AIN SHAMS UNIVERSITY – FACULTY OF ENGINEERING (ASU – FoE)

IN COLLABORATION WITH

SCHOOL OF ARCHITECTURE, COMPUTING AND ENGINEERING

BEng (Hons) in Communication Systems Engineering

Programme Handbook

Academic Year 2019-2020

CONTENTS

1 WELCOME AND INTRODUCTION

This handbook is intended for all students taking the BEng (Hons) Communication Systems Engineering Double Degree award from Ain Shams University and the University East London. You will find it a useful source of information at the start of your programme, but you should also keep it for reference purposes throughout your time here. It is, however, not intended to provide all you need to know, so you should also read Ain Shams University Handbook.

The partnership with University East London (UEL), our collaborative partner in the UK, started in Fall 2018. Three ASU Credit Hours programmes (Building Engineering Programme, Environmental Architecture and Urbanism Programme, and Computer Engineering and Software Systems Programme) have been validated and Double Degree awarded by ASU and UEL (***https://eng.asu.edu.eg/UEL***).

UEL is an internationally renowned university aiming to achieve the highest possible standard of academic excellence. Apart from being one of the UK's most diverse and fastest growing universities, UEL is a global learning community with internationally recognised research. We are most confident that our collaboration with UEL will yield significant academic benefits both for ASU as an institution, and for the students who will enrol the BEng (Hons) Communication Systems Engineering programme.

Our vision at Faculty of Engineering -Ain Shams University (FoE-ASU) is being one of the best colleges known for their leadership regionally and internationally in engineering education and scientific research through interdisciplinary and unique academic programmes that meet the needs of the community and contribute to sustainable development. It aims for preparation of distinguished graduates capable of keeping pace with global technology in various disciplines that meet the needs of local and regional markets and can conduct scientific research. This is applied through the creation of appropriate conditions for faculty members and their assistants and students, and through providing educational programmes in advanced undergraduate studies, as well as establishing advisory centres and research labs which include sophisticated contribution to community service to meet its needs.

Credit Hours Engineering Programmes at the Faculty of Engineering - Ain Shams University (ASU- ICHEP) is one of the outstanding models for engineering education in Arab Republic of Egypt, as it seeks to provide high-quality of engineering education based on interdisciplinary programmes and the application of international standards of credit hours systems followed in the most prestigious universities in the world. Learning environment at ASU- ICHEP focused on the graduation engineers equipped with skills, knowledge, and the ability to life-long learning. ICHEP began at the Faculty of Engineering - Ain Shams University in 2006 with two programmes namely Building Engineering and Materials Engineering with a number of students that does not exceed 60 students.

There are nine programmes (Building Engineering, Communication Systems Engineering, Materials Engineering, Manufacturing Engineering, Energy and Renewable Energy Engineering, Computer Engineering and Software Systems, Landscape Architecture, Mechatronics Engineering and Automation, and

Environmental Architecture & Urbanism Engineering). Thus, currently the total number of students in ASU- ICHEP exceeds 3000 students that work side by side with Specialized programmes. ASU- ICHEP is characterised by adopting new models in learning, which are different from the traditional system in Egyptian Engineering colleges. Moreover, the curriculum adopted in ASU- ICHEP are inspired by the vision of experts and specialists in these fields. The programmes in ASU- ICHEP follow mainly the National Authority for Quality Assurance and Accreditation of Education (NAQAAE).

The framework for NAQAAE was established to enhance the quality of education in Egypt with a mandate to ensure the development of basic reference standards for education - National Academic Reference Standards (NARS). The Communication Systems Engineering programme is designed based on the NARS requirements to inspire students to be innovative and creative by using appropriate teaching and learning technologies and pursuing independent and life-long learning.

Our graduates are expected to have productive and very rewarding careers in a variety of capacities. The programme enables graduates to enter the following markets: Telecommunication, Satellite communication, Broadcasting, Cellular Networks, Internet Network, Microwave, Optical Network, Electronics, and Embedded Systems

We are confident that you have made the right choice to continue your lifelong learning journey with ASU. We promise to make your time here with us a most enriching educational experience for you.

Mohamed Abouelatta, PhD
Programme Leader

2 INTRODUCTION TO THE PROGRAMME

Programme Philosophy

The Communication Systems Engineering Programme was launched at Ain Shams University in 2007, and is aiming to graduate engineers with the ability to deal with the latest developments in the fields of advanced communication, optical and electronic systems to meet the requirements of the market at the moral and professional levels by creating the appropriate conditions for the development of different skills of students and faculty members and cooperate with specialized industrial and research bodies locally and internationally.

The students are exposed to a wide variety of courses to build an open scope to telecommunication engineering which is interdisciplinary in nature. The graduate acquires his degree by taking a balanced curriculum that is pre-dominantly concerned with communication systems on different levels and which does not neglect required basic sciences used in this field.

The BEng (Hons) Communication Systems Engineering degree will give students an advantage in the employment market where the content of the programme provides a broader range of skills. Furthermore, a validated degree via a UK HEI will provide the students with a richer competency and skills-set. Finally, the skills which the students will gain on the programme will enhance the Communication Engineering discipline in Egypt and build capacity for sustainable development.

2.1 Programme duration and modes of study

The Communication Systems Engineering programme is a 4-year full-time or 8 year part-time mode. The programme includes a foundation year and three (3) years for the specialised courses.

In senior years (Level 5 & 6), students choose among three tracks of specialisation: Signals and Communication Systems, Circuits and Systems, and Physical and Wave Electronics. They study the specific specialisation courses corresponding to the chosen pathway, and there are offered wide range of technical electives that students can choose from according to their field of interest, and their ambition in their future career. The programme awards a Bachelor degree in the field of study.

The allowed study duration on the programme is four years for full-time mode. In exceptional circumstances, this time limit may be extended to five (5) years, which does not include frozen semesters for reasons acceptable by the faculty, after which the student is expelled from the programmes.

The students are allowed to register fewer number of modules to comply with Part time mode of UEL with maximum study duration of eight years after first enrolment on the programme.

It is possible to move from full-time to part-time study and vice-versa to accommodate any external factors such as financial constraints or domestic commitments. Many of

our students make use of this flexibility and this may impact on the overall duration of their study period and the fees students pay annually, depending on the agreed financial arrangements.

2.2 Programme aims and objectives

The programme aims at generating a graduate who is well trained in modern telecommunication industry as well as having a background in communication systems that enables him/her to fit easily within a modern telecommunication work environment and be able to identify market needs in this fast-moving segment of business.

