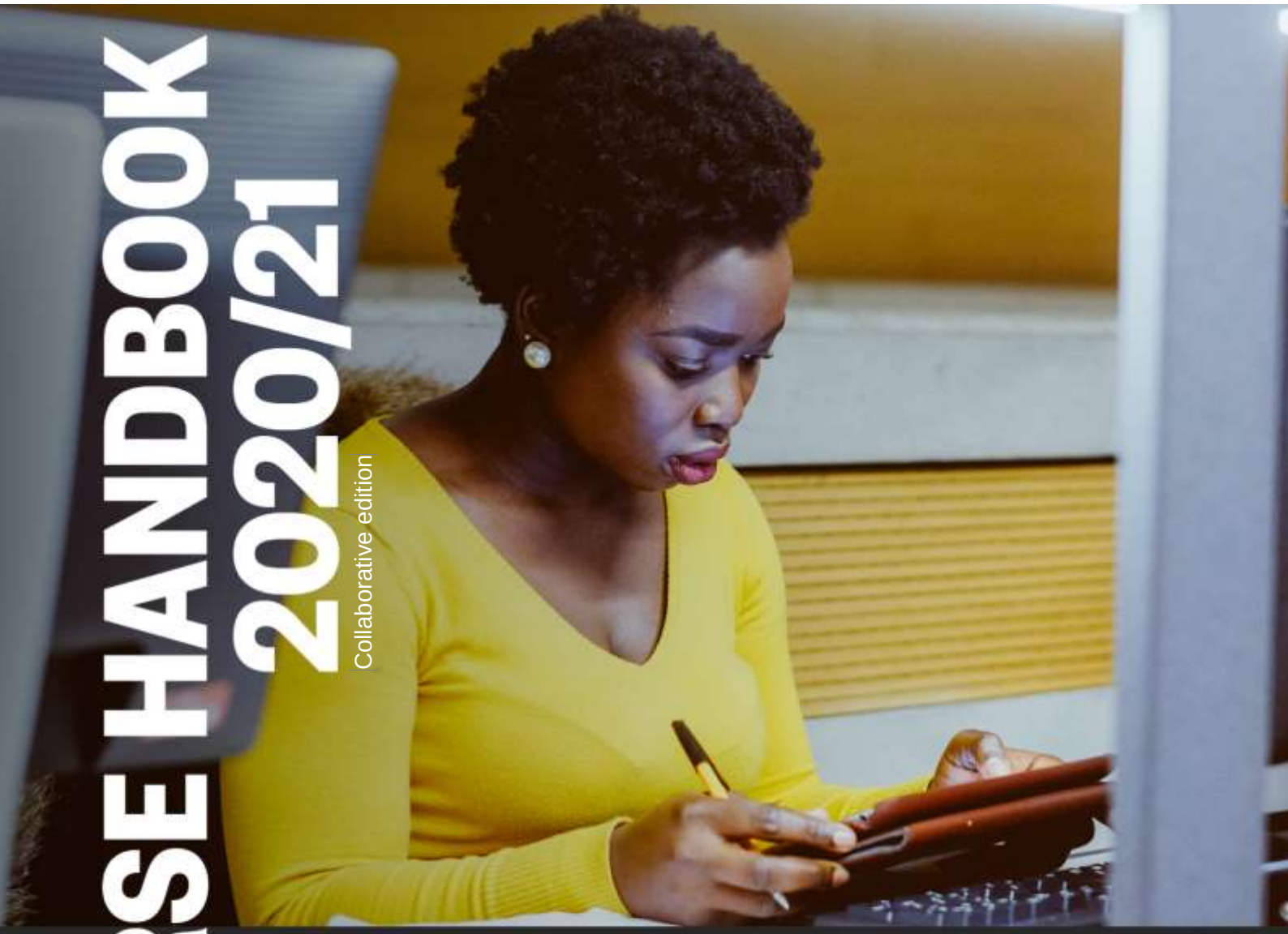
BSc (Hons) in Artificial Intelligence

FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU)



COURSE HANDBOOK 2020/21

Collaborative edition

University of East London

INTRODUCTION / WELCOME FROM THE PRINCIPAL

Credit Hour Programs – Faculty of Computer and Information Sciences are ones of the leading specialized programs in Computers and Information established in Egypt which offer high-quality and standard-based education. The FCIS – CHP aim to make progress in ICT in tandem with the information revolution and the knowledge economy, both at the level of development of the current recent industrial and society needs, and at the concept of professional education, including curricula and applied materials taught to students, computer labs and specialized training. The FCIS – CHP learning environment focuses on enhancing the students' knowledge, practical and transferrable skills according to the latest recent learning and technological trends.

To ensure leadership and offer our students the best progressive careers, the faculty holds close relationship with industrial and international partners. The faculty regularly holds its annual employment day, scientific conference, and various events and programs to help its students and researchers develop their technological and research capabilities, in addition to their personal skills.

Today, FCIS – CHP extend their success by providing a dual award of BSc (Hons) in its programs. Students enrolled onto the dual award Course means that they are students of FCIS – ASU, and also students of the Department of Engineering and Computing at the University of East London (one of the leading modern Universities in the UK for Engineering and Computing). The development of professionalism and career prospects that are fundamental aspects in UEL 2028 vision and in alignment with ASU ethos is guaranteed through well integrated mental wealth modules at the different levels of your Course. Both institutions work together, now and continuously, to ensure the quality and standards of the Course on which you are registered.

This handbook is intended for all students taking the BSc (Hons) **Artificial Intelligence** dual award from ASU and UEL. You will find it a useful information guide at the start and during your study in the Course (Program).
We trust that you will benefit and enjoy studying with our new programs and we warmly welcome you to FCIS – CHP.

Sincerely,
Prof. Dr. Nagwa Badr
(Dean of Faculty of Computer & Information Sciences - Ain Shams University)
Assoc. Prof. Dr. Sherine Rady
(CHP Director, Faculty of Computer & Information Sciences - Ain Shams University)

INTRODUCTION TO THE COURSE

Course Duration and Modes of Study

The dual award BSc (Hons) Artificial Intelligence Course is a 3-year full-time course. The Course offers dual awards of Bachelor of Science Degree from both Ain Shams University and the University of East London.
The minimum allowed study duration is 6 main semesters. The maximum allowed study duration is 8 main semesters (4 years).

Course Aims and Objectives

The BSc (Hons) Artificial Intelligence Course focuses extensively on computer science with a strong emphasis on artificial intelligence. The AI Course aims to prepare graduates with the ability to program the machine to simulate the human mind and how it works, such as its ability to think, discover and benefit from previous experiences. The AI Course is concerned with the notion to develop the students' ability to make a critical evaluation of the theories, techniques, tools and systems used in this field. The Course allows 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.

Course Intended Learning Outcomes (ILOs)

The graduates of the Artificial Intelligence Course should be able to:

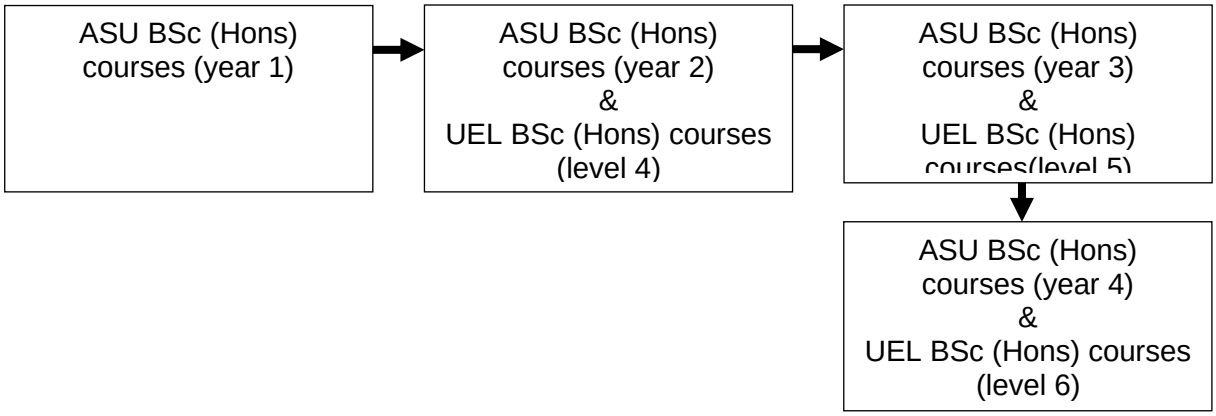
- Understand the current and underlying technologies, mathematical foundations, principles and techniques that support computer processing and inter-computer communication.
- Show a critical understanding of the principles of artificial intelligence and several fields related to it.
- Know the tools, practices and methodologies used in the specification, design, implementation, and critical evaluation of artificial intelligence.
- Make decisions on appropriate modelling and design of computer-based systems and intelligent machines for the purposes of comprehension, communication and prediction.
- Analyse the criteria and specifications appropriate to specific problems and plan strategies for their solution and 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.
- Design programs of varying levels of complexity using several different programming languages and paradigms.
- Use many computing tools and techniques, such as database, web-based and graphic tools and genetic algorithms, intelligent robotics and pattern recognition.

- Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context and apply quantitative analysis techniques appropriately and effectively.
- Use mathematics for solving problems and modelling solution.
- Deploy effectively the tools used for the construction and documentation of computer applications and operate computing equipment effectively, taking into account its logical and physical properties.
- Collaborate effectively within multidisciplinary team.
- 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 and demonstrate critical thinking.

Course Structure & Content

The Course conforms to UEL's Academic Framework structure for dual degree Courses. All modules will be taught by ASU academics in the Faculty of Computer and Information Sciences at Ain Shams University.

COURSE STRUCTURE



The Course structure can be seen in Table 2.1 (module codes are subject to change).

Table 2.1 BSc (Hons) Artificial Intelligence Course Structure

Level	Year	Code	Module Title	Credit	Core/Option
4	2	AS4001	Fundamentals of Programming	20	Core
4	2	AS4002	Mathematics for Computer Scientists	20	Core
4	2	AS4003	Digital Design and Computer Architecture	20	Core
4	2	AS4005	Mental Wealth: Professional Life 1	20	Core

			(Database Systems and Reports)		
4	2	AS4041	Statistics and Algorithms Design	20	Core
4	2	AS4042	Software Engineering & Human-Computer Interaction	20	Core
5	3	AS5006	Computer Networks and Operating Systems	20	Core
5	3	AS5043	Mental Wealth: Professional Life 2 (Computer Ethics and Parallel Programming)	20	Core
5	3	AS5044	Cognitive Sciences	20	Core
5	3	AS5045	Artificial Intelligence and Machine Learning	20	Core
5	3	AS5046	Computer Graphics and Image Processing	20	Core
5	3	AS5047	Internet of Things and Cloud Security	20	Core
6	4	AS6048	Robotics Vision and Learning	20	Core
6	4	AS6049	Numerical Methods and AI Robotics	20	Core
6	4	AS6050	Game Theory and Reasoning	20	Core
6	4	AS6051	Advanced AI Analytics	20	Core
6	4	AS6020	Mental Wealth: Professional Life 3 (Project)	40	Core

Modules are allocated credits, with each year consisting of 120 credits. Over the three years this will give a total of 360 credits.

The credits for a module indicate the time a student will need to spend on a module (either in classes or in self-study), with 10 student hours for each unit of credit. Therefore, a 20-credit module will map onto 200 student hours for example. The final Graduation Project is a 40-credit module that is delivered over two semesters.

All modules are core, which means that they must all be passed in order to gain the final BSc (Hons) Artificial Intelligence Award.

KEY STAFF, CONTACT DETAILS AND STAFF ROLES

The Key Staff and Contact Details are correct at point of publication. You will be notified of any changes.

Prof. Dr. Nagwa Badr
Dean of Faculty of Computer and Information Sciences - Ain Shams University
fcisdeanoffice@gmail.com
nagwabadr@cis.asu.edu.eg

Assoc. Prof. Sherine Rady
AI Course Leader and Contact Link ASU – FCIS
chp@cis.asu.edu.eg
srady@cis.asu.edu.eg

Dr. Mahmoud Mounir
AI Course Coordinator
dina.elsayad@cis.asu.edu.eg

Dr. Yasmine Afify
Academic Advisor
yasmine.afify@cis.asu.edu.eg

Mr. Mohamed Ayad & Mr. Amr Abdel Azim
AI Course Secretary and Students' Affairs
info.chp@cis.asu.edu.eg

Dr. Sin Wee Lee
Head of Partnerships, School of Architecture, Computing and Engineering, UEL
sinwee@uel.ac.uk

Students' Affairs Inquiries: +20-02-26855585 (ext.: 323)

Other Inquiries: +20-02-26855585 (ext. 174)

chp@cis.asu.edu.eg

UEL Academic Partnership Office:
+44 20 8223 2463 (apo@uel.ac.uk)

Link to the Student Handbook page for When to Contact UEL Directly:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/When-to-Contact-UEL-Directly.aspx

COURSE OPERATION AND STUDENT REGISTRATION

Course Delivery

At level 4, there will be a reliance on traditional methods of delivery consisting of a lecture Course with tutorial support. In addition, other methods of delivery, such as Computer Underpinned Learning or research-based tasks, may be used; these styles are more student-centred and put more responsibility onto the students to achieve the intended learning outcomes.

Certain modules at level 4 lend themselves to group working and assessment or operate in a mode where written examinations are less appropriate. The Course team is very experienced in group assessment via its successful workshop modules.

At levels 5 and 6, whilst certain modules are delivered by traditional methods, there is more reliance on student-centred learning. Several modules take the opportunity to introduce students to research methods and encourage investigation of current published work.

You will be allocated to a tutorial group for each module of study. You are required to attend the group for which you are registered, and you may not attend an alternative group informally.

Assessment Regulations

The Module Handbooks each give detailed breakdowns of the weightings and volume of assignments. For a formal description of the assessment process you should refer to the Academic Framework Module Regulations at: ***www.uel.ac.uk/academicframework/***.

Assessment Boards

Assessment Boards control and consider all assessments undertaken by students. The Board comprises a Chair, all those substantially involved as tutors and/or examiners and the external examiner(s). For more detailed information about the terms of reference of Assessment Boards within the Academic Framework Modular Regulations, please see details at ***www.uel.ac.uk/academicframework/***

Examinations and other assessments undergo a rigorous quality assurance process as follows:

- Module lecturers write the questions and produce solutions with marking schemes.
- Another lecturer checks the assessment questions, solutions and marking scheme.
- Copies of the assessment questions, solutions and marking scheme are sent, via the University of East London, to one of the External Examiners for checking and approval.
- Following the examinations, student answers are marked by the module lecturers.
- A sample of students' marked work is reviewed for accuracy by another lecturer.

- Marked samples of student submissions are sent to the University of East London for review.
- External Examiners visit the University of East London and check the students' work and the lecturers' marking.
- The results are considered at assessment boards at the University of East London.

Course Organisation

The organisation and administration of the Course will be carried out through the following:

The Dean of FCIS

Prof. Dr. Nagwa Badr is the Dean of FCIS - ASU. She has overall responsibility for maintaining the high standards of quality and innovation in all the academic teaching and research activities.

The Course Leader

Assoc. Prof. Sherine Rady is the Course Leader for the BSc (Hons) Artificial Intelligence Course. The Course leader coordinates the day-to-day business of Course and has overall responsibility for students on the Course. The role of the Course leader is to ensure guidance and support for the Course and students through the Course duration and is the first port of contact when Course level issues occur. The Course leader's responsibility is to resolve any issues that may arise at the Course level and will mediate between module leaders & the academic support team to drive and resolve Course level issues. For problems at a particular module, which have not been resolved by talking to the Module Leader, the matter should be brought to the Course Leader to resolve. Course Leaders are also responsible for liaison with Course Representatives for the year. They also have other duties, which vary from year-to-year and are often connected with quality improvement projects.