The specific aims of the programme are:

- Develop in the students a strong understanding of the capabilities and limitations of communication systems and the related electronics.
- Give the students a chance to gain knowledge and develop skills in a wide variety of specialized selective courses.
- Develop advanced analytical and experimental skills that will allow the successful graduates to design new communication systems and provide them with the skills to critically analyse existing designs.
- Develop students' competence in computing in terms of software engineering and the use of the latest computing technologies.
- Train students in laboratory techniques for the safe and effective construction and testing of communication systems.
- Develop students' excellence in communication of technical and non-technical information in written, oral or graphical form and the duties associated with the status of a communication engineer.
- Provide the students with opportunities for internships in industry to gain career enhancing experience of the application of engineering principles.
- Enhance the active learning by the students and provide them with a well-developed academic base and ethics that provides for further learning and professional development

2.3 Programme Intended learning outcomes (ILO's)

The graduates of the Communication Systems Programme should be able to demonstrate:

Knowledge

- Concepts and theories of mathematics, sciences, electronic engineering systems and their application within the field of Communication engineering.
- Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues associated with Communication engineering.

- Professional ethics and impacts of engineering solutions on society and environment.
- Coding and decoding techniques, Basics of electromagnetism, wave propagation and Transmission lines for communication systems.
- Analysis and control and Basics of Communication systems and networks.

Thinking skills

- Select appropriate mathematical and computer-based methods for modelling and analysing communication systems problems
- Think in a creative and innovative way in problem solving and design.
- Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
- Solve industrial problems, often on the basis of limited and possibly contradicting information.
- Incorporate economic, societal, environmental dimensions and risk management in design.
- Analyse the performance of digital and analog communication, mobile communication, coding, and decoding systems.

Subject-Based Practical skills

- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve communication systems problems.
- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyse and interpret results.
- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
- Apply quality assurance procedures and follow communication systems codes and standards.
- Exchange knowledge and skills with communication systems engineering community and industry.
- Apply computer programming for the design and diagnostics of digital and analogue communication, mobile communication, coding, and decoding systems.

Skills for life and work (general skills)

- Collaborate and communicate effectively within multidisciplinary team.
- Work in stressful environment and within constraints.
- Effectively manage tasks, time, and resources.
- Search for information and engage in life-long self-learning discipline.

2.4 Professional body accreditation

The National Academic Reference Standards (NARS) for Engineering set out generic statements which represent general expectations about standards for the Bachelor of Engineering. These statements clarify the attributes associated with the award of engineering degrees:

- The awards are in accord with the frameworks for contemporary engineering education.
- The Engineering degrees address the national expectations of the graduate engineers.
- The degrees satisfy the actual and expected market needs.

According to the Accreditation Board for Engineering and Technology (ABET), Engineering is the knowledge of the mathematical and natural sciences, gained by study, experience, and practice, applied with judgment to develop ways to economically utilise the materials and forces of nature for the benefit of mankind. It is the ability to initiate and conduct activities associated with engineering processes, systems, problems, opportunities, history, future impacts and ethics with minimal negative consequences. It involves knowledge, ways of thinking, action coordination and capability development. It helps preparing individuals to make well-informed choices whether they act as consumers, workers, citizens or members of the global community.

The engineering education should achieve excellence in undergraduate and graduate education, research, public service and advancement of the state-of-the art within the discipline. It aims to produce able, broadly educated, highly qualified engineers through academic excellence. Moreover, it motivates students, faculty and staff to learn, grow, achieve and serve the needs of society nationally, regionally and internationally. It also prepares students for a productive and rewarding career in engineering based on strong moral and ethical foundation.

The references for standards considered in the development of this programme were the Academic Reference Standards (ARS) of Communication System Engineering Programme, August 2009 (as a minimum standards) prepared by the Electronics and communication engineering education sector of the supreme council of universities in Egypt. Available copies of the NARS (issued in August 2009).

2.5 Programme Structure & Content

The BEng (Hons) Communication Systems Engineering degree is a four-year UEL/ASU double award programme, i.e. levels 3–6. The programme conforms to UEL's Academic Framework structure. The majority of modules are 30 credits delivered over the whole year and suit a September in take only. A few modules are 15 credits and delivered sequentially to meet specific professional learning outcomes. The student chooses one of the three tracks of specialization as a major track.

All modules will be taught/delivered and assessed in English. Each module will have a named Module Leader from ASU. The programme Leader, who has overall responsibility for the day-to-day running of the programme is Assoc. Prof. Dr.

Mohamed Abouelatta. Students will pay all tuition/study/workshop/course field trip fees directly to ASU. Details of the programme structure can be seen in Table 2.5.

Intermediate Awards

If students are unable to complete their studies, the following awards can be made:
In order to gain a BEng unclassified degree (ordinary degree) students will need to obtain a minimum of 300 credits including:

- A minimum of 120 credits at level four or higher
- A minimum of 120 credits at level five or higher
- A minimum of 60 credits at level six or higher

In order to gain a Diploma of Higher Education students will need to obtain at least 240 credits including a minimum of 120 credits at level four or higher and 120 credits at level five or higher.

In order to gain a Certificate of Higher Education students will need to obtain 120 credits at level four or higher.

In order to gain an Undergraduate Certificate students will need to obtain 40 credits at level three or higher.

Design of the Programme

The design and content of the Communication Systems Engineering programme has been determined by a number of considerations including:

- to meet the national Benchmark Standards and the requirements of the National Framework for Higher Education Qualifications (see ***www.qaa.ac.uk*** for details).

- To meet the UEL Academic Framework Modular Regulations and other university policies (***www.uel.ac.uk/academicframework***).

- To reflect the research and professional interests of the staff. The options on offer are taught by staff who is specialists in those areas. In this way, you will be exposed to up to date research and also gain awareness of professional practice.

- To build up your knowledge and extend your skills as you go through the years. Each Year/Level of the programme draws on and expands material presented at earlier stages. You will be expected to tackle more specialist topics and in more breadth and depth, to develop more critical evaluation and analysis of material, to begin to integrate material across modules, to rely less on basic text books and to read more original material, and to work more independently, with less guidance.

- To offer opportunities for you to develop career and work related skills. Certain modules are specifically designed to help you with this but all modules offer opportunities for practice and development.

Table 2.5 BEng Communication Systems Programme Structure.