The Course Coordinator

Dr. Dina Elsayad is the Course Coordinator for the BSc (Hons) Artificial Intelligence Course. The Course coordinator is responsible for ensuring that the Course is efficiently running in terms of student and staff time and all assessment tasks (coursework, examinations, etc) are appropriately handled according to submission dates and mapped to the Course and Modules' learning outcomes. She is additionally responsible for meeting the proper delivery of formative and summative feedbacks to students. Course coordinator is additionally accountable for the delivery and the academic management of all modules of the Course.

The Module Leaders

Module Leaders are responsible for delivery and academic management of the module, including all module assessment tasks. The module leader is responsible for the delivery of an individual module and is tasked with providing the students with the necessary lecture and tutorial material and assessing the work submitted. They are also responsible for the module accompanied assessment criteria, tasks guidelines, submission dates and ensuring the information regarding return of work to be clearly published to students. As far as possible, any problems or questions concerning individual modules should be addressed to the Module Leader. General academic advice can also be obtained from them.

The Course Management Team

The Course Management Team consists of the Course Leader, Course Coordinator, Module Leaders, School Administrators, and the Student Representatives. They are collectively responsible for day-to-day running of the Course. The team forms Course committees who hold regular meetings to discuss any issues that arise throughout the academic teaching and/or other subjects and these happen at least once per term.

External Examiners

External Examiners are responsible for providing an independent check that proper standards are being maintained and are allocated to modules by subject area. They review each piece of assessment before it is available to students, review samples of work each semester, and review student feedback and results.

Circumstances in which student can access UEL directly

You will find that for most issues that arise during your studies academic and administrative staff at your location of study will be able to help, and further details are provided in this handbook. If, however you have concerns that lie outside the remit of these staff you can contact the UEL link person [see further details below] in the first instance who will be able to re-direct your enquiry as appropriate.

The UEL Academic Link Tutor is appointed to manage the relationship between the Course Leader at ASU-FCIS and UEL. Students may meet the UEL link person at Course committee meetings.

Please contact your local Student Support/Administrative Office if you have any queries, in the first instance. If you have been advised by your local office to contact UEL then please send an e-mail to the contact UEL then please send an e-mail to the UEL Academic Partnerships Office at apo@uel.ac.uk.

Study Timings and Registration

The academic year comprises two semesters:
 First main semester (Fall): Begins early September and lasts for 15 weeks.
 Second main semester (Spring): Begins early February and lasts for 15 weeks.

- There is also an optional **summer semester** before the academic year, which begins late June and lasts for 7 weeks.
- New students' enrolment in the Courses starts two weeks before the starting of the Fall semester, after fulfilling all the Courses requirements and paying the enrolment fees, as recommend by the Courses Administration Council and set by the Council of the Faculty of Computer and Information Sciences.
- Registration for any semester takes place within two weeks before the starting day of the semester. Registration is not final until the full tuition fees of the semester are paid.
- Registration in the Summer semester is optional.
- The student must register 60 credits per semester. Registration is not final until the student pays the educational service fees for the semester.
- The student may register in the Summer semester in a maximum of two modules, unless it results in graduating the student conditional the approval of the academic advisor.
- Students enrolled in disciplinary program (formally known as mainstream) can transfer to CHP following the faculty transfer rules. In-between CHP transfer is also allowed. ASU modules' equivalency will take place for the modules studied in disciplinary programs or in the different CHP programs.
- The Course academic regulations are available at http:// chp-cis.asu.edu.eg/index.php/important-bylaw-regulations/
- The Local Attendance and Engagement policy is available at http:// chp-cis.asu.edu.eg/index.php/important-bylaw-regulations/
- UEL University's academic regulations are available at https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations

It is essential that you log in to UEL's web-based student record system, **UEL Direct**, and enrol with UEL using the UEL student number that you have be given prior to attending any lectures.

Once you have gained admission to the Course, you must login to the UEL direct page using your student username which will be your UEL ID number and password and complete the on-line enrolment. ASU – FCISwill assist and ensure that you complete your online enrolment task promptly. UEL Direct is available at https://www.uel.ac.uk/students.

For general enquiries concerning enrolment, you must contact your local Student Support/Administrative Office for guidance in the first instance and then if you are advised to contact UEL, please send an e-mail to the UEL Academic Partnerships Office at apo@uel.ac.uk.

Once you have gained admission to the course you must login to the UEL direct page using your student username which will be your UEL ID number and password and complete the on-line enrolment. FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU) will assist and ensure that you complete your online enrolment task promptly. UEL Direct is available at https://www.uel.ac.uk/students (click on ‘new students’)

For general enquiries concerning enrolment, you must contact your local Student Support/Administrative Office for guidance in the first instance and then if you are advised to contact UEL, please send an e-mail to the UEL Academic and Employer Partnerships Office at apo@uel.ac.uk.

EQUALITY AND DIVERSITY

ASU Equality and Diversity Strategy

- ASU commits to ensuring equality and diversity in its campus. Equality is ensured for everyone regardless any grounds of discrimination such as gender, age, colour, disability and religion.

- ASU supports a safe environment for both working and studying. The university environment must be free of bullying, harassment, and any form of discrimination. Any act of the aforementioned will not be tolerated, and any complaints will be taken seriously. Anyone who feels being subjected to these acts is encouraged to raise complaints.

- All academic staff members, students and employees are supposed to treat each other with mutual respect and fairness. Everyone should respect the presence of individual differences, diversity in culture, personal opinions and beliefs.

- Equal opportunities and access to facilities are allowed for all staff and students. Each staff member or student is given full support to develop their skills and talents. Selection for employment, promotion, training, or any other benefits will be based on aptitude and ability.

Link to the UEL Equality and Diversity Strategy**:**https://www.uel.ac.uk/-/media/main/images/about/temp_governance_prototype/polices-and-regulations/students/equality-and-diversity-policy-090615.ashx?la=en&hash=A1327CCC49248602E7683F626D9606B64550B646

COURSE MANAGEMENT

- Students' support and guidance are provided through a range of resources. A welcome and induction process is starting in their first week, where all students are guided to their Course studies.

- Special attention is paid to the learning management system that helps students and staff members to intercommunicate effectively in terms of course material, assignment, term-work marks … etc.

- The Course's learning management system is setup to have a page for each course studied during the semester. The student can access his courses from the main Course webpage.

- All electronic services provided to the students require the use of university e-mail, hence, it is created automatically for the student when he is first enrolled to the Course, and he retains this e-mail until he graduates.

- The Student Information System (SIS) is the place where students can access all their academic records. It can be reached on the main Course webpage, which also provides brief information about the mission and vision of the Course, and the important dates related to student academic activities.

- Every student is assigned an Academic Advisor who is one of the faculty members and may continue with the student for the whole study duration. The Academic Advisor should follow-up with the student, assist him in selecting courses each semester, and request to place the student under probation for one semester.

- For each hour (lectures or tutorials) the instructor should have an office hour. It could be twice a week for 1.5 hours each. Office hours will be determined in the first class and will be posted on the Instructor's office door.

- Students will be given a student handbook at the start of their Course study.

- Course Committees provide a formal structure for student participation and feedback on their Course of study. Course committees provide a forum in which students can express their views about the management of the Course, and the content, delivery and assessment of modules, in order to identify appropriate actions to be taken.

Students Involvement

There are different facilities that ensure students involvement:

a) <u>Students' Affairs Administration</u>

The students' affairs administration is chaired by the Vice-Dean for Education and Students' Affairs and is located in the faculty administration building. This administration has representatives at the Courses' administration offices (First Floor

of the Extension Building). The secretariat of each Course (at the Courses secretariat office – First Floor of the Extension Building) also collaborates with the previous representatives in accomplishing the following tasks:

- Archiving of the students' files.
- Issuing the students' identity cards.
- Electronic recording of the students' course registration, add/drop, and withdraw.
- Processing the students' course evaluation at the end of each semester.
- Issuing the students' records at the end of each semester.
- Issuing the students' graduation certificates.
- Processing the students' appeals and requests.

b) Students' Union

The students' union is also under the general supervision of the Vice-Dean for Education and Students' Affairs. As part of the Faculty of Computer and Information Sciences, the Courses' students are members in the union and have similar rights and benefits as the mainstream students, including entering the union's yearly elections.

c) Financial Affairs Administration

The Courses' financial affairs administration, located at faculty administration building, is responsible for issuing the payment orders for the students' tuition fees at the beginning of each semester. The administration is also responsible for collecting the copies of the students' payment receipts, which should be presented by the students after making their payment at the Faculty treasury. Students who fail to present copies of the payment to the Courses' financial administration risk having no payment records at the Courses.

d) Library

The Faculty library provides a service specially designed to fulfil the requirements of all academic Courses. It is open for all Faculty members for reference use and borrowing. The faculty has a central library which serves students and researchers in various fields besides the Digital Library to provide an online service for users. There is (1) central library with (3) sections according to the following:

- The student library contains (1405) books.
- The teaching staff hall contains (3430) books.
- Digital Library Hall: The Digital Library serves to provide an online Service for users. It gives online access to the contents of the library, including books and theses. The digital library website: http://srv2.eulc.edu.eg/eulc_v5/libraries/start.aspx.

The students' library has multiple copies of textbooks available for short-term borrowing to students. According to the Computer and Information Sciences Faculties libraries development project, annexed to the Ministry of Higher Education, the library is interconnected through the Internet with all the libraries of Computer and Information Sciences faculties nationwide. Library software system has been

installed which contains all the modules to provide library services to the Faculty community.

e) ASU-FCIS Information Systems

ASU-FCIS has a solid understanding of the importance of information systems in each aspect in the CHP academic environment. Hence, a comprehensive web portal has been created for CHP that has all information and services needed for the students, parents, and staff members. Learning Management System (LMS) is one of the available services at the ASU-FCIS portal for all students mainly to have their course materials posted regularly on it with a dedicated protected access to the courses. More importantly, a comprehensive Student Information System (SIS) is another service that is available on the portal to all parties involved in the system. The student can use SIS to access his academic records, do course registration, request to open courses that are not offered, or even request advising appointment with his academic advisor.

Course Committees provide a formal structure for student participation and feedback on their course of study. Course committees provide a forum in which students can express their views about the management of the course, and the content, delivery and assessment of modules, in order to identify appropriate actions to be taken.

The Committee's terms of reference is provided at:
https://uelac.sharepoint.com/LearningandTeaching/Pages/students-area.aspx

ATTENDANCE AND ENGAGEMENT

Teaching Policy

Language: English language should be used for lecturing, discussions, exams, and all verbal and electronic communications. Use of Arabic language is strictly forbidden even in one-to-one conversation between the instructor and the students.

Module Syllabus: Each module syllabus should contain: module objectives, textbook, outline, material, assessments, grading policy and outcome. Outline should contain sections covered every week with reference to chapters/sections in the textbook. The instructor should give the module syllabus to the students in the first class. The syllabus serves as a contract between the instructor and the students.

Textbook: The instructor is free to select/recommend a textbook, but it should be international and available. The textbook information should be provided to the administration office or the unit head before the first class of the module.

Attendance: Attendance is taken in lecture and tutorial classes. It is assigned a percentage based on the grading policy. Students should not be allowed to enter the class after 5 minutes from the scheduled time. No eating, drinking, or mobile use in the class. If the student wants to leave the class for any reason, he will not be allowed to come back to the class. The student's attendance should not be less than 75% during the course. Otherwise, the student should not be allowed to attend the final exam.

Assignments: Assignments are given every week (spelled out in the course syllabus), preferably from the textbook. Instructors are allowed to drop the least assignment from the grade. The assignment is collected at the end of the tutorial period of the next week. Instructors may grade only selected problems from the assignment. The graded assignment should be returned and discussed with the class.

Quizzes: Unannounced quizzes are given in the tutorials to force the students to study and be ready all time. The quiz is given at the end of the session for 15 minutes max. Up to 6 quizzes can be given and the least one can be dropped from the grade. The graded quiz and the model answer should be returned the following tutorial and discussed with the class.

Exams: One midterm exam should be given. Time should be indicated in the module syllabus. The midterm exam should be given during the 7^{th}-8^{th} week. This exam will be held during lectures/tutorials based on course progress. The graded midterm exam and its model answer should be returned and discussed with the class. The instructor can arrange for a bigger or more suitable room for the midterm exam. The final exam should be a comprehensive exam covering all material. Instructors may select to have all exams open-book or closed-book.

KEY DATES

- **The UEL Academic calendar is available at *https://www.uel.ac.uk/student-life/key-dates***
- **The ASU-FCIS Academic calendar is available at *http:// chp-cis.asu.edu.eg/academic-calendar/***

	ACTIVITY	FROM	TO
FALL 2021	Registration	10/10/2021	23/10/2021
	Classes	16/10/2021	6/1/2022
	Add / Drop	24/10/2021	30/10/2021
	Withdraw	31/10/2021	26/11/2021
	Midterm Exams	27/11/2021	2/12/2021
	Practical Exams	1/1/2022	14/1/2022
	Final Exams	15/1/2022	3/2/2022
	Inter-Semesters Recess	5/2/2022	18/2/2022
SPRING 2022	Registration	13/2/2022	19/2/2022
	Classes	19/2/2022	2/6/2022
	Add / Drop	20/2/2022	4/3/2022
	Withdraw	5/3/2022	5/5/2022
	Midterm Exams	7/5/2022	12/5/2022
	Practical Exams	28/5/2022	9/6/2022
	Final Exams	11/6/2022	30/6/2022
	Co-Op (Summer/ Field Training)	2/7/2022	21/7/2022
SUMMER 2022	Registration	2/7/2022	8/7/2022
	Classes	9/7/2022	1/9/2022
	Add / Drop	9/7/2022	14/7/2022
	Withdraw	16/7/2022	4/9/2022
	Practical Exams	20/8/2022	25/8/2022
	Final Exams	27/8/2022	8/9/2022

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MODULE SPECIFICATIONS

Module specifications define each module of study on the course. They will include **learning outcomes** and the **aims** for each module. These documents form part of the 'definitive' documentation for the course. It is important to note that reading lists and indicative content are likely to change.

Module Specification

Module Title: Fundamentals of Programming	**Module Code:**AS4001 **Level:**4 **Credit:** 20 **ECTS credit:**10	**Module Leader**: Dr. Wedad Hussein
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite: None	**Excluded combinations:** None	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module introduces the main concepts of object-oriented programming (OOP) paradigm. It also familiarizes students with the syntax of an OOP language and improves their programming skills. Also, it provides the students with concepts of the commonly used data structures. Students can employ the OOP concepts and data structures to synthesize an efficient design for simple and medium sized programming problems. It also Improves the teamwork, and self-study skills of students.
The module is taught from first principals and assumes no prior knowledge of the subject.

Main topics of study:

- Introduction to OOP Principles
- Class Templates and Functions
- Stacks
- Queues
- Lists
- Binary Search Trees
- Iterators
- Hash Tables
- The STL
- Graphs and Graph Algorithms
- Priority Queues
- Exception Handling
- Introduction to Basic Algorithm Analysis

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Describe the key object-oriented concepts of encapsulation, abstraction, information hiding, inheritance, and polymorphism.
2. Explain linear and non-linear data structures.
3. Explain data structures with their associated STL containers.

Thinking skills

4. Identify the different implementations (data structures) of the basic abstract data types in terms of storage and processing efficiency. (IC)

Subject-based practical skills

5. Implement classes, class templates, variety of data structures and use the associated STL classes in programs.(COI)
6. Use exception handling.

Skills for life and work (general skills)

7. Demonstrate the ability to efficiently work in teams and independently. (EID, SID)
8. Evaluate different data structures appropriateness to specific applications. (COI)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:

Lectures will be used to introduce the fundamental programming concepts. Continuous practice and assessment during practical sessions will be used to reinforce the understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio Continuous assessment tasks: In-class Test 50% (120 minutes) Assignments 30% (20 hours of student effort) Practical 20% (40 hours of student effort)	**100%**	**1-8**

Reading and resources for the module:

Core

Wisnu Anggoro. (2018) *C++ Data Structures and Algorithms*. Packt Publishing Ltd.

Kingsley Sage. (2019) *Concise Guide to Object-Oriented Programming*. Springer.

Recommended
Dr. Basant Agarwal and Benjamin Baka. (2018) *Hands-On Data Structures and Algorithms.* Second Edition. Packt Publishing Ltd.

Provide evidence of how this module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project: Students would be designing and implementing a basic management system using data structures and object-oriented concepts.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hours 48 hours	 Lectures Labs
2. Student learning time: 104 hours	 Essential and background reading, private study, group work, assignment planning and preparation and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Mathematics for Computer Scientists	**Module Code:**AS4002 **Level:** 4 **Credit:** 20 **ECTS credit:10**	**Module Leader**: Dr. Safaa Amin
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y

Summary of module for applicants:

This module aims at thinking logically and mathematically and acquiring the skill of problem solving. It also introduces the skill of using mathematical induction to prove results about positive integers. By the end of this module, student should be able to understand Integral Calculus, infinite Series, and ordinary differential equations, and their applications.

Main topics of study:

- Introduction to Propositional Logic: Propositional Equivalences, Predicate Logic and Quantifiers and rules of Inference and Methods of Proofs.
- Number Theory: Divisibility and modular arithmetic and primes and greatest common divisors.
- Relations and their properties.
- Linear System, Solution of Equations, Inverse Matrix and Cofactor.
- Linear Transformations and Diagraphs, Definitions and examples.
- Eigen Values and Eigen Vectors and Diagraphs, Diagonalization, Symmetric Matrices, Orthogonality.
- First and second order differential equations.

- Solving Systems of linear differential equations.
- Laplace transforms. Special functions.
- Numerical Solutions of Ordinary Differential Equations.

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Explain the basic techniques of linear algebra. (DP)
2. Describe the different methods and rules of integration including finite and improper integrals. (DP)

Thinking skills

3. Identify the methods of integration, series summations and tests of convergence. (DP)
4. Identify the appropriate techniques to solve ordinary differential equations. (COI)

Subject-based practical skills

5. Use techniques of linear algebra in solving and handling practical problems. (DP, IC)
6. Use techniques of integration, infinite Series, and ordinary differential equations in solving practical problems. (DP,IC)

Skills for life and work (general skills)

7. Solve problems and work and manage time effectively as a member of a development team. (CC, COI)

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio Continuous assessment tasks: In-class Test 60% (120 minutes) Assignments 40% (60 hours of student effort)	**100%**	**1-7**

Reading and resources for the module:

Core:
Luis Manuel Braga da Costa Campos. (2019) Non-Linear Differential Equations and Dynamical Systems. CRC Press.
Robert Adams (2017) Calculus: a complete course. 9th edition. Pearson.
Dennis G. Zill (2019) A First Course in Differential Equations with Modelling Applications. 11th edition. Cengage Learning

Recommended
Oscar Levin (2019) *Discrete Mathematics: an open introduction*. 3rd Edition.

Provide evidence of how this module will be able to demonstrate at least one of the following examples/ exposures

Company/engagement visits: Guest talk from industry

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs. 48 hrs.	Lectures Tutorials
2. Student learning time: 104 hours	Essential reading, private study, groupwork, practical work and assessment preparation
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Digital Design and Computer Architecture	**Module Code:** AS4003 **Level:**4 **Credit:**20 **ECTS credit:**10	**Module Leader:** Dr. Manal Tantawy
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module provides students with sufficient background on digital logic circuits and the ability to synthesize a given system starting with problem requirements, identifying and designing the building blocks, and then integrating blocks designed earlier. It also gives an overview of the architecture and functions of computers and how the execution of the basic constructs takes place at the register level.

Main topics of study:

- Numbering systems, Arithmetic operations and logic gates
- Boolean algebra and canonical & standard forms
- Basic Combinational circuits design and analysis

- Decoders, encoders, demultiplexers and multiplexers
- Synchronous counters & frequency division
- Ripple counters, RAM, ROM and PLA
- Computer Abstraction and Technology
- Arithmetic for computers
- Assessing and Understanding Performance
- Enhancing Performance with Pipelining
- Exploiting Memory Hierarchy, Storage and other I/O topics
- Multicores and multiprocessors

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Explain different numbering systems, combinational logic and how to analyse and design combinational and sequential circuits. (DP)
2. Describe the register level machine and the interfacing and programming of sensors and actuators. (DP)

Thinking skills

3. Identify the steps needed to design different combinational and sequential circuits.
4. Identify the different levels of description of the same computational process and the criteria and specifications appropriate to specific problems, and plan strategies for their solution. (IC)

Subject-based practical skills

5. Design combinational and sequential circuits using different logic gates, decoders, multiplexers, and flip-flops. (COI)
6. Use RISC Processor with all its internal modules using a suitable hardware description language. (DP)

Skills for life and work (general skills)

7. Solving common problems by working coherently with others in a small group to provide hardware solutions for basic computer tasks. (SID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:

For on campus students:

Lecturesare used to explain the main concepts of the module while lab sessions will be used for hands-on practice. Continuous Assignments will be given to reinforce the understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio Continuous assessment tasks: In-class Test 50% (120 minutes) Assignments 30% (20 hours of student effort) Practical 20% (40 hours of student effort)	**100%**	**1-7**

Reading and resources for the module:

Core

La Meres, B.J., 2019. *Introduction to Logic Circuits & Logic Design with VHDL*. Springer.
Patterson, D.A. and Hennessy, J.L., 2016. *Computer Organization and Design ARM Edition: The Hardware Software Interface*. Morgan kaufmann.

***Live, applied project*: Students will be required to work on a simulation project that applies the basics concepts studied in this module.**

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction 48 hours 48 hours	 Lectures Labs
2. Student learning time: 104 hours	 Essential and background reading, Tutorial preparation, Assignment planning and preparation and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: *Mental Wealth;* ***Professional Life 1*** (Database Systems and Reports)	**Module Code:**AS4005 **Level:** 4 **Credit:** 20 **ECTS credit:**10	**Module Leader**: Dr. Sally Saad
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module allows the student to think in a systematic and methodological way about database (DB) issues, design relational database management systems and build reports related to them. It develops students' competence and equips them with specific writing and technical skills so that they can either work effectively as database professional designer and developer who have a strong awareness of the environment in which they operate and/or be able to pursue DB oriented academic/industry study. It also makes the students familiar with writing skills considering various kinds of job writing and the strategies appropriate to each. It also discusses technical reports, research techniques and practices different soft skills required for various job needs. This module assumes knowledge of system development lifecycle and basic programming knowledge.

Main topics of study:

- Database system concepts and architecture.
- Data modelling using the Entity-Relationship (ER) and the Enhanced Entity-Relationship (EER) models.
- Relational database design by ER-and EER-to relational mapping.
- Functional dependencies and normalization for relational databases.
- Structured Query Language (SQL).
- Data organization and retrieval techniques.
- Transaction processing and management.
- Overview of query processing and optimization.
- Skills and techniques required for good technical writing.
- Manuscript preparation ethical issues.
- Professional communication (writing business letters, emails, etc.).
- Fundamentals of presentation.
- Writing in the field of computer science and database management systems.

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project t☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Explain technical writing properties and ethical issues.(EID)
2. Describe and evaluate the structure and underlying principles of a relational DBMS and assess the security, legal and ethical issues in database design.(DP)

Thinking skills

3. Identify the audience to meet their needs. (SID)
4. Assess technical communication for clarity, accuracy, and organization.(SID, CID)
5. Identify various database models and demonstrate the understanding of logical design and structure of a database. (COI)

Subject-based practical skills

6. Design, develop and implement a database solution using an industry standard DBMS and languages. (IC)
7. Use rules of professional writing ethics to create effective technical correspondences. (EID, PID, UGB)

Skills for life and work (general skills)

8. Solve problems by developing interpersonal skills through working, communicating, and collaborating via verbal and written forms. (SID, CC)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:

Lectures will be used to introduce the basic database management and reporting concepts. Continuous practice and assessment during practical sessions will be used to reinforce the understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio Continuous assessment tasks: In-class Test 50% (120 minutes) Assignments 40% (40 hours of student effort) Practical 10% (20 hours of student effort)	**100%**	**1-8**

Reading and resources for the module:

Core

Hering, H., Hering, H. and Baumann, 2019. How to write technical reports. Springer Berlin Heidelberg.
Raymond Greenlaw. (2012) *Technical Writing, Presentation Skills, Online Communication: Professional Tools and Insights*. Information Science Reference, ISBN 978-1-4666-0238-0.

Recommended

Gillenson, M. (2019) Fundamentals of Database Management Systems 2nd Edition
Bailey, S. (2011) Academic Writing A Handbook for International Students 3rd edition

Provide evidence of how this module will be able to demonstrate at least one of the following examples/ exposures

***Live, applied project*:** Students are asked to design and develop a database system for specific business domain and prepare its documentation.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hours	 Lectures Labs

24 hours	
2. Student learning time: 128 hours	Essential and background reading, private study, assignment planning and preparation, group work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Statistics and Algorithms Design	**Module Code:** AS4041 **Level:** 4 **Credit:** 20 **ECTS credit:** 10	**Module Leader:** Dr. Walaa Khaled
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module aims to help students building fundamental knowledge of probabilities, statistics and algorithm design and analysis. The module starts with concepts of probability and statistics and provides student with skill of applying them on algorithm analysis. It familiarizes students with the main techniques/ paradigms for algorithmic design. The module enables students to apply and/or adapt the standard algorithm design.

Main topics of study:

- Sample space and probability axioms and Random variables
- Conditional probability
- Independence and Bayes' theorem.
- Distribution functions, moments and generating function
- Joint distribution
- The chebyshev inequality
- The central limit theorem and sampling distributions
- Best, worst and average case analysis, growth of functions
- Divide and conquer
- Iteration method
- Recursion tree
- Quick sort algorithm, comparison sorting, Counting sort, radix sort, Order Statistics
- Dynamic Programming
- Greedy Algorithms
- Graph Algorithms
- P& NP complete problems

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*

- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Explain the basic concepts of probability and statistics, the impact of variation/uncertainty on predictions and the benefits, in terms of economy and quality of information, of using statistically designed experiments.(DP)
2. Describe the computation efficiency of algorithms, the fundamental techniques of algorithm design paradigms, main graph algorithms and the concepts of P&NP-complete problems. (COI)

Thinking skills

3. Identify simple probability and statistical methods in modeling and prediction and the worst-, average-, and best-case analysis of algorithms. (COI)
4. Recognize recurrence relations that describe the time complexity of recursively defined algorithms and the design technique suitable to solve a problem. (COI, IC)

Subject-based practical skills

5. Use statistical and probability methods in solving practical problems. (COI)
6. Use the big O complexity and the suitable design technique to solve a specific problem efficiently. (IC, DP)

Skills for life and work (general skills)

7. Demonstrate good time management, team working, presentation, problem solving and academic integrity skills. (SID, PID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used to introduce the basic concepts of statistics and algorithm analysis and design. Practical lessons will focus on clarification the relevance of statistics analysis and applying algorithm design to solve real world efficiently. Continuous assessment during practical sessions will be used to reinforce understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module.	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio Continuous assessment tasks: In-class Test 50% (120 minutes) Assignments 40% (40 hours of student effort) Practical 10% (20 hours of student effort)	**100%**	**1-7**

Reading and resources for the module:

Core Giudici, P., Givens, G. H., & Mallick, B. K. (2012) *Wiley Series in Computational Statistics*, 2nd edn. Wiley **Recommended** Pishro-Nik, H., (2016) *Introduction to probability, statistics, and random processes*.
Live, applied project: the module will be assessed based on applying suitable design technique to solve real world problem efficiently. E.g.: application to encrypt and compress image.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48hrs 48hrs	 Lectures Practical Classes and tutorials
2. Student learning time: 104hours	 Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Software Engineering and Human-Computer Interaction	**Module Code:**AS4042 **Level:**4 **Credit:**20 **ECTS credit:**10	**Module Leader**: Dr. Huda Amin
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations: N/A**	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module intends to provide students with the main principles and concepts of software engineering. The module develops a broad understanding of the potential, limitations and factors that are required for the successful development and construction of software systems. It also aims to equip students with the key areas, theoretical frameworks, approaches and major developments in Human-Computer Interaction (HCI) that get students to think constructively and analytically about how to design and evaluate interactive technologies.

Main topics of study:

- Introduction to Software Engineering
- Computer Based Software Engineering
- Software Processes
- Requirements Engineering
- Agile Software Development
- System Modelling
- Software Testing
- Technical Metrics for Software

- Introduction to Human-Computer Interaction
- Task Models and dialogs
- User Models and prototyping
- Evaluation Methods of interfaces with users
- Psychology of everyday things
- Screen designs
- Design principles and usability heuristics
- HCI design standards

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Describe the major structures and principles of software engineering. (DP, COI)
2. Explain the fundamental aspects of designing and evaluating interfaces using HCI technologies considering the human and computational abilities and limitations. (DP, COI)

Thinking skills

3. Identify available techniques and models for each stage in the software development lifecycle according to the understanding of main requirements and SRS documentation of the system. (COI)
4. Identify available HCI Methods and techniques for design, construction, and evaluation of user interfaces. (DP, COI)

Subject-based practical skills

5. Use suitable tools and techniques to support development, analysis, modelling and testing stages during the construction of live industry systems. (IC, DP)
6. Implement an interactive design process and universal design principles to designing HCI systems. (IC, DP)

Skills for life and work (general skills)

7. Demonstrate good time management, team working, presentation, problem solving and academic integrity skills. (SID, PID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used for providing students with the major concepts and techniques for software engineering and human computer interactions. Practical sessions will be used to reinforce understanding of the material and provide hands on experience to demonstrate and apply a concept to real-life situations. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary: **For on campus students:** **Portfolio** Continuous assessment tasks: In-class Test 50% (120 minutes) Assignments 30% (40 hours of student effort) Practical 20% (20 hours of student effort)	**Weighting:** **100%**	**Learning Outcomes demonstrated:** **1-7**

Reading and resources for the module:

Core

Pressman, R. S. (2019) *Software Engineering: A Practitioner's Approach*. 9thedn. McGraw Hill.

Tidwell, J. (2019) *Designing interfaces: Patterns for effective interaction design*. 3rdedn. "O'Reilly Media, Inc.".

Recommended

Somerville, I. (2015) *Software Engineering.* 10thedn. Pearson.

Provide evidence of how this module will be able to demonstrate at least one of the following examples/ exposures

***Live, applied project*:** The module will be assessed on the development of applications based on the case studies of live industry projects.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction 48hours 48 hours	 Lectures Labs
2. Student learning time: 104hours	 Essential and background reading, Tutorial preparation, Assignment planning and preparation and assessment preparation.
Total hours (1 and 2):	200 Hours

Module Specification

Module Title: Computer Networks and Operating Systems	**Module Code:**AS5006 **Level:**5 **Credit:**20 **ECTS credit:**10	**Module Leader**: Dr. Tamer Mostafa
Pre-requisite: N/A	**Pre-cursor:** AS4001 Fundamentals of Programming	

Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module aims to equip the students with knowledge of computer networks' principles, protocols, transmission and routing techniques and design procedures. It also aims to provide a basic understanding of operating systems and their role in the management of computer resources. The module focuses on multiprocessing, multithreading, deadlocks, concurrency, and scheduling techniques. This module assumes comprehensive knowledge of fundamentals of programming.