Note: The listed modules' codes are temporary, and they will be updated later according to the UEL partner Web Marks Entry (WME) system

Level	Year	Code	Module title	credit	Core/ Track Related
Communication Systems Engineering					
3	1	EG10311	Applied Mathematics for Communications Engineering	30	Core
3	1	EG10312	Foundations of Physics	30	Core
3	1	EG10313	Engineering and Electronic Materials	30	Core
3	1	EG10314	Circuits and Fields theory	30	Core
Communication Systems Engineering					
4	2	EG10421	Digital Design and Computer architecture	30	Core
4	2	EG10422	Electronic Devices & Circuits	30	Core
4	2	EG10423	Fundamentals of Microwave Engineering	30	Core
4	2	EG10424	Fundamentals of signals & Communications	30	Core
Communication Systems Engineering					
5	3	EG10531	Analog and Digital Circuits	30	Core
5	3	EG10532	Antenna Engineering	15	Core
5	3	EG10533	Digital Transmission and Networks	30	Core
5	3	EG10534	Control Engineering	15	Core
Track 1: Signals and Communication Systems					
5	3	EG10535	Satellite Communications	15	Elective
5	3	EG10536	Statistical Signal Processing	15	Elective
Track 2: Circuits and Systems					
5	3	EG10537	VLSI Technology	15	Elective
5	3	EG10538	Introduction to Embedded Systems	15	Elective
Track 3: Physical and Wave Electronics					
5	3	EG10539	Microwave Circuits	15	Elective
5	3	EG105310	Optical Sensing	15	Elective
Communication Systems Engineering					
6	4	EG10641	Advanced Communication Networks	15	Core
6	4	EG10642	Graduation Project	30	Core
6	4	EG10643	Entrepreneurship	15	Core
6	4	EG10644	Information Theory and Coding	15	Core
Track 1: Signals and Communication Systems					
6	4	EG10645	Wireless and Mobile Communications	30	Elective

6	4	EG10646	Processing for Multimedia	15	Elective
Track 2: Circuits and Systems					
6	4	EG10647	Analog and RF Circuit design	30	Elective
6	4	EG10648	ASIC Design & Automation	15	Elective
Track 3: Physical and Wave Electronics					
6	4	EG10649	Microwave Systems	30	Elective
6	4	EG106410	Optical Communication	15	Elective

FoE-ASU modify the programmes Bylaws every five years to cope with the advances in engineering technologies and/or enforcing corrective actions to face any deficiencies in the previous Bylaws. The current enrolled students on the Communication Systems Engineering programme are registered on the 2013 Bylaw, while the students who will register in the academic year 2019-2020 will be enrolled at 2018 Bylaw. For students who are enrolled on the 2013 Bylaw and want to complete the BEng (Hons) from UEL, an equivalency will be made for the courses achieved by student(s) to determine which level s/he will be enrolled at. As for students who will be enrolled on the 2018 Bylaw and want to complete the BEng (Hons) from UEL, they will register the corresponding UEL level modules and follow either full time or part time study modes.

The following table shows the content of each module of the COMM programme (Bylaw 2013 and Bylaw 2018), percentage weighting and the assessment method:

Module Code	Module Name	Component of Assessment	Percentage Weighting	Component of Assessment	Percentage Weighting	Assessment Method
		2013 Bylaws		2018 Bylaws		
Communication Systems Engineering (UEL) Foundation (Level 3) - ASU Year 1						
EG10311 30 Credits	Applied Mathematics for Communications Engineering	**PHM113** Calculus for Engineering (3)	25%	**PHM111** Probability and Statistics	25%	Four portfolios of students' work include coursework of the four ASU- modules; each portfolio includes samples of the following: • Participation • Assignments • Quizzes • A midterm exam • Final Exam
		PHM115 Differential Equations and Partial Differential Equations	25%	**PHM113** Differential Equations and Partial Differential Equations	25%	
		PHM114 Statistics and Probability for Engineering	25%	**PHM114** Numerical Analysis	25%	
		PHM116 Complex and special functions and Fourier Analysis	25%	**PHM213** Complex and special functions and Fourier Analysis	25%	
EG10312 30 Credits	Foundations of Physics	**PHM221:** Optical and Thermal Physics	50%	**PHM123** Thermal and Statistical Physics	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam
		PHM123: Modern Physics and Quantum Mechanics	50%	**PHM121:** Modern Physics and Quantum Mechanics	50%	
EG10313 30 Credits	Engineering and Electronic Materials	**MDP132** Structures and Properties of Materials	50%	**EPM211** Properties of Electrical Materials	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Practical demonstrations • TCAD Simulation Report • Assignments • Quizzes • A midterm exam
		ECE132 Electronic Materials	50%	**ECE111** Electronic Materials	50%	

						• Final Exam
EG10314 30 Credits	Circuits and Fields theory	**EPM114** Electrical Circuits	50%	**EPM114** Fundamentals of Electrical Circuits	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Reports & Assignments • Quizzes • A midterm exam • Final Exam
		ECE161 Electrostatics and Electromagnetics	50%	**ECE131** Electrostatics and Electromagnetics	50%	
Communication Systems Engineering (UEL) Level 4 – (ASU) Year 2						
EG10421 30 Credits	Digital Design and Computer architecture	**CSE122** Computer programming	30%	**CSE131** Computer programming	30%	Three Portfolios of students' work include coursework of the three ASU- modules; each portfolio includes samples of the following: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam
		CSE141 Logic Design	35%	**CSE111** Logic Design	35%	
		CSE212 Computer Architecture	35%	**CSE212** Computer Organization	35%	
EG10422 30 Credits	Electronic Devices & Circuits	**ECE233** Solid State Electronic Devices	50%	**ECE213** Solid State Electronic Devices	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Practical demonstrations • Assignments • TCAD Simulation Report • Quizzes • A midterm exam • Final Exam
		ECE242 Electronic Circuits (1)	50%	**ECE214** Electronic Circuits (1)	50%	
EG10423 30 Credits	Fundamentals of Microwave Engineering	**ECE261** Engineering Electromagnetics	50%	**ECE331** Electromagnetic Waves	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam
		ECE262 Waves and Transmission Lines	50%	**ECE333** Microwave Engineering	50%	
EG10424 30 Credits	Fundamentals of signals & Communications	**ECE 252** Signals and Systems	35%	**ECE 253** Signals and Systems	35%	Three portfolios of students' work include coursework of the three ASU- modules; each portfolio includes samples of the following: • Participation • Practical demonstrations
		ECE253 Analog Communication Systems	35%	**ECE254** Analog Communications	35%	