Main topics of study:

- Introduction to the operating system: structure, functions, and characteristics.
- Process management: process description, process states models and process control.
- Multiprocessing and multithreading.
- Deadlock and concurrency: the use of semaphores to synchronize the process executions, deadlock avoidance, and prevention techniques.
- Memory management.
- Virtual Memory concept and management.
- CPU scheduling techniques.
- Introduction to computer networking.
- Protocol Architecture, TCP/IP and OSI Model.
- Data and Media Transmission Techniques.
- Routing Concepts and Techniques.
- Network operating system (NOS).

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Explain the general structure of an operating system and its objectives and functions. (COI)
2. Identify the basic computer networking concepts and differentiate between different

switching techniques and discuss protocols and addressing. (IC)

Thinking skills

3. Evaluate the main techniques and procedures for process management and scheduling appropriately. (DP)
4. Analyse the solutions of familiar and unfamiliar problems relevant to operating systems and computer networks. (IC, COI)
5. Evaluate the performance of different network topologies. (DP, SID)
6. Distinguish between transport layer protocols.

Subject-based practical skills

7. Implement the techniques and procedures appropriate to processes management and scheduling in operating systems. (DP)
8. Apply socket programming, subnetting, network requirement planning and IP management. (DP)

Skills for life and work (general skills)

9. Demonstrate good time management, team working, presentation, problem solving and academic integrity skills. (SID, PID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:

Lectures will be used to introduce the basic concepts of computer networks and operating systems. Continuous practice and assessment during practical sessions will be used to reinforce the understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120minutes)	**50%**	**1-6**
Coursework Practical 20% Assignments 30% (30 hours of student effort)	**50%**	**7-9**

Reading and resources for the module:

Core

Silberschatz, A., Galvin, P. B., & Gagne, G. (2018) *Operating system concepts*. 10th edn. John Wiley & Sons, Inc.

Kurose, J., & Ross, K. (2016) *Computer Networking: A Top Down Approach*. 7thedn. Pearson.

Recommended

Tanenbaum, A. S., & Bos, H. (2014) *Modern operating systems*. 4thedn. Pearson.

Stallings, W: (2013) *Data and Computer Communications*. Prentice-Hall.

Provide evidence of how this module will be able to demonstrate at least one of the following examples/ exposures

***Live, applied project*:** Students would be exposed to the design and simulation of a basic operating system and local area network.

Indicative learning and teaching time (10 hrs per credit):	Activity
1. Student/tutor interaction 48 hours 48 hours	 Lectures Labs
2. Student learning time: 104 hours	 Essential and background reading, Tutorial preparation, Assignment planning and preparation and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: *Mental Wealth;* ***Professional Life 2*** (Computer Ethics and Parallel Programming)	**Module Code:** AS5043 **Level:** 5 **Credit:** 20 **ECTS credit:** 10	**Module Leader:** Dr. Yasmine Afify
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module provides the students with the concepts and practice of parallel processing with considering the ethical and legal issues in professional work. The module covers Parallel Computing Architectures, Parallel system models, Parallel programming languages and paradigms, and techniques for performance assessment and optimization.

Main topics of study:

- Ethical decision-making approaches
- Key ethical issues for organizations:
- Ethics for IT workers
- Internet crime
- Privacy and anonymity issues
- Developing quality software
- Practical cases in professional life
- Intellectual property rights.
- Overview of Parallel Computing
- Parallel applications
- Numerical Integration
- Collective Communications (Broadcast and Reduce)
- Collective Communications (Scatter and Gather)
- Data grouping and communicators
- Pipelined computations
- Parallel Algorithms

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Contrast the key ethical and legal issues involved in professional life. (CC)
2. Identify the different parallel computing architectures, parallelizable and non-parallelizable problems and the feasibility and unfeasibility of parallel computing. (DP)
3. Identify motives, justifications, and chances of corruption. (CID)

Thinking skills

4. Analyze and assess the performance of a parallel computing system. (IC, COI)

Subject-based practical skills

5. Use elements of ethical decision-making approaches on situations at work as an IT professional. (PID)
6. Implement parallel solutions to abstract and practical problems.(IC,COI)

Skills for life and work (general skills)

7. Think in parallel for problem solving. (SID)
8. Develop critical thinking skills. (EID, UGB)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used to introduce the fundamental knowledge of parallel programming along with importance of ethical and legal issues. Continuous assessment during practical sessions will be used to reinforce understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120 minutes)	**50%**	**1-4**

Coursework Practical 10% Assignments40% (30 hours of student effort)	**50%**	**5-8**

Reading and resources for the module:

Core

Pacheco, P. (1997). *Parallel programming with MPI*. Morgan Kaufmann.

De George, R. T. (2012). The ethics of information technology and business. John Wiley & Sons., 3rdedn. MIT press*.*

Recommended

Stamatellos, G*. (2007). Computer ethics:* A global perspective.

***Live, applied project*:** the module will be assessed based on applying parallel programming concepts in an applicable project

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs 24 hrs	 Lectures labs
2. Student learning time: 128 hours	 Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Cognitive Sciences	**Module Code:** AS5044 **Level:** 5 **Credit:** 20 **ECTS credit: 10**	**Module Leader**: Dr. Dina Khattab
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y

Location of delivery: ASU

Summary of module for applicants:

This module aims to provide students with basic concepts and methodologies of Neural Networks (NNs) needed to implement and analyse computational models of cognition. The module considers the fundamental issues of using a computational approach to explore and model cognition. The module also covers different structures or models of NNs, the types of problems for which neural networks are used and usage of NNs for knowledge acquisition.

Main topics of study:

- Acquisition of Natural Language (syntax and semantics)
- Bayesian Inference and Hierarchical Bayesian Models
- Frameworks for Knowledge Representation: First-order Logic, Formal Grammars, Associative Networks, Taxonomic Hierarchies, Relational Schemas
- Probabilistic and Causal Graphical Models, Relational Probabilistic Models and Inductive Logic Programming
- Introduction to NNs
- Biological neuron and artificial neuron
- Activation function.
- McCulloch Pitts Model.
- Rosenblatt's perceptron
- ADALINE
- Multilayer Perceptron (MLP)
- Radial Basis function
- Principal Component Analysis
- Kohonen Self-Organizing Feature Map
- Support Vector Machines

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Identify the basic concepts and methodologies of cognitive modelling and relationship between computational models and psychological theories. (COI)
2. Contrast between the architectures and learning algorithms for different NN architectures. (COI, DP)

Thinking skills

3. Evaluate qualitatively and quantitatively computational models of cognition using a range of techniques, when given a model and a set of experimental data that it is supposed to account for. (IC, COI)
4. Relate the fundamental concepts and methodologies of NNs to applications of real-world problems in computer vision, remote sensing, medical diagnosis, business decision making. (IC, COI)

Subject-based practical skills

5. Use existing modelling tools to design and test computer implementations of cognitive models. (DP, IC)
6. Design, implement, and test various NN systems to solve simple problems and real classification problems. (DP, IC)

Skills for life and work (general skills)

7. Construct a readable, well-supported research report as a member or leader in a team. (SID, COI)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used for providing students with fundamental knowledge of NNs and computational cognitive sciences. Practical sessions will be used to reinforce understanding of the material and provide hands on experience to demonstrate how to build intelligent systems. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core
Aggarwal, C. C. (2018) Neural networks and deep learning. 1stedn. Springer. Farrell, S., and Lewandowsky, S. (2018). Computational modelling of cognition and behaviour. Cambridge University Press.

Recommended
Fausett, L. (1994). Fundamentals of neural networks: architectures, algorithms, and applications. Prentice-Hall

***Live, applied project*: The** module will be assessed on the developmentof a project that implies application of NNs and cognition sciences concepts

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs 48 hrs	 Lectures Practicals
2. Student learning time: 104 hours	 Essential and background reading, private study, practical

	work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Artificial Intelligence and Machine Learning	**Module Code:** AS5045 **Level:** 5 **Credit:** 20 **ECTS credit: 10**	**Module Leader**: Dr. Dina Khattab
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module aims to introduce basic concepts, principles, theories, and applications of artificial intelligence, machine learning and pattern recognition. It also aims to provide the student with the knowledge and skill of applying systems that can interact intelligently with outside world through visual perception. It enables graduates to proceed in postgraduate studies in artificial intelligence.

Main topics of study:

- Rule-based reasoning
- Intelligent Agents and Case-Based Reasoning (Automated Reasoning)
- State – Space Search (depth-first, breadth, backtracking algorithm)
- Heuristic Search (best-first, A*, AI Game Algorithms)
- Predicate Calculus and Uncertain Reasoning (First-order logic, fuzzy logic)
- Bayesian networks and AI probabilistic search algorithms
- ID3 Induction Algorithm
- Neural Networks
- Machine Learning – Social and Emergent (Genetic algorithms)
- Machine Learning – Unsupervised (Clustering)
- AI Planning Algorithms
- Association Analysis
- Components of pattern recognition systems
- Texture analysis and classification
- Shape Measurements and descriptors

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*

- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Identify the principles and techniques of artificial intelligence and machine in conjunction with real-world pattern recognition applications. (DP, IC)
2. Contrast between different algorithms of artificial intelligence and machine learning. (DP)

Thinking skills

3. Analyse the interpretation of intelligent frameworks and AI approaches for problem solving and application development. (COI)
4. Evaluate common methods for feature extraction, for object and scene recognition. (COI)

Subject-based practical skills

5. Use suitable AI tools, algorithms and data structures to solve the given problem. (DP, IC)
6. Design, develop and implement solutions to pattern recognition problems. (IC)

Skills for life and work (general skills)

7. Demonstrate good time management, teamwork, presentation, problem solving and academic integrity skills. (PID, SID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used to provide students with AI and machine learning algorithms and pattern recognition techniques. Practical will focus on applying different machine learning algorithms and techniques to real life problems. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	***Learning Outcomes demonstrated:***
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core
Stuart, R. and Peter, N. (2016) *Artificial Intelligence: A modern approach*, Prentice Hall/Pearson.
Deisenroth, M. P., Faisal, A. A., & Ong, C. S. (2020) *Mathematics for machine learning*, Cambridge University Press.
Recommended
Russel, S. and Norvig, P., 2013. *Artificial intelligence: a modern approach*. Pearson

Education Limited.
Live, applied project: The module will be assessed on the development of artificial intelligence applications based on the visual perception.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs 48 hrs	 Lectures Practical
2. Student learning time: 104 hours	 Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	 200 hours

Module Specification

Module Title: Computer Graphics and Image Processing	**Module Code: AS5046** **Level:** 5 **Credit:** 20 **ECTS credit: 10**	**Module Leader**: Dr. Maryam Nabil
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

The module aims to provide abroad exposure to the computer graphics and image processing fields. It also aims to equip students with practical skills and analytic background for modelling and generating images of 2D and 3D objects and building digital image applications.

Main topics of study:

- Graphics Output Primitives
- 2D, 3D Geometric Transformations
- 2D, 3D Viewing
- Three-Dimensional Object Representations
- Visible-Surface Detection Methods
- Illumination Models and Surface-Rendering Methods
- Computer Animation
- Image Acquisition
- Image Enhancement in the spatial domain
- Enhancement in the frequency domain
- Image Restoration
- Image Segmentation and Morphology
- Image Representation and Description

This module will be able to demonstrate at least one of the following examples/

exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Contrast the basic components of graphics systems and identify 2D and 3Dprimitives, their attributes, and the steps of the graphics pipeline. (DP)
2. Identify aspects of digital image processing concepts and techniques and the central role of digital image processing in solving problems in several real-life environments and applications and contrast between different methods of image acquisition. (DP, IC)

Thinking skills

3. Analyse the essential steps in the graphics viewing pipeline and coherently put information together. (DP)
4. Evaluate the use of different image processing techniques in different scenarios. (COI)

Subject-based practical skills

5. Implement functions for 2D and 3D graphics primitive, geometrical transformations, shading, and illumination and computer graphics animation. (DP)
6. Use high-level programming languages and tools to design and develop efficient algorithms/solutions for different image processing and analysis problems. (IC, DP)

Skills for life and work (general skills)

7. Evaluate the performance of different techniques used in computer graphics and image processing and communicate with others effectively to build and defend projects. (DP, SID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used for providing students with aspects of graphics concepts and digital image processing concepts. Practical sessions will be used to reinforce understanding of the material and provide hands on experience to demonstrate and apply a concept to a real-life situation. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to	**Weighting:**	**Learning**

demonstrate the learning outcomes for the module; please define as necessary:		Outcomes demonstrated:
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core

Marschner, S. and Shirley, P., (2015) *Fundamentals of computer graphics*. CRC Press.
Gonzalez, R. C. & Woods, R. E. (2017) *Digital Image Processing. 4th*edn. Pearson

Recommended

Guha, S., (2018) *Computer Graphics Through OpenGL®: from theory to experiments*. CRC press.
Sonka, M., Hlavac, V., & Boyle, R. (2014) *Image processing, analysis, and machine vision*. Cengage Learning.
Hearn, D., (2011) Computer Graphics with OpenGL. 4th edn. Prentice-Hall.

Live, applied project:
Students would design and implement graphics image processing projects related to real life problem

Indicative learning and teaching time (10 hrs per credit):	Activity
1. Student/tutor interaction: 48 hrs 48 hrs	 Lectures Practical
2. Student learning time: 104 hours	 Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Internet of Things and Cloud Security	**Module Code:** AS5047 **Level:** 5 **Credit:** 20 **ECTS credit:** 10	**Module Leader**: Dr. Alshymaa Abo Alian
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		
Summary of module for applicants:		

This module aims to give the students fundamental knowledge of computer security and the theoretical and practical grounding in Internet of Things (IoT). The module covers cryptographic definitions and identify why such definitions are crucial to building more secure systems and assessing the security of existing ones. It also provides students with knowledge about IoT systems architecture, hardware platforms, embedded programming and debugging, networking paradigms for IoT, secure operation, cloud integration, and simple data analytics.

Main topics of study:

- Classical Encryption techniques
- Fiestel Ciphers, Data Encryption Standard
- Multiple Encryption and Triple DES
- Finite Fields
- Advanced Encryption on Standard
- Public key cryptography and RSA
- Diffie Hellman Key Exchange
- Elliptic Curve Cryptography
- Hashing and MAC Algorithms
- Digital Signatures and Authentication Protocols
- IoT architecture
- Hardware platforms, low power devices, sensors
- Wireless technologies (Wi-Fi, Bluetooth, BLE, Zigbee, Z-Wave)
- Networking protocols (M2M, LoRa, IPv6, 6LowPAN)
- Security and privacy
- IoT device programming and debugging
- Cloud integration
- Data analytics and visualization
- Commercialization challenges

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☐
Company/engagement visits ☒
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Identify concepts and system architecture of the Internet of Things. (DP)
2. Contrast the mains security attacks and standard security terminology. (DP)

Thinking skills

3. Evaluate wireless technologies and networking protocols specific to IoT systems and different cloud integration methods. (IC, COI)
4. Evaluate computer security techniques and their relevance to different situations(DP, COI)

Subject-based practical skills

5. Design, implement, and test a simple IoT system equipped with sensors and wireless transceivers. (IC)
6. Implement a software security package of symmetric/asymmetric encryption, digital signatures, key management, hashing and digital signature techniques and apply security techniques to secure file transfer via networks.(DP, IC)

Skills for life and work (general skills)

7. Evaluate system security requirements and solve general computer security and IoT problems as a member or leader in a team. (SID, COI)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used for providing students with different computer security techniques, concepts of IoT, cloud security and the systems architectures.Practical sessions will be used to reinforce understanding of the material and provide hands on experience to demonstrate how to build secure systems. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core
Todson, C. (2019) *Practical Cloud Security: A Guide for Secure Design and Deployment.* 1st edition. O'Reilly Media.
Kapoor. A. (2019) *Hands-On Artificial Intelligence for IoT*. Packt Publishing.