		ECE254 Digital Signal Processing	30%	**ECE255** Digital Signal Processing	30%	• Assignments • Quizzes • A midterm exam • Final Exam
Communication Systems Engineering (UEL) Level 5 – (ASU) Year 3						
EG10531 30 Credits	Analog and Digital Circuits	**ECE343** Electronic Circuits (2)	50%	**ECE315** Electronic Circuits (2)	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Assignments • Project • Quizzes • A midterm exam • Final Exam
		ECE344 Digital Circuit Design	50%	**ECE316** Digital Circuit Design	50%	
EG10532 15 Credits	Antenna Engineering	**ECE363** Antenna Engineering and Propagation	100%	**ECE432** Antenna Engineering and Propagation	100%	Portfolio of students' work includes samples of the following: • Participation • Lab Reports • Assignments • Quizzes • A midterm exam • Final Exam
EG10533 30 Credits	Digital Transmission and Networks	**ECE354** Digital Communications	50%	**ECE354** Digital Communications	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Reports • Projects • Assignments • Quizzes • A midterm exam • Final Exam
		ECE355 Communication Networks	50%	**ECE355** Communication Networks (1)	50%	
EG10534 15 Credits	Control Engineering	**CSE373** Control Systems	100%	**CSE371** Control Engineering	100%	Portfolio of students' work includes samples of the following: • Participation • Lab reports • Assignments • Quizzes • A midterm exam • Final Exam
Track 1: Signals and Communication Systems						
EG10535 15 Credits	Satellite Communications	**ECE358** Satellite Communications	100%	**ECE454** Satellite Communication Systems	100%	Portfolio of students' work includes samples of the following: • Participation • Research Reports • Assignments • Quizzes • A midterm exam • Final Exam

EG10536 15 Credits	Statistical Signal Processing	**ECE359** Statistical Signal Processing	100%	**ECE357** Statistical Signal Processing	100%	Portfolio of students' work includes samples of the following: • Participation • Reports • Assignments • Quizzes • A midterm exam • Final Exam
Track 2: Circuits and Systems						
EG10537 15 Credits	VLSI Technology	**ECE381** VLSI Technology	100%	**ECE411** Integrated Circuits Technology	100%	Portfolio of students' work includes samples of the following: • Participation • Research Reports • Project • Assignments • Quizzes • A midterm exam • Final Exam
EG10538 15 Credits	Introduction to Embedded Systems	**CSE341** Introduction to Embedded Systems	100%	**CSE211** Introduction to Embedded Systems	100%	Portfolio of students' work includes samples of the following: • Participation • Project • Assignments • Quizzes • A midterm exam • Final Exam
Track 3: Physical and Wave Electronics						
EG10539 15 Credits	Microwave Circuits	**ECE364** Microwave Circuits	100%	**ECE337** Microwave Circuits	100%	Portfolio of students' work includes samples of the following: • Participation • Lab reports • Assignments • Quizzes • A midterm exam • Final Exam
EG105310 15 Credits	Optical Sensing	**ECE493** Selected Topics in Physical and Wave Electronics	100%	**ECE338** Optical Sensing and Instrumentation	100%	Portfolio of students' work includes samples of the following: • Participation • Lab reports • practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam
Communication Systems Engineering (UEL) Level 6 – (ASU) Level 4						
EG10641 15 Credits	Advanced Communication Networks	**CSE435** Computer Networks	100%	**ECE458** Communication Networks (2)	100%	Portfolio of students' work includes samples of the following: • Participation • Lab reports

						• Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam
EG10642 30 Credits	Graduation Project	**ECE497** Graduation Project (1)	50%	**ECE491** Graduation Project (1)	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes 8000-word project report, intermediate deliverables and a 15-minute viva presentation
		ECE498 Graduation Project (2)	50%	**ECE492** Graduation Project (2)	50%	
EG10643 15 Credits	Entrepreneurship	**ECE496** High-Tech Entrepreneurship	100%	**ASU321** Innovation and Entrepreneurship	100%	Portfolio of students' work includes samples of the following: • Participation • Project • Fieldwork reports • Oral presentations • Quizzes • A midterm exam • Final Exam
EG10644 15 Credits	Information Theory and Coding	**ECE458** Information Theory and Coding	100%	**ECE462** Information Theory and Coding	100%	Portfolio of students' work includes samples of the following: • Participation • Lab reports • Assignments • Quizzes • A midterm exam • Final Exam
Track 1: Signals and Communication Systems						
EG10645 30 Credits	Wireless and Mobile Communications	**ECE459** Wireless and Mobile Communications	100%	**ECE358** Wireless Communications	50%	Two portfolios of students' work include coursework of the two ASU- modules in bylaw 2018 (One portfolio only in bylaw 2013); each portfolio includes • Participation • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam
				ECE459 Mobile Communications	50%	
EG10646 15 Credits	Processing for Multimedia	**CSE367** Digital Image Processing	100%	**ECE359** Signal Processing for Multimedia	100%	Portfolio of students' work includes samples of the following: • Participation • Oral presentations • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam
Track 2: Circuits and Systems						

EG10647 30 Credits	Analog and RF Circuit design	**ECE382** Analog Integrated Circuits Design	50%	**ECE412** Analog Integrated Circuit Design	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Fieldwork reports • Project • Assignments • Quizzes • A midterm exam • Final Exam
		ECE488 RF Circuit Design	50%	**ECE414** RF Circuit Design	50%	
EG10648 15 Credits	ASIC Design & Automation	**ECE487** VLSI Design & Automation	100%	**ECE413** ASIC Design & Automation	100%	Portfolio of students' work includes samples of the following: • Participation • CAD reports • Oral presentations • Assignments • Quizzes • A midterm exam • Final Exam
Track 3: Physical and Wave Electronics						
EG10649 30 Credits	Microwave Systems	**ECE463** Microwave Devices	50%	**ECE438** Microwave Devices	50%	Two portfolios of students' work include coursework of the two ASU- modules; each portfolio includes samples of the following: • Participation • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam
		ECE464 Microwave Measurements	50%	**ECE335** Microwave Measurements	50%	
EG106410 15 Credits	Optical Communication	**ECE356** Optical Communication Systems	35%	**ECE334** Optical Fiber Communications	35%	Portfolio of students' work includes samples of the following: • Participation • Lab reports • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam

3 KEY STAFF AND CONTACT DETAILS

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Programme Organisation

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

The Dean of Faculty of Engineering

Prof. M. Ayman Ashour is the Dean of Faculty of Engineering at ASU. He has overall responsibility for maintaining the high standards of quality and innovation in all our teaching and research activities.

The Programme Leader

Assoc. Prof. Mohamed Abouelatta is the programme leader for the BEng (Hons) Communication Systems Engineering programme. The programme leader represents the academic interests of the programme, coordinates the day-to-day business of programme, and has overall responsibility for students on the programme. The role of the programme leader is to guide each student registered on the programme through the duration of the programme and is the first port of contact when programme level issues occur. The programme leader, in conjunction with the academic support team, is responsible with the day-to-day running of the programme. The programme leader is there to resolve any issues that may arise at the programme level and will mediate between module leaders & the academic support team to resolve any programme level issues. If you have a problem with a particular module and have not been able to resolve it by talking to the Module Leader, you should bring the matter to the Programme Leader. Programme Leader is also responsible for liaison with Programme Representatives for the year. He also has other duties, which vary from year-to-year and are often connected with quality improvement projects.

The Programme Management Team

The Programme Management Team consists of the Programme Leader, Module Leaders, School Administrators and the Student Representatives, are collectively responsible for day-to-day running of the programme. We have Programme Committees and Meetings to discuss any issues that arise throughout the academic teaching and/or other subjects and these happen at least one per term.

The Module Leaders

Your 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 will take all of the lectures for their module. As far as possible any problems or questions concerning individual modules should be addressed to the Module Leader. In most cases this can be done within seminars, workshops or practical sessions. General academic advice can also be obtained from them.

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 the course of 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 Programme Leader at ASU- FoE and UEL. Students may meet the UEL Link Person at Programme 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 **UEL Academic Link Tutor** at ***h.hakimazari@uel.ac.uk***.

4 PROGRAMME OPERATION AND STUDENT REGISTRATION

4.1 Study Timings and Registration

The academic year comprises three 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.

- New students' enrolment in the programmes starts two weeks before the starting of the Fall semester, after fulfilling all the programmes requirements and paying the enrolment fees, as recommend by the Programs Administration Council and set by the Council of the Faculty of Engineering.
- 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 120 credits per academic year or 60 credits per semester, after consulting the academic advisor, at the time of registration and according to the yearly rules issued by the Faculty and published in the student's guide. Registration is not final until the student pays the educational service fees for the semester.
- There will be one intake point per year, which will be in September.
- Late registration is not final unless there is a vacancy in the courses, and the student should pay late registration fees besides the prescribed academic service fees, in accordance with the recommendations of the Programmes Administration Council and approval of the Council of the Faculty of Engineering regarding this issue.
- The student may not register in any course without fulfilling all its prerequisites.

- The programme academic regulations are available at ***https://eng.asu.edu.eg/BylawsAndRegulations***
- The Local Attendance and Engagement policy is available at ***https://eng.asu.edu.eg/uploads/uploadcenter/asu_594_file.pdf***
- UEL University's academic regulations are available at: Academic Framework Regulations (see Manual of General Regulations, Part 3)
- ***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 direct and enrol with UEL using the UEL student number that you have be given prior to attending any lectures. Your programme leader will be able to assist you with this.

Once you have gained admission to the programme 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 – FoE will 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 and Employers Partnerships Office at ***h.hakimazari@uel.ac.uk***.

5 TEACHING, LEARNING AND ASSESSMENT

5.1 Details of local teaching and learning approaches

- No distance learning is implemented.
- The programme is a credit bearing system leading to the Bachelor of Science Degree (Honours) after completing 480 credits. Student evaluation is based not only on final exam, but also on midterm exams, quizzes, assignments, course projects, presentations, papers, essays, in/out of class participation and many other innovative activities.
- The student must pass the College requirements, which consist of basic sciences and engineering courses. These courses must be studied by all students and they represent 120 credits at Foundation level.
- Course instructors in the programme are carefully selected from the distinct full-time world-class faculty members of the Faculty of Engineering at Ain Shams University.
- Although this is not compulsory, the student is encouraged to perform summer training for 12 weeks during study duration. Training must be performed in an industrial/service facility related to the student's programme and must be under the full supervision of the faculty.
- With the majority of modules being delivered over the whole year there is excellent scope for formative assessment to stretch and extend the students. Thus, a key feature of the courses 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.
- Assessment for these programmes takes the form of examinations, course works, presentations and time constrained assessments as can be seen below in the Assessment Workload mapping.
- Each course 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 course syllabus to the students in the first class. The syllabus serves as a contract between the instructor and the students.

The following are note compulsory for the double award programmes but will be encouraged:

- The student should pass the ASU’s requirements, which consist of humanities, social sciences, general culture courses. These courses represent 18 credit hours at ASU selected from a list of courses.
- The student must pass the ASU’s College requirements, which consist of basic sciences and engineering courses. These courses must be studied by all students.
- The student must perform summer training for 12 weeks during their study duration and should be conducted during 3 summers. Training must be performed in an industrial/service facility related to the student's program or inside the faculty where it is delivered by staff members. The training must be under the full supervision of the faculty. The student submits their training

portfolio to their Academic Advisor, who in turn assesses the outcomes and evaluates it.

ASU Attendance Policy

Across the faculty, consistent attendance of at least 75% and participation in programme activities is part of the learning process. To meet all learning outcomes, FoE- ASU expects full attendance in all lectures and insufficient attendance may result in an 'Incomplete' status for the course. The school should be notified of absences. In case of illness a recognized medical certificate should be supplied. Students are encouraged to communicate with their lecturer or course coordinator if they have any queries**.**

Assessment

The module specifications provide a detailed breakdown of the weighting and volume of assessment: these can be found in the Table above. For a formal description of the assessment process students should refer to the Academic Regulations on the UEL website or refer to details in the guide for students. FoE - ASU has a broad experience in providing formative and summative assessment, thus migrating to the UEL Framework will not be a major issue.

Assessment Arrangements

Each module assessment will be designed and set in accordance with the module specification. This will state the number of components to be assessed as well as the weighting of each component. Each assessment will be moderated/verified internally at ASU before it is sent to UEL for approval. All module or component assessments must be formally approved before they are issued to students. All assessments will be approved via the normal and established UEL procedure(s). A marking criteria will be published to students using either a rubric or more detailed written explanation and will be provided to students at the same time as the assessment specification/task. This will form part of the assessment brief which will be agreed with the external examiner.

Marking of assessments will use the full scope of marks, that is 0 – 100. A sample of 10% or 10 scripts (whichever is greater) must be second marked by ASU and this must cover the full range of marks. In the case of the research project (or similar work), the work of the entire cohort will be blind double-marked. The samples (including both second marked and non-second marked) will be sent to UEL for forwarding to the External Examiner for review.

UEL will determine what documents/information is needed for an Assessment Board and this will be communicated to ASU in a timely manner.

All summative assignments will be marked anonymously where possible and subject to second marking. ASU will conduct a pre-board where all modules and profiles of students will be considered, and this will be fed back to UEL who will consider these at the relevant UEL Assessment Board. The results will be considered at assessment boards, which will be held at UEL. Feedback will be given to all students especially on

summative assessment tasks. Normally the module leader will choose how this is given, but generally it will be given individually (within 20 days).

UEL operates a minimum of 30% threshold in each component of assessment on a module. However, to pass the module students will need to achieve a weighted average of at least 40%. Progression to the next higher level (year) will only be permitted if the student has gained at least 90 credits during the academic year.

On the UEL/ASU double programme, students will not be permitted to study any level six (6) modules, if there are outstanding level four (4) modules. The Assessment Board at UEL (with representation by the Academic Link Tutor) will determine the progression decision of all students.