Recommended
Bhattacharjee, S. (2018) *Practical Industrial Internet of Things security: A practitioner's guide to securing connected industries*.1stedn. Packt Publishing.
Manyika, J., Chui, M., Bisson, P., Woetzel, J., Dobbs, R., Bughin, J. and Aharon, D. (2015). Unlocking the Potential of the Internet of Things. McKinsey Global Institute.
Pieprzyk, J., Hardjono, T. and Seberry, J. (2013). Fundamentals of computer security. Springer Science & Business Media.

Company/engagement visits: Guest talk from industry

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs 48 hrs	 Lectures Practical
2. Student learning time: 104 hours	 Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Robotics Vision and Learning	**Module Code:**AS6048 **Level:**6 **Credit:**20 **ECTS credit:**10	**Module Leader**: Dr. Sherine Rady
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module introduces the basic concepts and methods in robotics vision, applies AI techniques to solve the problems of making devices capable of interacting with the physical world. It also aims to provide students with the knowledge of moving things (manipulation robotics), acquiring information by direct sensing (machine vision) and It explains to them the problems and limitations that have important impacts on software engineering and general hardware.

Main topics of study:

- Introduction to robotics and vision.
- Classical Kalman Filter.
- Extended Kalman Filter.
- Iterative Kalman Filter.
- Adaptive Kalman Filter.
- Bug Algorithms.
- Configuration space.
- Potential functions.
- Roadmaps.
- Cell Decompositions.
- Kalman filtering in motion planning.
- Swarm Algorithm.
- SLAM Algorithm.

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Appraise the motivation, principles, applications, and challenges of different motion planning methods. (COI)
2. Argue the problems of robotic motion planning and how to combine topics from several courses including computer graphics, computational geometry, algorithms, image processing and computer vision in order to study the different motion planning problems. (COI)

Thinking skills

3. Evaluate motion planning problems to design the model which gives the solution to the problem precisely and efficiently.
4. Evaluate effective algorithms for the robot motion planning problem. (COI)

Subject-based practical skills

5. Select recent tools to implement motion planning algorithms for solving problems in real applications.(COI)
6. Implement the modelling techniques for robotic motion in planning.

Skills for life and work (general skills)

7. Reflect on the studied algorithms and techniques and communicate effectively both verbally in brainstorming discussions and presentations and in written form to write reports. (COI, SID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used to explain the fundamental concepts of this module then lab sessions are to be used for hands-on practice and projects. Continuous assignments will be given to reinforce the understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam	**50%**	**1-4**

(120 minutes) **Coursework** Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core
Niku, S. B. (2020) *Introduction to robotics: analysis, control, applications*. 3rdedn. John Wiley & Sons.

Recommended
Corke, P. (2017) *Robotics, vision and control: fundamental algorithms in MATLAB*. 2ndedn. Springer.
Leo, A., Handjaras, G., Marino, H., Bianchi, M., Pietrini, P., & Ricciardi, E. (2016) *Human and Robot Hands: Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics*. Springer.

Live, applied project: Students would be designing and simulating robotics and vision applications.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48hours 48 hours	 Lectures Labs
2. Student learning time: 104 hours	 Essential and background reading, Tutorial preparation, Assignment planning and preparation and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Numerical Methods and AI Robotics	**Module Code:**AS6049 **Level:**6 **Credit:**20 **ECTS credit:**10	**Module Leader**: Dr. Safaa Amin
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module gives a broad overview of AI techniques, so that when students go into industry or research, they will be able to choose the correct AI techniques for the problems which arise, Learn the Concepts from basic AI sciences necessary to understand and be able to advance the technology that through understanding different numerical methods to find

acceptable approximate solutions when exact solutions are either impossible or so arduous.

Main topics of study:

- Introduction to Numerical computing methods
- Sources of errors in computations
- Propagation of error
- Finding roots of nonlinear equations methods
- Interpolation Techniques
- Introduction to AI Robotics
- Knowledge engineering, expert systems and rule-based reasoning
- Intelligent Agents and Case-Based Reasoning (Automated Reasoning)
- State – Space Search (depth-first, breadth, backtracking algorithm)
- Heuristic Search (best-first, A*, AI Game Algorithms)
- Predicate Calculus and Uncertain Reasoning (First-order logic, fuzzy logic)
- Bayesian networks and AI probabilistic search algorithms
- Machine Learning - Connectionist (Neural Networks)
- Machine Learning – Symbol based (ID3 Induction Algorithm)
- Machine Learning - Connectionist (Neural Networks)
- Machine Learning – Unsupervised (Clustering)
- AI Planning Algorithms
- Association Analysis

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Identify the types of errors and contrast between different numerical techniques for finding approximates solutions. (DP, COI)
2. Select key methods, algorithms and techniques used in AI and its implementation. (COI)

Thinking skills

3. Analyse the effect of different types of errors. (COI)
4. Evaluate the applicability of AI techniques in novel applications. (IC)

Subject-based practical skills

5. Implement data interpolation and data fitting.
6. Select available AI tools, algorithms and data structures and choose those appropriate to given applications. (DP)

Skills for life and work (general skills)

7. Reflection acquired knowledge and developing research skills and extend professional knowledge to clarify problems and take responsibility for further own learning.(COI, SID)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will show the main concepts of this module addition to lab sessions are be used for hands-on practice and stages of project. Continuous Assignments will be given to reinforce the understanding of the material. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core
Stuart, R. and Peter, N. (2016) *Artificial Intelligence: A modern approach*, Prentice Hall/Pearson.
Cheney, E. W., & Kincaid, D. R. (2012) *Numerical mathematics and computing*, Cengage Learning.

Recommended
Kolodner, J. (2014) *Case-based reasoning*, Morgan Kaufmann.

***Live, applied project*:**

Students would be designing a project implementing different studied techniques and simulating different scenarios.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hours 48 hours	 Lectures Labs
2. Student learning time:	

104 hours	Essential and background reading, Tutorial preparation, Assignment planning and preparation and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: Game Theory and Reasoning	**Module Code:** AS6050 **Level:** 6 **Credit:** 20 **ECTS credit: 10**	**Module Leader**: Dr. Sally Saad
Pre-requisite: N/A	**Pre-cursor: N/A**	
Co-requisite: N/A	**Excluded combinations: N/A**	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module aims to bring as a coherent body of knowledge the game theoretic algorithms & models that underpin several flourishing subjects at the intersection of computer science, economics and e-commerce and AI. The module also focuses on approaches relating to representation, reasoning, and planning for solving real world inference.

Main topics of study:

- Nature of agents, performance measures and environments
- Planning as a Search Problem: In deterministic, observable, static, and known environments
- Searching using constraints
- Informed search and exploration for agents
- Propositional Logic
- First Order Logic& Encoding facts/rules in FOL
- Unification and Generalized Modus Ponens
- Resolution based Inference
- Scaling Planning for Complex Tasks (Representing States, Goals and Actions, Partial Order Planning)
- Acting in Uncertain (Bayes Net, hidden markov models, dynamic Bayesian networks)
- Zero-sum two-person games: LPsimplex, LP-duality, mixed strategies and the minimax theorem
- General games in strategic form: Equilibria and Nash's theorem
- Player equilibria: Lemke-Howson algorithm and its variants
- Game trees
- And/or game graphs and reachability games
- Mean value games, MDPs, and stochastic games

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Explain concepts of reasoning and First order logic. (DP)
2. Contrast various models of games.(DP, IC)

Thinking skills

3. Evaluate algorithms and their efficiency for games. (COI, IC)
4. Analyzefirst order logic and the strengths and weaknesses of this and other logic representations. (COI)

Subject-based practical skills

5. Select the suitable algorithm to solve various scenarios ofstrategic games.(IC, COI)
6. Select a basic probabilistic action agent using simulated state transitions and goals. (COI)

Skills for life and work (general skills)

7. Reflect on working as a part of a team to find a solution for practical problems and projects.(SID, COI)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used for providing students with fundamental knowledge of various game algorithms, agents, reasoning and planning. Practical sessions will be used to reinforce understanding of the material and provide hands on experience to demonstrate how to design and implement AI game. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core

Stuart, R. and Peter, N. (2016) *Artificial Intelligence: A modern approach*, Prentice Hall/Pearson.
Myerson, R. B. (2013) *Game theory*, Harvard university press.

Recommended
Shoham, Y.and Leyton-Brown, K. (2009). Multiagent Systems. Cambridge University Press.

Live, applied project:
Students would be designing and implement AI game.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs 48 hrs	 Lectures Practical
2. Student learning time: 104 hours	 Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	 200 hours

Module Specification

Module Title: Advanced AI Analytics	**Module Code:** AS6051 **Level:** 6 **Credit:** 20 **ECTS credit:** 10	**Module Leader**: Dr. Sherine Rady
Pre-requisite: N/A	**Pre-cursor:** N/A	
Co-requisite: N/A	**Excluded combinations:** N/A	**Suitable for incoming study abroad?** Y
Location of delivery: ASU		

Summary of module for applicants:

This module provides students with basic concepts of advanced Genetic Algorithms, as one specific method of evolutionary computation, and its importance to the field of big data and data sciences. The module focuses on the particulars of GAs, though the course focuses more generally on evolutionary computing. It also provides students with the skills of identifying big data problems and applying GAs to solve it.

Main topics of study:

- Canonical Genetic Algorithm and Binary Representation
- Schema Theory
- Floating point representation and their operators
- Fuzzy Rule Base Systems
- Feature Selection
- Evolution of Fuzzy Rules with Genetics algorithms
- Training of Neural Networks with GA
- Evolution Strategy
- Data Analytics Lifecycle
- Basic Data Analytic Methods: Exploratory Data Analysis
- Basic Data Analytic Methods: Statistical Methods for Evaluation
- Basic Data Analytic Methods: Visualization and Plotting

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☐
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Recognize architectural components and programming models used for scalable Big Data analysis project and the 6-step lifecycle for structuring a Big Data project analytics. (DP)
2. Discuss different concepts related to Genetic Algorithm and other evolutionary computation algorithms. (DP)

Thinking skills

3. Critique a Big Data problem identifying key requirements, alternative solutions evaluation methods. (IC, COI)
4. Analyse Big Data problems using different Genetic Algorithms, including basic GA, and other evolutionary computation algorithms. (DP, COI)

Subject-based practical skills

5. Select the suitable tool, and technique which aid the specification, design and

implementation of a Big Data Analytics project based (IC, COI)

6. Select the optimal model parameters of GA and/or other evolutionary computation algorithm. (COI)

Skills for life and work (general skills)

7. Reflect on finding a solution for practical problems and projects while working as a part of a team.(SID, COI)

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:
For on campus students:

Lectures will be used for providing students with fundamental knowledge of big data, data sciences Genetic Algorithms and in general evolutionary computation algorithms. Practical sessions will be used to reinforce understanding of the material and provide hands on experience to demonstrate how to identify Big data problems and solve them using GAs. Feedback will be provided throughout the module in the form of both formative and summative work.

Assessment methods which enable students to demonstrate the learning outcomes for the module; please define as necessary:	**Weighting:**	**Learning Outcomes demonstrated:**
Written Exam (120 minutes)	**50%**	**1-4**
Coursework Practical 20% Assignments 30% (30 hours of student effort)	**50%**	**5-7**

Reading and resources for the module:

Core
Kramer, O. (2017) *Genetic algorithm essentials* (Vol. 679). Springer.
EMC Education Services (2015) *Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data*. Wiley.

Recommended
Eiben, A.E. and Smith, J.E. (2015) *Introduction to Evolutionary Computing*. Springer.

Live, applied project:
Students would be designing and implement project applying concepts of GAs to Big Data problem

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 48 hrs 48 hrs	 Lectures Practical
2. Student learning time:	

104 hours	Essential and background reading, private study, practical work and assessment preparation.
Total hours (1 and 2):	200 hours

Module Specification

Module Title: *Mental Wealth;* ***Professional Life 3*** (Project)	**Module Code:** AS6020 **Level:** 6 **Credit:** 40 **ECTS credit:** 20	**Module Leader**: Dr. Walaa khaled
Pre-requisite: Completing 90 credits in level 5	**Pre-cursor:** None	
Co-requisite: None	**Excluded Combination:** None	**Suitable for incoming study abroad?** Yes
Locations of delivery: ASU		

Summary of module for applicants:

To enable students to undertake a sizeable piece of academic work in an area of their own or recommended interest to enrich technical skills acquired in their course of study. The project requires appropriate research, analysis, design, implementation, quality assurance, evaluation and project management.

Main Topics of Study:

- Research methods
- Identification of a suitable project topic
- Project analysis
- Project design
- Project implementation
- Project validation and verification
- Project documentation and proper referencing

This module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project ☒
Company/engagement visits ☒
Company/industry sector endorsement/badging/sponsorship/award ☐

Learning Outcomes for the Module

- *Digital Proficiency - Code = (DP)*
- *Industry Connections - Code = (IC)*
- *Emotional Intelligence Development - Code = (EID)*
- *Social Intelligence Development - Code = (SID)*
- *Physical Intelligence Development - Code = (PID)*
- *Cultural Intelligence Development - Code = (CID)*
- *Community Connections - Code = (CC)*
- *UEL Give-Back - Code = (UGB)*
- *Cognitive Intelligence – Code = (COI)*

At the end of this module, students will be able to:

Knowledge

1. Investigate the problem domain and its current state of the art. *(COI, IC)*
2. Construct the problem statement and motivation and define the objectives of the project. *(COI)*

Thinking skills

3. Analyse and evaluate the features and limitation of existing work. *(IC, COI)*
4. Make decisions regarding the project management. *(SID, CID)*

Subject-based practical skills

5. Use the tools needed for the project analysis and design. *(DP)*
6. Select and use appropriate tools to implement and test computer systems and software. *(DP)*

Skills for life and work (general skills)

7. Include current research and academic publications in literature review. (EID, CC)
8. Communicate arguments and results via several presentations. *(PID,SID, UGB)*
9. Reflect on and evaluate own strengths, limitations and performance. *(EID)*

Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:

Lecture will be used to provide an overview of the project selection criteria, its requirements, milestones and an introduction to research methods, literature surveys and reference management systems.
In addition, every team will be allocated a supervisor at an early stage within the module. The supervisor will support the team for the duration of the project through discussions.
Feedback, in the form of formative assessment, will be provided by supervisor on a regular basis. Moreover, team is requested to make several presentations in a scheduled seminar throughout the year to evaluate their progress. Feedback, in the form of summative assessment, will be provided by judges for each seminar.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes Demonstrated**
Portfolio Including 8000-wordproject report plus 20 minutes presentation (75%) intermediate deliverables (25%)	100%	1-9

Reading and resources for the module:

Core

Latte, Björn, Henning, Sören and Wojcieszak, Maik (2019) *Clean Code: On the Use of Practices and Tools to Produce Maintainable Code for Long-Living*. In 6th Collaborative Workshop on Evolution and Maintenance of Long-Living Systems, 18.02.2019, Stuttgart.
Bob Hughes (2019) *Project Management for IT-Related Projects* (BCS)
Pears, R. and Shields, G (2013) *Cite Them Right.* Newcastle: Pear Tree Press.
Documentation template to be provided by the supervisor.

Recommended

R. Majumdar, R. Jain, S. Barthwal and C. Choudhary (2017) *Source code management using version control system.6th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO),* pp. 278-281, doi: 10.1109/ICRITO.2017.8342438.