ASU Assessments vs UEL/ASU Double Assessment Arrangements

On the UEL/ASU double award programme, students must pass the agreed UEL module in conformity with all established rules and procedures as determined by UEL. If a student has failed a module or component of a module on the UEL/ASU double award programme, the student will be entitled to a resit opportunity. This will normally be in the early summer (July/August).

Students will be asked and expected to retake a module with attendance if a resit opportunity was not successfully passed; however, this depends on the individual profile of the student – taking into consideration UEL policy/rules on retakes.

Although reassessment on modules is not permitted on the Egyptian award, yet students are able to review the course work grades and discuss with the instructor the marking of the course work. As for the final exam students are permitted to submit an appeal for revising the marks registration and the completeness of grading the final exam paper. However, modules reassessment is possible on the UEL award according to UEL regulations.

UEL's "capping" regulations will apply for any resit or retake modules or components of modules. Passing an ASU module or component of a module does not automatically mean that the UEL/ASU double award module has been passed. There will be no averaging (mean) of module marks on ASU modules to determine UEL/ASU double award module marks. The marks of a module will be as specified on the module specification.

If a student fails a module on the ASU variant of the programme but passes the UEL/ASU double award module: This student would have been deemed to pass the module and would be given the credits for such module.

An agreed equivalence chart/table will be used to compare ASU marking/grading scheme to that of the UEL/ASU double programme. However, in all cases, on the UEL/ASU double award programme the full spectrum of marks (0-100) will be used.

Students will be entitled to UEL's "compensated pass" regulations on the double award programme. Summer training/placements/work is not a formal part of the UEL/ASU double programme but will be encouraged.

Moderation of Assessment

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

Preparing the assessment brief / examination paper

- Module lecturers design/ write the questions / briefs and produce answers with marking schemes.
- Another lecturer checks the assessment questions, solutions and marking scheme.
- Copies of the assessment questions, answers and marking scheme are sent to UEL for checking and approval.
- UEL sends the assessments to external examiners for approval.

Marking of assessments

- Students' assessments are marked by the FoE- ASU teaching staff.
- A sample of 10% or 10 scripts, whichever is the higher, are double marked by another lecturer within FoE-ASU
- In the case of exam scripts, the papers of the entire cohort is blind double-marked
- The double marked sample is sent to UEL for forwarding to the External Examiner
- The results are considered at assessment boards.

All summative assignments are marked anonymously where possible and subject to second marking. If they can't be marked anonymously, the assignments will be double-marked. The ASU examination board will conduct a pre-board where all modules and profiles of students will be considered. This will be fed back to UEL who will consider these at the relevant UEL Assessment Board.

Submission of Coursework

ASU has its own mechanisms and procedure for coursework submission and these will apply. Students will be informed of this procedure during induction. ASU is committed to facilitating Turnitin submission within 12-18 months and advice will be sought from the School of ACE at UEL as to how to implement this. The module handbook/guidelines will explicitly detail how coursework should be submitted and these will (using student number, word count, word-processed). Submission dates will be available in the Module Guides and on the VLE. Work which is submitted late, but within 24 hours of the deadline, will be assessed but subjected to a fixed penalty of 5% of the total marks available (as opposed to marks obtained).

Please note that if you submit twice, once before the deadline and once during the 24 hour late period, then the second submission will be marked and 5% deducted.

Further information is available in the Assessment & Feedback Policy at ***https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Assessment-and-Feedback-Policy***

Extenuating circumstances claims

Under certain circumstances, extenuation can be granted. Academic staff should direct students to FoE ASU support staff trained on UEL extenuation processes as outlined in UEL's extenuation policy as FoE – ASU will follow the process of UEL for the Extenuating circumstances:
https://www.uel.ac.uk/discover/governance/policies-regulations-corporate-documents/student-policies/extenuation-procedures
Normal UEL criteria will apply. A subcommittee will be set up at FoE - ASU under the guidance of the Academic Link Tutor. This committee will report its finding and determination to UEL (APO and ALT).

Breaches of Academic Misconduct Regulations

Assessment tasks are designed to reduce, as far as is practicable, the possibility of plagiarism and collusion and other instances of academic misconduct. Where an instance of academic misconduct is suspected, procedures detailed in Part 8 of Manual of General Regulations (Academic Misconduct Regulations of UEL) will be invoked. The cases will be identified through Turnitin facilities provided by UEL for the registered students and they will be dealt with the same procedures mentioned in the General Regulations manual. Students will be made aware of the Academic Integrity Policy to assist in the avoidance of plagiarism. As part of their induction, students will also be required to complete the academic integrity certificate on Moodle.

The following is a non-exhaustive list of examples of academic misconduct:

Plagiarism: representing another person's work or ideas as one's own, for example by failing to follow convention in acknowledging sources, use of quotation marks etc. This includes the unauthorised use of one student's work by another student and the commissioning, purchase and submission of a piece of work, in part or whole, as the student's own.

Collusion: cooperation in order to gain an unpermitted advantage. This may occur where students have consciously collaborated on a piece of work, in part or whole, and passed it off as their own individual efforts or where one student has authorised another to use their work, in part or whole, and to submit it as their own.

Misconduct in examinations (including in-class tests). Including, for example, when an examination candidate:

- copies from the examination script of another candidate;
- obtains or offers any other improper assistance from or to another candidate (or any other person unless an approved reader or scribe);
- has with them any unauthorised book (including mathematical tables), manuscript or loose papers of any kind, unauthorised electronic devices (including mobile telephones) or any source of unauthorised.
- allows himself/herself to be impersonated or when any person impersonates another examination candidate.
  Further information of UEL's academic misconduct policy is available at:

https://www.uel.ac.uk/-/media/main/images/about/temp_governance_prototype/polices-and-regulations/students/manual-of-general-regulation-2017/part8-academic-misconduct-regulations-sept-2017-final

Fabrication or misrepresentation: the presentation of fabricated data, results, references, evidence or other material or misrepresentation of the same. Including, for example:

- claiming to have carried out experiments, observations, interviews or other forms of research which a student has not, in fact, carried out;
- claiming to have obtained results or other evidence which have not, in fact, been obtained;
- in the case of professional qualifications, falsely claiming to have completed hours in practice or to have achieved required competencies when this is not the case;

Failure to obtain ethical approval: where work is undertaken without obtaining ethical approval when there is a clear and unambiguous requirement to do so.
FoE ASU will use a range of mechanisms for determining academic misconduct including and not limited to, plagiarism software, internet searches, viva voce.