Provide evidence of how this module will be able to demonstrate at least one of the following examples/ exposures

Live, applied project: Scheduled presentations are held to evaluate the necessary project deliverables. Company/engagement visits: Some projects are mentored by industry partners.	
Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lecture/ Supervision/ Seminars
2.Student Learning Time: 300 hours	Background reading, software/hardware tools and packages learning, seminar preparation, group work, project planning, implementation, testing and documentation.
Total hours (1 and 2):	400 hours

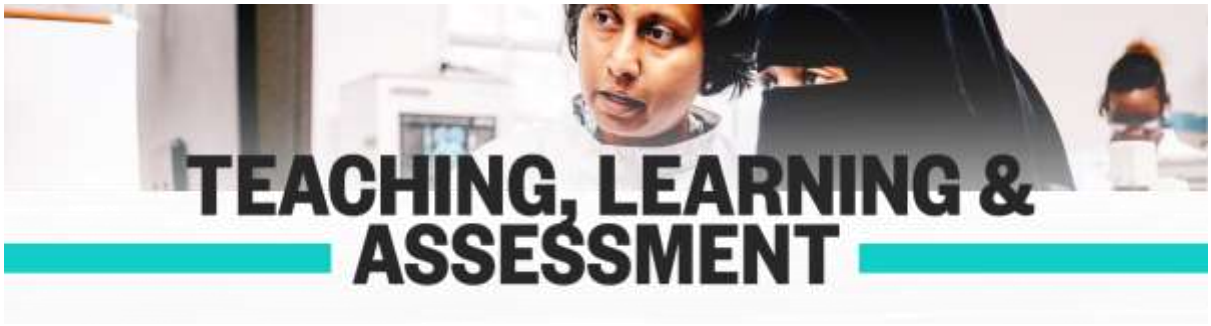
AWARD CERTIFICATES

- Issuing transcripts of results to students, and award certificates to successful students on Coursers.

- The student who achieves an accumulative GPA of 3.6 or higher after any semester and did not fail any course throughout his course of study is included in the Dean's List.

- Students who manage to fulfil all graduation requirements are awarded a dual B.Sc. degree from ASU–FCIS in Artificial Intelligence and UEL in Artificial Intelligence.

Link to the University's **academic regulations**:
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations



Details of Local Teaching and Learning Approaches

- The Course is a credit system leading to the Bachelor of Science Degree (Honours) after completing 360 credits. Student evaluation is based not only on final exam, but also on midterm exams, quizzes, assignments, course projects, presentations, essays, in/out of class participation and many other innovative activities.
- Course instructors in the Course are carefully selected from the distinct full-time world-class faculty members of the Faculty of Computer and Information Sciences at Ain Shams University.
- With most of the modules being delivered over the whole year there is excellent scope for formative assessment to stretch and extend. Thus, a key feature is the emphasis on formative feedback and guidance to enable students to develop full understanding of the topics of study, prior to assessment taking place. Feedback will be available within 15 days from the assessment date. Feedbacks are announced via different means (LMS, emails, student boards, etc,).
- Assessment for these Courses takes the form of examinations, course works, presentations and time constrained assessments.
- Each module syllabus should contain: course objectives, textbook, outline, material, assessments, grading policy and outcome. Outline should contain sections covered every week with reference to chapters/sections in the textbook. The instructor should give the module syllabus to the students in the first class. The syllabus serves as a contract between the instructor and the students.

Details of Assessment Arrangements

a) Passing Modules

The student must achieve a minimum of 40% in a module in order to pass a module.

b) Incomplete Modules

If a student does not pass the module, another set of assessments (resits) are conducted after the semester's final exams (during the resit period). The marks of the resit are capped at 40% unless extenuation is granted.

c) Modules opportunities

A module resit is considered a second opportunity. If a student fails at the second opportunity, they will be given a maximum of two further opportunities (opportunity three and opportunity four).

The third opportunity requires full attendance of the module in the next academic year. The fourth opportunity will be a further resit. In each case the final mark is capped at 40% unless extenuation is granted.

d) Repeating a year

If a student fails to achieve 60 credits within an academic year they may, at the discretion of the Exam Board, be asked to leave the course. The student will only be allowed to repeat an academic year twice at most during their studies (with mark uncapped).

Degree Classification

Where a student is eligible for an Honours degree by passing a valid combination of modules to comprise an award and has gained a minimum of 240 UEL credits at level 5 or level 6 on the current enrolment for the Course, including a minimum of 120 UEL credits at level 6, the award classification is determined by calculating:

The arithmetic mean of the best 100 credits at level 6	x	0.8	+	The arithmetic mean of the next best 80 credits at levels 5 and/or 6	x	0.2

and applying the mark obtained as a percentage, with all decimal points rounded up to the nearest whole number, to the following classification

70% - 100%	First Class Honours
60% - 69%	Second Class Honours, First Division
50% - 59%	Second Class Honours, Second Division
40% - 49%	Third Class Honours
0% - 39%	Not passed

For full details of the University degree classification refer to
http://www.uel.ac.uk/wwwmedia/internal/qa/committees/documents/Academic-Framework---Assessment-Regulations---with-changes-approved-for-Transition-Group.doc

Grades of the Artificial Intelligence Course modules

The points of each credit hour are computed as follows:

University of Ain Shams			University of East London
Percentage of Total Mark at ASU	Grade	Points for GPA	Percentage Equivalent at UEL
97% and Higher	**A+**	**4.0**	**95% and Higher**
93% to less than 97%	**A**	**4.0**	**82% to less than 95%**
89% to less than 93%	**A-**	**3.7**	**70% to less than 82%**
84% to less than 89%	**B+**	**3.3**	**66% to less than 70%**
80% to less than 84%	**B**	**3.0**	**63% to less than 66%**
76% to less than 80%	**B-**	**2.7**	**60% to less than 63%**
73% to less than 76%	**C+**	**2.3**	**56% to less than 60%**
70% to less than 73%	**C**	**2.0**	**53% to less than 56%**
67% to less than 70%	**C-**	**1.7**	**50% to less than 53%**
64% to less than 67%	**D+**	**1.3**	**45% to less than 50%**
60% to less than 64%	**D**	**1.0**	**40% to less than 45%**
Less than 60%	**F**	**0**	**Less than 40%**

References to Student Policies

ASU-FCIS student policy available at:
http:// chp-cis.asu.edu.eg/index.php/important-bylaw-regulations/
UEL available at:
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies

The electronic version of "Cite Them Right: *the essential referencing guide"* 9th edition, can be accessed whilst on or off campus, via UEL Direct. The book can only be read online and no part of it can be printed nor downloaded.

Assessment and Feedback Policy available at:
https://ums.asu.edu.eg/App?redirectUrl=https%3A%2F%2Fums.asu.edu.eg%2F#ScrollElement

Assessment and feedback are fundamental parts of your learning experience. The UEL Assessment and Feedback Policy seeks to:

- actively promote student success and academic achievement;
- provide clear, accurate, accessible information and guidelines to all staff and students on assessment and feedback;
- maximise the potential for consistency and fairness in assessment;
- locate assessment and feedback as an integral part of learning and teaching processes.

Every component of assessment that contributes to an award, at all levels, is subject to internal and External Examiner moderation. This ensures the maintenance of standards both internally and in comparison, with similar Courses delivered at other

higher education institutions. The UEL Assessment and Feedback Policy outlines the process for the various stages of the marking process and is available at https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Assessment-and-Feedback-Policy

The UEL Skills Curriculum has been designed to ensure that you are taught, have the opportunity to practice, and are assessed in three skillsets: Learning Skills, Professional Skills and Research Skills. These Skills are developed within your Course of study. Further information is available at: https://www.uel.ac.uk/discover/governance/policies-regulations-corporate-documents/student-policies/skills-curriculum

The UEL Skills Portal has been designed to act as a single gateway to a whole range of skills support that will help you progress through your studies. From tips on academic writing, using IT, to guidance on time management and exam revision - all of the resources in the UEL Skills Portal have been designed to support your learning and achievement, refer to https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Skllzone.aspx

As a student, you will be taught how to write correctly referenced essays using UEL's standard Harvard referencing system from Cite Them Right**.** Cite them Right is the standard Harvard referencing style at UEL for all Schools apart from the School of Psychology which uses the APA system. This book will teach you all you need to know about Harvard referencing, plagiarism and collusion. The electronic version of "Cite Them Right: ***the essential referencing guide"*** 9th edition, can be accessed whilst on or off campus, via UEL Direct. The book can only be read online and no part of it can be printed nor downloaded.

Further information is available at the weblinks below

Harvard referencing
https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Harvard-Referencing-.aspx

Academic Integrity
https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Academic-integrity.aspx

Assessment Criteria

A student's performance will be marked and graded according to pre-specified and clear assessment criteria. These will normally be presented in one document combining marking and grading criteria. Further details can be found in section 2.3 of the Assessment and Feedback Policy and can be found at: www.uel.ac.uk/qa/policies/assessmentpolicy/

As your degree progresses, you will be assessed in a number of different ways. In addition to examinations, you will have a range of coursework assessments such as reports or presentations, for which you will be given clear guidance by the module leader including how you will be assessed for that piece of work.

The section below gives you a general guideline of what we are looking for at different levels of the Course.

Level 4

- You can present factual information.
- With some help, you can analyse and evaluate the information presented and draw some conclusions.
- You can follow guidelines in creating solutions to straightforward problems.

Work of a better standard usually reflects an approach where,

- You have required little guidance in producing your work.
- You have shown initiative where appropriate.
- You meet your obligations to others.
- You have fully appreciated the complexity of a task and managed your time and resources accordingly.
- Your work is presented with care and forethought.

Level 5

- Your work displays a detailed knowledge of the topic. You are aware of other contexts that can be applied to this knowledge.
- With some guidance, you can analyse data and situations in a range of different contexts.
- You can take information gathered or the ideas of others and re-format it to your own purpose.
- You can select appropriate evaluation techniques. You can use these to evaluate your own findings.

Work of a better standard usually reflects an approach where

- You have required minimal assistance if any assistance.
- You have been particularly creative in devising and implementing your chosen solution.
- You have identified the key elements of problems and chosen the appropriate strategies to resolve them.
- You have communicated your work in a clear and concise manner.

Level 6

- Your work displays a comprehensive and detailed knowledge of the topic with areas of specialisation showing depth of understanding.
- You are aware of current developments.
- Without guidance, you can analyse data and situations in a range of different contexts.
- You can develop creative and innovative solutions with little guidance.
- You can review evidence critically and use your findings to support conclusions and recommendations.
- Work of a better standard usually reflects an approach where *y*ou have not required any assistance.
- You have proved you can manage your own learning and make full use of a wide range of resources.
- You have been confident in your ability to solve problems.
- You have communicated your work in a thoroughly professional and coherent

manner.

Link to the Student Handbook page on Assessment and Feedback: https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Assessment-and-Feedback.aspx

Link to Student Policies: https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies

REFERENCING

As a student you will be taught how to write correctly referenced essays. UEL's standard **Harvard referencing** system is from *Cite Them Right*. Cite them Right is the standard Harvard referencing style at UEL for all Schools, however professional body requirements will take precedence for instance the School of Psychology which uses the APA system.

MORE INFORMATION

Link to the Student Handbook page on *Cite Them Right*:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Cite-Them-Right.aspx

For the purposes of University regulations, **academic misconduct** is defined as any type of **cheating** in an assessment for the purposes of achieving personal gain. Please follow the link below to learn more.

Academic Misconduct

For the purposes of university's regulations, academic misconduct is defined as any type of cheating in an assessment for the purposes of achieving personal gain. Examples of such misconduct are given below: the list is **not** exhaustive and the use of any form of unfair or dishonest practice in assessment can be considered potential misconduct.

Coursework Submitted for Assessment

For coursework submissions, academic misconduct means:

(a) The presentation of another person's work as one's own with or without obtaining permission to use it.

(b) The inclusion within one's own work of material (written, visual or oral), originally produced by another person, without suitable acknowledgment.

(c) The submission, as if it were one's own work, of anything which has been offered to you for your use, but which is actually not your own work.

(d) The inclusion within one's work of concepts paraphrased from elsewhere without citing your source.

(e) The inclusion in submitted work of sections of text, whether from electronic or hard copy sources, without appropriate acknowledgement of the source.

(f) The submission of work that the student, as the author, has previously submitted, without suitable acknowledgement of the source of their previous work; this should not normally be more than a short quotation as the same work cannot be submitted for different assignments.

(g) Including or quoting the work of other students in one's work, with the exception of published work, or outputs held in the library as a learning resource, which should be cited and acknowledged appropriately.

(h) Being party to any arrangement whereby the work of one candidate is represented as that of another.

(i) The submission, as your own work, of any work that has been purchased, or otherwise obtained from others, whether this is from other students, online services, “cheat sites”, or other agents or sources that sell or provide assignments.

(j) Practices such as ‘cutting and pasting’ segments of text into your work, without citing the source of each.

(k) For work not intended to be submitted as a collaborative assignment: producing work with one or more other students, using study practices that mean the submitted work is nearly identical, overall or in part, to that of other students.

(l) Offering an inducement to staff and/or other persons connected with assessment.

Examinations

For examinations, academic misconduct means:

(a) Importation into an examination room of materials or devices other than those which are specifically permitted under the regulations applying to the examination in question.

(b) Reference to such materials (whether written or electronically recorded) during the period of the examination, whether or not such reference is made within the examination room.

(c) Refusing, when asked, to surrender any materials requested by an invigilator.

(d) The application of an electronic device, unless this has been expressly permitted for that examination.

(e) Copying the work of another candidate.

(f) Disruptive behaviour during examination or assessment.

(g) Obtaining or seeking to obtain access to unseen examination questions prior to the examination.

(h) Failure to observe the instructions of a person invigilating an examination or seeking to intimidate such a person.

(i) Offering an inducement to invigilators and/or staff and/or other persons connected with assessment.

Where academic misconduct is suspected, the matter will be dealt with under the *Procedure to be followed in the event of a suspected case of academic misconduct, Part 8, paragraph 4* of the Manual of General Regulations (available for view at

https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations).

If it is determined that academic misconduct has taken place, a range of penalties may be prescribed which includes expulsion from the Course.

PLAGIARISM - A GUIDANCE NOTE FOR STUDENTS

1. Definition of Plagiarism

Our University defines plagiarism and other academic misconduct in Part 8 of the UEL Manual of General Regulations (to which all students are referred upon joining UEL), which is reprinted in "The Essential Guide to the University of East London". In this document, the following example of an assessment offence is given:

The submission of material (written, visual or oral), originally produced by another person or persons or oneself, without due acknowledgement*, so that the work could be assumed to be the student's own. For the purposes of these Regulations, this includes incorporation of significant extracts or elements taken from the work of (an)other(s) or oneself, without acknowledgement or reference*, and the submission of work produced in collaboration for an assignment based on the assessment of individual work. (Such misconduct is typically described as plagiarism and collusion.)

The following note is attached:
*(Note: To avoid potential misunderstanding, any phrase that is not the student's own or is submitted by the student for a different assessment should normally be in quotation marks or highlighted in some other way. It should also be noted that the incorporation of *significant* elements of (an) other(s) work or of one's own work submitted for a different assessment, even with acknowledgement or reference, is unacceptable academic practice and will normally result in failure of that item or stage of assessment.)

2. Plagiarism in Greater Detail

Work that students submit for assessment will inevitably build upon ideas that they have read about or have learnt about in lectures. That is perfectly acceptable, provided that sources are appropriately acknowledged. It should be noted, however, that the wholesale reproduction of the ideas and words of others, however well referenced, is likely to lead to failure at assessment (see section 6 below)

The submission of work that borrows ideas, words, diagrams, or anything else from another source (or sources), without appropriate acknowledgement, constitutes plagiarism. Plagiarism is not limited to unattributed cutting-and-pasting; it includes the reproduction, without acknowledgement, of someone else's work, taken from a published (or unpublished) article, a book, a website, a friend's (or anybody else's) assignment, or any other source.

When an assignment or report uses information from other sources, the student must carefully acknowledge exactly what, where and how s/he has used them. If someone else's words are used, they must be within quotation marks and a reference must follow the quotation. (See section 6 for further guidance on referencing.)