Feedback to Students

Feedback will be given to all students especially on summative assessment tasks. Normally the module leader will choose how this is given, but generally it is given individually. Assessment feedback is provided to you so that you can use the feedback to improve your future performance. You will be also provided with feedback on formative tasks – these are tasks that do not lead to a final mark or grade. The lecturer or the module leader will determine how this is given.
Feedback is central to learning and is provided to you to develop your knowledge, understanding, skills and to help promote learning and facilitate improvement.
All feedback will be:

- timely (provided within 20 working days)
- given in relation to the learning outcomes and assessment criteria
- provided on both coursework and examinations
- clear, relevant, motivating, and constructive
- developmental, enabling you to consolidate learning and achievement
- word-processed where e-submission is not used (unless the nature of the work prevents this e.g. mathematical formula)
- offered in a range of formats appropriate to the module e.g. electronically via Turnitin Grade Mark or other e-Submission tools where used, Audio file, Video file, or Screen cast.

Assessment Boards

Assessment Boards control, consider and adjudicate upon all assessments undertaken by students. The Board comprises a Chair (usually a Head of Department),

all those substantially involved such as lecturers/tutors/module leaders and the external examiner(s).

Mapping of assessment schedule to UEL Boards

Submission dates will be planned in collaboration with the UEL Academic Link Tutor to ensure that the marking process is complete, and marks are entered in time for the appropriate board at UEL.

Use of Virtual Learning Environment (VLE) in the learning and assessment process;

Currently, the ASU uses a VLE where module content material such as lecture slides, tutorial and practical tasks are uploaded for the students to access.

5.2 Details of local assessment arrangements

The students work is submitted for each individual ASU course in the form and deadline instructed via ASU assignment and goes via the normal marking process. Further the student work for each individual ASU courses is packed in a portfolio format for the submission requirement for the UEL degree.

We strongly suggest that you try to submit all coursework by the deadline set as meeting deadlines is expected in employment. However, in our regulations, UEL has permitted students to be able to submit their coursework up to 24 hours after the deadline. The deadline will be published in your module guide. Coursework which is submitted late, but within 24 hours of the deadline, will be assessed but subjected to a fixed penalty of 5% of the total marks available (as opposed to marks obtained).

Please note that if you submit twice, once before the deadline and once during the 24 hour late period, then the second submission will be marked and 5% deducted.

Further information is available in the Assessment & Feedback Policy at ***https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Assessment-and-Feedback-Policy***.

Grades of the COMM Programme modules

The points of each credit hour are computed as follows:

Ain Shams University			**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	0.0	Less than 40%

5.3 References to student policies

ASU-FoE available at:
https://eng.asu.edu.eg/uploads/uploadcenter/asu_594_file.pdf
UEL available at:
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies

Also detailed in Appendix B which provides full information on referencing and the avoidance of plagiarism.

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.

Reference to Appendix E containing information on Academic Misconduct and Plagiarism. Assessment and Feedback Policy available at:
https://eng.asu.edu.eg/uploads/uploadcenter/asu_594_file.pdf

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 programmes 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***

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 Appendix E and 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

5.4 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:
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/ assessment-and-feedback-policy

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 programme.

5.4.1 Level 3

- You demonstrate understanding of factual information.
- you can process and evaluate given information and draw some conclusions.
- You can follow guidelines in developing solutions to simple problems.

5.4.2 Level 4

- You can present factual information.
- 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 additional 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.

5.4.3 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 additional assistance
- You have been particularly creative in devising and implementing you 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.

5.4.4 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.
- 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

- You have not required any additional 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.

The student must attend at least 75% of the course.

Research Integrity

The University of East London conducts high quality, innovative research and is guided by the principles and standards outlined in The Concordat to Support Research

Integrity, 2012; the University's Code of Practice for Research; Code of Practice for Research Ethics and Procedures for the Investigation of Misconduct in Research, for staff and students. The Concordat seeks to provide a national framework for good research governance and its conduct, and applies to all fields of research supporting a research environment that is underpinned by ethical values. 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.

Research Ethics

Research involving human participants, human material, including human tissue, embryos, foetuses and bodily fluids, from living or deceased participants, human data, personal, sensitive or otherwise, or non-human animal should comply with all legal and ethical requirements and other applicable guidelines. The University has established various Research Ethics Committees at University, School and College level to ensure appropriate ethical review of research projects involving human participation, human material or personal data. A proposed research study may require ethical approval from the main University Research Ethics Committee (UREC), one of the School Research Ethics Committees (SRECs), one of the College Research Ethics Boards (CREBs) or where applicable, Collaborative Partner Research Ethics Committees (CRECs). UREC reviews ethics applications from staff, MPhil, PhD, Post and Professional Doctorates and Masters by Research students. Please note, that Professional Doctorates from the School of Psychology are reviewed by the School of Psychology SREC. SRECs, CREBs and CRECs consider applications for ethical approval from taught Masters and undergraduate students.

Research involving human participation, human material or personal or sensitive data, where necessary, will require formal approval from UREC, SREC, CREB or CREC before the research commences. Students should submit research projects involving human participants, human material, personal or sensitive data or non-human animal for ethical review, to one of the University's Research Ethics Committees listed above, and abide by the outcome of the review. The application for ethical approval should be submitted alongside copies of any supporting documentation which will be given to the participants, including a Participant Information Sheet, Consent Form, interview schedule, indicative topic guide, self-completion survey or questionnaire, debrief letter, and recruitment poster, where appropriate.

The Research Ethics Committees ensure that appropriate procedures for obtaining informed consent are observed, having particular regard to the needs and capacity of the subjects involved. The dignity, rights, safety and well-being of participants must be the primary consideration in any research study. Appropriate care must be taken when research projects involve vulnerable groups, such as elderly people, children, people with mental ill-health, and covert studies or other forms of research which do not involve full disclosure of the research to participants. The University's Research Ethics Committees also ensure that research projects of this nature have been submitted for approval to all applicable external bodies; ethical, regulatory or otherwise.

https://uelac.sharepoint.com/ResearchInnovationandEnterprise/Pages/Ethics.aspx

Students who wish to conduct research in the NHS or Health and Social Care must apply to the NHS for ethical approval through the Integrated Research Application System (IRAS). The online application for ethical approval will be reviewed by a NHS or Social Care Research Ethics Committee. Students who are conducting research with only NHS staff or only using NHS premises are required to apply to the relevant University Research Ethics Committee; UREC, SREC, CREB or CREC and the Health Research Authority (HRA) for ethical approval. Students should seek guidance from their supervisor to ensure that ethical approval is sought from the appropriate body.