Where a concept or argument in another source is paraphrased (rather than directly quoted), quotations marks should not be used, but it will still be necessary to acknowledge the source. Remember, however, that the making of simple changes to the wording of a source, while retaining the broad structure, organisation, content and/or phraseology of the source, is unacceptable academic practice and will probably be regarded as plagiarism. (For helpful tips on how to avoid plagiarism, see "The Study Skills Handbook" by Dr Stella Cottrell, pages 122-125.)

3. Collusion

Collusion is the term used to describe any form of joint effort intended to deceive an assessor as to who was actually responsible for producing the material submitted for assessment. Clearly, students are encouraged to discuss assignments with their peers, but each student must always ensure that, where an individual assignment is specified, the report/essay submitted is entirely the student's own. Students should, therefore, never lend work (in hard or electronic copy) to friends. If that work is subsequently plagiarised by a "friend", an act of friendship might lead to a charge of collusion.

4. When to Reference

Our regulations do not distinguish between deliberate and accidental plagiarism, but you will not be accused of plagiarism, provided that you properly reference everything in your work that was said, written, drawn, or otherwise created by somebody else.

You need to provide a reference:

- when you are using or referring to somebody else's words or ideas from an article, book, newspaper, TV Course, film, web page, letter or any other medium;
- when you use information gained from an exchange of correspondence or emails with another person or through an interview or in conversation;
- when you copy the exact words or a unique phrase from somewhere;
- when you reprint any diagrams, illustrations, or photographs.

You do not <u>need</u> to reference:

- when you are writing of your own experience, your own observations, your own thoughts or insights or offering your own conclusions on a subject;

- when you are using what is judged to be common knowledge (common sense observations, shared information within your subject area, generally accepted facts etc.) As a test of this, material is probably common knowledge if

  - you find the same information undocumented in other sources;
  - it is information you expect your readers to be familiar with;
  - the information could be easily found in general reference sources.

5. How to Reference

Our University has agreed on a single version of the Harvard referencing system (the School of Psychology uses the American Psychological Association (APA) referencing style) and this (along with APA) can be found in Cite Them Right:

Pears, R. and Shields, G (2013) *Cite Them Right.* Newcastle: Pear Tree Press
Cite Them Right is available online and hard copies can be found in our libraries and bookshops.

6. Plagiarism, or Unacceptable Academic Practice?

If work that you submit for assessment includes substantial and significant elements of other sources and all of those sources are appropriately acknowledged, you will not have plagiarised, but you will be culpable of unacceptable academic practice, because there will be too little of your "own voice" to allow your knowledge to be assessed. Work that you submit for assessment must:

- use your own words;
- provide a critical commentary on existing literature;
- aim for novelty and originality;
- demonstrate your understanding of the subject area by paraphrasing.

Work that does not meet those criteria will fail.

Link to the Student Handbook page on Academic Misconduct and Plagiarism:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Academic-Misconduct-and-Plagiarism-Home.aspx

The University adheres to its responsibility to support and promote the highest standards of **rigour and integrity** and embed a culture of honesty, transparency and care and respect for all participants and subjects of research. The University is committed to ensuring that research is conducted with integrity and good research practices are upheld. Please follow the link below to learn more.

Link to the Student Handbook page on Research for On Campus programmes:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Research.aspx

Link to the Research Integrity and Ethics Document page:
https://uelac.sharepoint.com/ResearchInnovationandEnterprise/Pages/research-integrity-and-ethics-documents.aspx

Placements and volunteering provide opportunities for students to gain work experience, develop work-related skills, learn about professional sectors and how your studies can be directly applied in the work environment. Some courses include placements as part of the formal course of study, and for others placements are a mandatory professional requirement.

Local Arrangements for Academic and Pastoral Care for Students

- Course teams must ensure that Academic Advisors have the knowledge and skills to carry out the role. The role includes helping students to understand:
  i. The academic and related skills required for successful study.
  ii. The need for self-direction and responsibility for own learning.
  iii. Their learning needs beyond their current courses and immediate assessments.
  iv. An opportunity to identify areas of weakness.
  v. Where to find information, help and support.
  vi. Clarification of aims and choices for progression, employment and further study [internship opportunities].

- Academic Advising in ASU-FCIS:
  i. Must exist for every year.
  ii. Must form part of the student induction process especially for General Level Year Students.
  iii. Must be used as a mechanism, to identify “students at risk”.
  iv. Must happen at critical moments in each semester. [week 1 & 8]

- Course teams must carefully manage the Academic Advising system so that students understand its role and know how to access it.

- Academic Advising needs to be carefully managed with its importance being emphasised:
  i. During the induction period for each Level of the Course.
  ii. In student handbook.
  iii. By Academic Advisor.
  iv. By Course Instructors-via class announcements.
  v. Via email and SIS.

- Unit Heads agree on procedures and systems to manage Academic Advising. These will include:
  i. Allocation of Academic Advisors for all Levels.
  ii. Ensuring students are informed.
  iii. Delivery of Academic Advising.
  iv. Identification of students at risk.

Local Personal Tutor Support

- Course teams must meet the minimum requirements for delivery of Academic Advising.

  - Meet in weeks 1 and 8 each semester.
  - Identify issues and agree on strategies.
  - Keep a record of meetings [SIS+ student copy].
  - Feedback on issues and actions taken as appropriate.
  - Advertise office hours when 1:1 appointments can be made according to Advisor and student Schedule.

- Advisor need to be clear about the focus of the meeting:
  i. Check that student has settled into the Course.
  ii. Identify any concerns the student may have.
  iii. Review student's progress [preferably quantitative].
  iv. Review and offer advice on student's performance in assessments/exams.
  iv. Address concerns about performance or attendance.
  v. Review progression or career plans [internship].

- Meeting -encouraging change
  i. Encouraging change -telling or helping?
  ii. Giving constructive feedback
  iii. Discussing options
  iv. Agreeing on actions –SMART targets
  v. Producing a realistic plan of action
  vi. Getting commitment
  vii. What's going well?
  viii. What could go better?

- Follow-up from meetings –ensuring action
  i. What actions are required by the student or by the Academic Advisor?
  ii. Does this involve liaison with:
    - Course Instructors?
    - Unit Heads?
    - Vice Director?

Local Careers Advice

- Course teams must ensure that staff acting as Academic Advisors are aware of relevant learner support services.

- Academic Advising is only a part of Learner Support:
  i. Employability Skills (through events)
  ii. Student Activities
  iii. The Library
  iv. Disability issues
  v. The Student Union

Employability and Career Development Centre (ECDC) is a Centre constructed through the collaboration between Ain Shams University and the American University, it has a permanent headquarter in Ain Shams University. It provides special training programs for students in order to develop their capabilities in the professional and employment fields. The centre aims to guide the trainee to his excellence and weaknesses points, and how to raise points of excellence and overcome weaknesses.

Local Arrangements for Supporting Students with Disabilities/Dyslexia

Faculty of Computer and Information Sciences provides support and equal opportunity for learning to its diverse community especially to those with disability. The faculty aimed that they experience the same level of equality and meet the same level of academic potential. The objectives are:

i. Ensure the accessibility to all faculty facilities.
ii. Ensure that admission requirements do not hinder anyone from enrolment by unnecessary barriers.
iii. Encourage people with disability to courses admission by providing any possible support.
iv. Determine the needs of the disable and support staff to deal with their needs.

The student should fill in the form describing his/her conditions to request for disability services. According to each case, the faculty can provide:

i. Quiet areas for exams equipped with the required physical changes.
ii. Providing staff members assisting for writing in exams.
iii. Extra exam time.
iv. Extended deadline for the assignments and attendance.
v. Providing special seating place in class.
vi. Providing large print hand-outs and verbal description for visual aids.

a) Local library and IT resources

ASU-FCIS has a central library which serves students and researchers in various fields besides the Digital Library to provide an online service for users. There is (1) central library with (3) sections according to the following:

- The student library contains (1405) books.
- The teaching staff hall contains (3430) books.
- Digital Library Hall: The Digital Library serves to provide an online Service for users. It gives online access to the contents of the library, including books and theses. The digital library website: http://srv2.eulc.edu.eg/eulc_v5/libraries/start.aspx.

Other learning resources are the Egyptian Bank of Knowledge (EBK) through the website: http://www.ekb.eg/ "Egyptian Knowledge Bank", is one of the largest national projects that is concerned with education in Egypt. It aims to provide huge and diversified sources for knowledge and culture for free. It comes after contracting with several international publishing houses to publish their contents in all scientific and cultural disciplines, to have the system for the new Egyptian Cultural Revolution completed. Generally, 25 global publishing house and specialised companies were contracted to provide their contents & technologies.
E-Mail Services involved a developed Cooperation of the University with Microsoft Corporation to Serve Undergraduate and Postgraduate Students offering new features for the official e-mail users.

b) Other Local Resources Relevant to Support the Course

The faculty offers students Training Support through the faculty's **iHub Unit,** which aims to be a centre for innovation in technology and entrepreneurship, as to form a link between academic study and labour market. It provides technical and professional development to the students by offering training Courses to serve students and graduates at the same time. These training Courses aim to develop the creative sense of the trainees in order to integrate them into creative and innovative works that would serve the Information Technology field and the community. It emphasizes on the overlap between the different disciplines in various fields and at various levels.

FCIS Graduates unit revives the post-graduation engagement. It focuses on the rehabilitation of the graduates to the work environment to meet the needs of national and international software houses and IT companies. The unit aims to reach out for

the graduates, make use of their expertise in the job market and get to know the required services that can be offered by the faculty to them.

Employability and Career Development Centre (ECDC) is a Centre constructed through the collaboration between Ain Shams University and the American University, it has a permanent headquarter in Ain Shams University. It provides special training Courses for students in order to develop their capabilities in the professional and employment fields. The centre aims to guide the trainee to his excellence and weaknesses points, and how to raise points of excellence and overcome weaknesses.

In general students have access to over 280 modern computers. Faculty members and employees have access to over 100 additional computers.
The databases and information systems of faculty staff members, their assistants, students, graduate students, expatriates, administrators and libraries have been developed and updated. The databases are continuously updated.

The Faculty of Computer and Information Sciences has a website through the main website of Ain Shams University. The website is: https://cis.asu.edu.eg/. The website provides various services for students and faculty members by presenting the internal regulations of the bachelor's degree courses as well as post-graduate education. The site is being developed and data recorded within it are consistently updated. The contents of the various educational materials are displayed. The course schedules and exam results are announced at the end of the semester. The site is available in Arabic and English so that the user can choose the appropriate language. This site is regularly updated by site administrators and college administration. E-mail access is also available to the faculty members and the assistant staff and the students on the website of the College.

In order to update the educational services to the international standards, an online portal was developed in order to open the access to students and staff members to perform efficiently online. Students can view their courses, submit coursework and view their grades. Staff members can upload their lectures, view the online submissions and grade online. An information technology unit was set up for the electronic portal of the college to be the main focus of interaction between students and faculty.

You are enrolled on a course of study leading to the award of a degree of the University of East London (UEL). As such, you are regarded as a student of the University of East London as well as FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU) and both institutions work together to ensure the quality and standards of the course on which you are registered.

The final responsibility for all quality assurance, validation and standards' matters rests with UEL.

Link to the Student Handbook page on *Quality and Standards*:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Quality-and-Standards.aspx

Extenuating Circumstances are circumstances which:

- impair your examination performance or prevent you from attending examinations or other types of assessment, or
- prevent you from submitting coursework or other assessed work by the scheduled deadline date, or within 24 hours of the deadline date

The University of East London has agreed, through Academic Board, procedures governing extenuation for students concerning the assessment process.

This course will be subject to equivalent procedures, with the process being administered by, and the panel being held within, FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU).

- If granted by the panel, **Extenuation can**
  - Allow students to hand in coursework up to 7 days late.
    or
  - Allow students to proceed to their next attempt uncapped.

- **Extenuation doesn't**
  - Give students more attempts to pass a module
  - Reschedule exams
  - Uncap a capped module
  - Give students a higher mark.
  - Allow students to hand in work over 7 days late

- The basic principle is that extenuation should put you in the same position that you would have been in had you not missed the exam or handed in the assessment late – it does not confer any advantages.

- UEL decided that its procedures would be
  - Evidentially based
  - Handled centrally by a panel of senior staff (not devolved to various parts of the organisation)
  - Retain student anonymity where possible

- The extenuation procedures are intended to be used rarely by students not as a matter of course.

- The procedures govern circumstances which
  - Impair the performance of a student in assessment or reassessment
  - Prevent a student from attending for assessment or reassessment
  - Prevent a student from submitting assessed or reassessed work by the scheduled date

- Such circumstances would normally be
  - Unforeseeable - in that the student could have no prior knowledge of the event concerned
  - Unpreventable - in that the student could do nothing reasonably in their power to prevent such an event
  - Expected to have a serious impact

- Examples of circumstances which would normally be regarded as serious are:
  - *A serious personal illness* (which is not a permanent medical condition – this is governed by disability procedures)
  - *The death of a close relative immediately prior to the date of assessment*

- Examples of circumstances which would *not* normally be regarded as extenuating circumstances are:
  - Failure of computer equipment / USB stick
  - Transport problems, traffic jams, train delays
  - Misreading the exam timetables / assessment dates
  - Minor illnesses

- The judgement as to whether extenuation is granted is made by a panel of senior persons in the organisation who make this judgement on the basis of the evidence the student provides (not on their knowledge of the student) – where possible the identity of the student is not made available to the panel. The judgement is made on the basis that the circumstances could reasonably be thought to be the sort of circumstances which would impair the performance of the student etc. The actual performance of the student is not considered and is not available to the panel.

➢ It is the responsibility of the student to notify the panel, with independent evidential documentary support, of their claim for extenuation.

Link to the Student Handbook page on **Extenuation**:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Extenuation.aspx

Academic Appeals
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Student-Appeals

Academic Integrity
https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Academic-integrity.aspx

Academic Tutoring
https://www.uel.ac.uk/centre-for-student-success/academic-tutoring

Accreditation of Experiential Learning
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations

Assessment and Feedback Policy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (click on other policies)

Centre for Student Success
https://www.uel.ac.uk/centre-for-student-success

Complaints procedure
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Student-Complaint-Procedure

Counselling
http://chp-cis.asu.edu.eg/index.php/c-administration/

Disability support
http://chp-cis.asu.edu.eg/index.php/c-administration/

Engagement & Attendance Policy
http://chp-cis.asu.edu.eg/index.php/important-bylaw-regulations/

Equality and Diversity Strategy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (click on other policies)

Extenuation Procedures
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Extenuation-Procedures

IT Support
https://ums.asu.edu.eg/

Library Resources
http://srv2.eulc.edu.eg/eulc_v5/libraries/start.aspx.

Manual of General Regulations
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations

Mentoring
https://www.uel.ac.uk/centre-for-student-success/mentoring

Referencing guidelines
https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Harvard-Referencing-.aspx

Student Protection Plan
https://www.uel.ac.uk/-/media/main/files/uel_student_protection_plan_202021.ashx

Suitability Procedure (Manual of General Regulations – Part 13 – Suitability Procedure)
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations

APPENDIX A: ACADEMIC APPEALS

Students who wish to appeal against a decision of an Assessment/Progression Board may appeal in accordance with the procedure for Appeals against Assessment Board decisions (Manual of General Regulations: Part 7 Appeals Against Assessment Board Decisions).

Disagreement with the academic judgement of a Board of Examiners' decision cannot -in itself- constitutes a reason to Appeal. Academic judgement is a judgement that is made about a matter where only the opinion of an academic expert will suffice. For example, a judgement about assessment or degree classification or a judgement about a decision where a student is required to repeat or take further assessment will usually be academic judgement, and a student cannot appeal simply because they believe they ought to have received a higher grade or mark. For further information on the scope of this procedure, please refer to Part 7 of the Manual of General Regulations.

Further information about the UEL appeals process, including copies of the formal Notification of Appeal Form, is available to view at https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Student-Appeals

To help you decide whether your query would be an Appeal or Complaint, please refer to https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies

If you would like to lodge a formal appeal or have any queries, please email the Institutional Compliance Office at appeals@uel.ac.uk

APPENDIX B: COMPLAINTS

If you feel that you have not received the standard of service which it would be reasonable to expect, you may be entitled to lodge a complaint. Complaints should be used for serious matters, and not for minor things such as occasional lapses of good manners or disputes of a private nature between staff and students

Separate procedures exist for the following, which therefore cannot form the substance of a complaint:

- appeals against the decisions of Assessment Boards (**Manual of General Regulations: Part 7 Appeals Against Assessment Board Decisions**);
- appeals against annual monitoring reviews, transfer of research degree registration or oral examination decision for postgraduate research students (**Manual of General Regulations: Part 9 Research Degrees**);
- appeals against the decisions of the Extenuation Panel (**Manual of General Regulations: Part 6 Extenuating Circumstances**);
- complaints against the Students' Union (see the **Complaints Procedure** in the **Students' Union constitution**);
- appeals against decisions taken under disciplinary proceedings **(Manual of General Regulations: Part 12**);
- complaints about businesses operating on University premises, but not owned by our university (contact the Deputy Vice-Chancellor and Chief Operating Officer);
- complaints about the behaviour of other students (see **Part 12 of the Manual of General Regulations this Manual**);
- appeals against the decisions of Academic Misconduct Panels (see **Part 8 of the Manual of General Regulations**)
- appeals against the decisions of Attendance Appeal Panels (see the **University's Attendance Policy**).

Students wishing to submit a complaint must, in the first instance, follow the complaints policy of which aligns to the Office of the Independent Adjudicator's good practice framework (https://www.oiahe.org.uk/media/96361/oia-good-practice-framework.pdf). The FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU) complaints policy is available at: https://elearning.cis.asu.edu.eg/undergraduate/

FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU) will administer all stages of its complaints policy and, upon exhaustion of this policy, will issue a formal letter to the complainant notifying them that its complaints policy has been exhausted. If the complainant is still not satisfied with the outcome, they will be entitled to request that the University of East London undertake a review of their complaint.

The University of East London will conduct a review of the complaint in accordance with Stage 3 of its own Complaints Procedure. The University of East London Complaints Procedure is available at: https://www.uel.ac.uk/discover/governance/policies-regulations-corporate-documents/student-policies/manual-of-general-regulations

The University of East London will administer the Stage 3 review in accordance with its Complaints Procedure and, upon completion of the review, will issue a Completion

of Procedures Letter. If the complainant is still not satisfied with the outcome, they will be entitled to make a complaint to the Office of the Independent Adjudicator.

Complainants are strongly advised to make every reasonable effort to resolve their complaint informally through meeting with the member of FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU) staff most directly concerned with the matter, such as the Course or Module Leader, before submitting a formal complaint.

Complaints must normally be lodged within the set time limits outlined in the relevant complaints policy. This ensures that the people involved still remember the case, and the facts can be established.

If you would like to request that the University of East London undertake a review, following the exhaustion of the FACULTY OF COMPUTER & INFORMATION SCIENCES - AIN SHAMS UNIVERSITY (FCIS- ASU) complaints policy, please email the Complaints and Appeals Office at complaints@uel.ac.uk

APPENDIX C: ASSESSMENT MAPPING TABLES

Bachelor of Artificial Intelligence (Hons) (Ain Shams University)							BSc Artificial Intelligence (Dual Award)						
Code	**Module Name**	**Credit hour**	**C/W**	**C/W Weightage**	**Exam**	**Exam Weightage**	**Module Code**	**Module Name**	**Credit Weighting**	**C/W**	**C/W Weightage**	**Exam**	**Exam Weightage**
CSC270	Programming II	4	Practical	20%	Final	50%	AS4001	Fundamentals of Programming	20	In-class Test (120 minutes)	50%		
			In-class Test	15%									
			Assignments	15%						Assignments (20 hours of student effort)	30%		
CSC250	Data Structures & Analysis	4	Practical	20%	Final	50%				Practical (40 hours of student effort)	20%		
			In-class Test	15%									
			Assignments	15%									
BSC221	Discrete Mathematics	3	In-class Test	15%	Final	60%	AS4002	Applied Mathematics	20	In-class Test (120 minutes)	60%		
			Assignments	25%									
BSC225	Differential Equations	3	In-class Test	15%	Final	60%				Assignments (60 hours of student effort)	40%		
			Assignments	25%									
CSY260	Digital Logic Design	3	Practical	20%	Final	50%	AS4003	Digital Design and Computer Architecture	20	In-class Test (120 minutes)	50%		
			In-class Test	15%									
			Assignments	15%						Assignments (20 hours of student effort)	30%		
CSY362	Computer Architecture and Organization	3	Practical	20%	Final	50%				Practical (40 hours of student effort)	20%		
			In-class Test	15%									
			Assignments	15%									
CSC340	Design & Analysis Algorithms	3	Practical	20%	Final	50%	AS4041	Statistics and Algorithms Design	20	In-class Test (120 minutes)	50%		
			In-class Test	15%									
			Assignments	15%									
BSC223	Probability and	3	In-class Test	15%	Final	60%				Assignments	40%		

	Statistics		Assignments	25%							(40 hours of student effort)			
											Practical (20 hours of student effort)	10%		
INF370	Database Management	3	Practical	20%	Final	50%		AS4005	Mental Wealth: Professional Life 1 (Database Systems and Reports	20	In-class Test (120 minutes)	50%		
			In-class Test	15%										
			Assignments	15%										
HUM113	Report Writing	2	In-class Test	15%	Final	60%					Assignments (40 hours of student effort)	40%		
			Assignments	25%							Practical (20 hours of student effort)	10%		
INF380	Software Engineering	3	Practical	20%	Final	50%		AS4042	Software Engineering & Human-Computer Interaction	20	In-class Test (120 minutes)	50%		
			In-class Test	15%										
			Assignments	15%										
AIT312	Human-Computer Interaction	3	Practical	20%	Final	50%					Assignments (40 hours of student effort)	30%		
			In-class Test	15%										
			Assignments	15%							Practical (20 hours of student effort)	20%		
HUM215	Computer Ethics	2	In-class Test	15%	Final	60%		AS5043	Mental Wealth: Professional Life 2 (Computer Ethics and Parallel Programming)	20	Practical (10 hours of student effort)	10%	Exam 120 minutes	50%
			Assignments	25%										
AIT 415	Parallel Programming Languages and Systems	3	Practical	20%	Final	50%					Assignments (20 hours of student effort)	40%		
			In-class Test	15%										
			Assignments	15%										
AIT311	Computational Cognitive Science	3	Practical	20%	Final	50%		AS5044	Cognitive Sciences	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%										
			Assignments	15%										
CSC445	Neural Networks	3	Practical	20%	Final	50%					Assignments	30%		

			In-class Test	15%							(20 hours of student effort)			
			Assignments	15%										
AIT322	Machine Learning and Pattern Recognition	3	Practical	20%	Final	50%		AS5045	Artificial Intelligence and Machine Learning	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%										
			Assignments	15%										
CSC441	Artificial Intelligence	3	Practical	20%	Final	50%					Assignments (20 hours of student effort)	30%		
			In-class Test	15%										
			Assignments	15%										
CSY465	Computer Networks	3	Practical	20%	Final	50%		AS5006	Computer Networks and Operating Systems	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%										
			Assignments	15%										
CSC352	Operating Systems	3	Practical	20%	Final	50%					Assignments (20 hours of student effort)	30%		
			In-class Test	15%										
			Assignments	15%										
CSC342	Computer Graphics	3	Practical	20%	Final	50%		AS5046	Computer Graphics and Image Processing	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%										
			Assignments	15%										
CSC442	Image Processing	3	Practical	20%	Final	50%					Assignments (20 hours of student effort)	30%		
			In-class Test	15%										
			Assignments	15%										
CSY477	Computer Security Techniques	3	Practical	20%	Final	50%		AS5047	Internet of Things and Cloud Security	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%										
			Assignments	15%										
AIT326	Internet of Things Systems Security and the Cloud	3	Practical	20%	Final	50%					Assignments (20 hours of student effort)	30%		
			In-class Test	15%										
			Assignments	15%										

AIT417	Introduction to Vision and Robotics	3	Practical	20%	Final	50%	AS6048	Robotics Vision and Learning	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%									
			Assignments	15%									
AIT427	Robot Learning and Sensorimotor Control	3	Practical	20%	Final	50%				Assignments (20 hours of student effort)	30%		
			In-class Test	15%									
			Assignments	15%									
SCC 330	Numerical Methods	3	Practical	20%	Final	50%	AS6049	Numerical Methods and AI Robotics	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%									
			Assignments	25%									
AIT428	Intelligent Autonomous Robotics	3	Practical	20%	Final	50%				Assignments (20 hours of student effort)	30%		
			In-class Test	15%									
			Assignments	15%									
AIT414	Algorithmic Game Theory and its Applications	3	Practical	20%	Final	50%	AS6050	Game Theory and Reasoning	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%									
			Assignments	15%									
AIT421	Reasoning and Agents	3	Practical	20%	Final	50%				Assignments (20 hours of student effort)	30%		
			In-class Test	15%									
			Assignments	15%									
AIT422	Genetic Algorithms	3	Practical	20%	Final	50%	AS6051	Advanced AI Analytics	20	Practical (10 hours of student effort)	20%	Exam 120 minutes	50%
			In-class Test	15%									
			Assignments	15%									
AIT430	Big Data Analytics	3	Practical	20%	Final	50%				Assignments (20 hours of student effort)	30%		
			In-class Test	15%									
			Assignments	15%									
AIT400	Project	6	8000-word project report plus 20 minutes	75%			AS6020	Mental Wealth: Professional Life 3 (Project)	40	8000-word project report plus 20 minutes	75%		

			presentation								presentation			
			Intermediate deliverables	25%										
TRNxxx	2 Summer Trainings	4	20 minutes presentation	25%							1000-word Intermediate deliverables	25%		
			Intermediate deliverables	75%										

An example for the assessment mapping between ASU and UEL is given for the Module “Computer Networks and Operating Systems”. At the Egyptian Bylaw, the two-courses components are the practical, In-class test, Assignment and Final exam with their weights. The table shows an example for marks by a student for every component as both out of 100 and as assessment weightage on the ASU mark range. The marks by assessment weightage for the different categories can be assembled for the two ASU courses providing the student total marks out of 200 marks (155 for the example shown).

The assessment weightage of ASU is next mapped to the assessment weightage of UEL since two ASU courses forms a single UEL module. The table also shows the components’ mapping visualized by colour. The student marks on the UEL mark range can be then calculated forming a student total mark out of 100 (77.5 for the example shown).

Since the ASU and UEL uses different grading and Pass/Fail systems as highlighted by the table on p58, the mark that the student obtained (77.5) is scaled on the UEL range to obtain the percentage equivalent according to the UEL Bylaw (61.13).

Description	ASU-FCIS								UEL		
	CSY 465 Computer Networks				CSC 352 Operating Systems				AS5006 Computer Networks and Operating Systems		
	Practical	In-Class Test	Assignment	Final Exam	Practical	In-Class Test	Assignment	Final Exam	Practical	Assignment	Final Exam
Assessment weightage	20%	15%	15%	50%	20%	15%	15%	50%	20%	30%	50%
For example											
Marks by component (Full marks of 100) on ASU mark range	67	56	80	84	64	60	86	89			
Marks by Assessment weightage	13.4	8.4	12	42	12.8	9	12.9	44.5			

ASU-FCIS Assessment weightage category	ASU-FCIS total weightage	Marks by Assessment weightage cateogry
Practical	40%	26.2
In-Class Test	30%	17.4
Assignment	30%	24.9
Final Exam	100%	86.5
	200%	155

UEL Assessment weightage category	UEL total weightage	Marks by Assessment weightage cateogry
Practical	20%	13.1
Assignment	30%	21.15
Final Exam	50%	43.25
	100%	77.5
% Equivalent at UEL = 61.13		

APPENDIX D: HEALTH AND SAFETY

- One of the principle roles of Ain Shams University administration is controlling dangers and risks. The University is aware that failures in health and safety administration can possibly prompt loss of life, injury, and damage to the University properties.

- According to the University, a fundamental standard of the Health and Safety policy is that it is in the hands of the individuals who cause the dangers and risks to manage and control them.

- The University appoints persons “capable to advice” to help with identifying, recognizing, and controlling health and security dangers and risks. They may work in any sector of the University.

- Each College of the University holds a responsibility regarding the management and use of its own health and security policies and strategies. Despite that, the University and Colleges are still obliged to coordinate on the mutual matters of health and security which affect the more extensive University community.

- Heads of the different Departments must set out their own organizational courses of action for the safety measures. In addition, they abide by the general University Health and Safety Policies and are responsible for their implementation and management in their own departments and domains of responsibility.

- Each Head of Department might set up a Departmental Safety Policy, which works hand in hand with this University Health and Safety Policy to satisfy the prerequisite Health and Safety at Work measures.

- Each Head of Department must guarantee that everybody who might be influenced by the activities of the Department, knows about the health and security policies and arrangements, and has sufficient knowledge, information, time, preparation and supervision authority to allow for the identification, recognition and control of the dangers and risks to health and security.

- The supervisor of any departmental activity (field trip, practical work, office work or teaching activities) must have a comprehensive understanding of the related dangers and risks and conduct the risk assessment suitable for the circumstances of the activity. This is to fulfil the requirements of the Health and Safety at Work Regulations and different measures which state that no work might be attempted unless reasonable and adequate risk assessment has been done to define a safe and secure system of work.

- All University staff members are expected to be fully aware of both the University and Department policies and know that they hold the responsibility of this aspect for all those under their supervision or management. This implies ensuring and promoting good working practices and environment. It also includes ensuring that practical and office work is done in safe spaces, equipment being maintained and checked in safe procedures, that the policies and strategies are being implemented and disseminated and that immediate reporting of any accidents or dangers takes place in order to take the necessary measures.

- The health and safety policy are also abiding to any private body or entity working inside the University premises. They must coordinate with the University on all matters related to health and safety management.

APPENDIX E: COURSE COMMITTEE (COLLABORATIVE)

Terms of Reference

To be responsible for assuring and enhancing the quality of the student experience at Course level by:

- Providing a forum in which students can express their views about the management of the Course, and the content, delivery and assessment of modules, or equivalent, in order to identify appropriate actions to be taken in response to the issues raised and to ensure that the implementation of these actions is tracked.

- Providing formal yearly student feedback on the Course as input into the preparation of the Course REP.

- Reviewing Course questionnaire results and making recommendations and changes arising from these.

- Receiving, considering, and approving the Course REP and identifying responsibilities for action to be taken before it is considered by School Learning and Teaching Quality Committee.

- Reviewing progress on REP action plans at each meeting.

- Reviewing the relevant documentation and other evidence prepared for Academic and collaborative Institutional Review and other external review processes.

- Reviewing proposals for modification of the Course structure (validated Courses only) and noting implementation arrangements for modifications.

- Advising the Course Leader on mechanisms by which University policy statements, which have an impact on Course design and delivery, are implemented.

MEMBERSHIP

Course Leader (Chair)
Administrator/Servicing Officer (ex-officio)
Course staff making a significant teaching contribution to the Course
Learning Support Services representative
Technician representative (for laboratory-based Courses)
Dean of School/department or equivalent (ex officio)
UEL Dean of School/Associate Dean of School, or equivalent (ex officio)
UEL link person (ex officio)
Two student representatives for each level and at least one part-time student (where appropriate)

The meeting will be held once per semester/term and will be quorate if 40% of the members are present.