Students conducting studies under the auspices of any of the UK Departments of Health and/or the HRA are required to submit copies of their NHS, Social Care or HRA ethics approval letter, Local Information pack, IRAS application form and a PDF of the IRAS document checklist to the UREC Committee. UREC will grant consent for the study and issue a combined approval and sponsorship letter, for the research, on behalf of the University. The University acts as a sponsor for NHS or Social Care approved research projects, and students should conduct their studies in accordance with the conditions specified in the NHS, Social Care or HRA ethics approval letter. ***http://www.hra.nhs.uk/research-community/hra-approval-the-new-process-for-the-nhs-in-england***

Students should understand their responsibilities to conduct research to high ethical standards and be aware of policies and procedures on good research practice. The University has established guidelines to preserve the confidentiality and security of personal data, relating to human participants and human material, involved in research projects. Students must comply with the regulations of appropriate regulatory or statutory bodies and any legal obligations when conducting or collaborating in research in other countries. The legal and ethical requirements existing in the UK and in the countries where the research will take place should also be observed. Students should ensure that they have fully prepared for their planned research, allowing enough time to submit an application for ethical approval and obtain appropriate consent. It is advisable that students seek guidance from supervisors on proposed research projects.

The University complies with all applicable Data Protection laws and students should consult the University's Data Management policies:
https://uelac.sharepoint.com/ITServices/Pages/Our-Policies.aspx

While preparatory activity is permitted, no formal contact with potential participants, recruitment of human participants or data collection for the research study may commence until ethical approval from UREC, SREC, CREB, CREC, or a NHS or Social Care Research Ethics Committee is confirmed. Students must conduct the research project in accordance with the University's policies and the conditions of ethical approval specified in the ethics approval letter, throughout the length of the study. Amendments to an approved research study must be submitted to the relevant Research Ethics Committee for review, and ethical approval obtained before any changes to the project may be implemented. Please be aware, ethical approval for

research projects cannot be granted retrospectively. Research conducted with human participants or human material, without ethical approval from the appropriate Research Ethics Committee, is considered misconduct in research and as such, students may be subject to formal investigation, which can result in the termination of the research project and misconduct proceedings.
https://uelac.sharepoint.com/ResearchInnovationandEnterprise/Pages/Ethics.aspx

Risk Assessment

The University has a duty of care to its researchers and a responsibility to safeguard the welfare of research participants. Risk management should be considered at the same time as planning a research project. A comprehensive risk assessment helps to identify and evaluate potential hazards associated with the research project. Students in consultation with their supervisors should put control measures in place to minimise the likelihood of an event occurring that will cause harm. A risk assessment must be completed for research taking place within and outside of the University, fieldwork and research conducted overseas, before the project commences. The risk assessment should be completed by the student in collaboration with the supervisor and authorised by the Dean of the School or Associate/Acting Dean.

If students consider that human participants in their, or others,' research are subject to unreasonable risk or harm, they must report the concerns to their supervisor and, where necessary, to the appropriate regulatory authority. Similarly, concerns relating to the improper and/or unlicensed use or storage of human material or non-human animal or the improper use or storage of personal data, should also be reported.

Further guidance on risk assessments can be found in the University's Health & Safety Handbook:
https://uelac.sharepoint.com/HealthandSafetyUnit/Pages/H%26S-Handbook.aspx

6 MODULE SPECIFICATIONS

<table>
<tr><td>Module Title:
Applied Mathematics for Communications Engineering</td><td>UEL Module Code:
EG3XXX

ASU Module Code:
EG10311

Level: 3

Credit: 30

ECTS credit: 15</td><td>Module Leader:

Dr. Makram Roshdy &
Dr. Mohamed Abouelatta</td></tr>
<tr><td colspan="2">Pre-requisite: None</td><td>Pre-cursor: None</td></tr>
<tr><td colspan="2">Co-requisite: None</td><td>Excluded Combination: None</td></tr>
<tr><td colspan="3">Locations of delivery: ASU</td></tr>
<tr><td colspan="3">Main Aim(s) of the Module:

• To provide students with an understanding of foundational mathematics material required for Communication and Electronics Systems Engineering.
• To prepare students for the more advanced mathematics they will encounter on their degree.</td></tr>
<tr><td colspan="3">Main Topics of Study:

• Vectors and Geometry of Space.
• Functions of several variables and Partial derivatives.
• Double integrals over rectangular regions and general regions
• Triple integrals in cylindrical and spherical coordinates.
• Line and surface integrals, Surface Integrals
• Green's theorems and Stokes' theorem.
• The Nature of probability and statistics
• Probability and counting rule.
• Frequency distributions and graphs
• Continuous probability distributions
• The divergence theorem.
• Basic Concepts and Rules of Probability.
• Discrete and continuous random variables and its distributions
• Organization data, Frequency Distributions, Cumulative frequency distribution and graphs.
• Measures of central tendency and measures of dispersion.
• Coefficient of variation and coefficient of skewness.
• Introduction to calcification of differential equations, first order equations
• Higher order differential equations: homogenous
• Cauchy-Euler equations, Laplace transform, Fourier series and Partial differential equations.
• Solving improper integrals in terms of the Gamma and Beta functions, Fourier series.
• Solve special kinds and forms of differential equations in terms of Bessel functions and Legendre polynomials.
• Solid foundation in functions of complex variables.</td></tr>
<tr><td colspan="3">Learning Outcomes for the Module

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

Knowledge
1. Recognize the basic principles in probability and statistics.</td></tr>
</table>

2. Identify different complex functions.

Thinking skills
3. Analyse signals using Fourier analysis.
4. Solve mathematical problems numerically.

Subject-based practical skills
5. Use the knowledge of multiple integrals and statistics to solve practical engineering problems;
6. Use mathematical models to solve differential equations and partial differential equations.

Skills for life and work (general skills)
7. Operate effectively in a team;
8. Develop the skills which are related to creative thinking, problem solver in different fields.

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

"Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (52 hours)	25%	1,5, 7, 8
Portfolio 2 (52 hours)	25%	6-8
Portfolio 3 (52 hours)	25%	4, 7, 8
Portfolio 4 (52 hours)	25%	2-3, 7, 8
Each portfolio in the module contains: • Participation • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Stewart, J. (2015) *Calculus*. 8th edn. Cengage Learning.
- Stroud, K. A., & Booth, D. J. (2013) *Engineering mathematics*. 7th edn. Macmillan International Higher Education.
- Wackerly, D., & Scheaffer, W. (2008) *Mathematical Statistics with Applications*. 7th edn. Thomson Brooks/Cole.

Recommended

- Kreyszig, E. (2011) *Advanced engineering mathematics*. 10th edn. John Wiley & Sons.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**

1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/ Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Foundations of Physics	**UEL Module Code:** EG3XXX **ASU Module Code:** EG10312 **Level:** 3 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof. Wael Fikry & Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None
Locations of delivery: ASU	

Main Aim(s) of the Module:

- To provide the fundamental skills necessary to distinguish between different classes of materials.
- To outline the origin of mechanical, electrical, thermal, optical and magnetic properties and explain how they are related to their structure.

Main Topics of Study:

- Explain the concepts of oscillations and waves.
- Differentiate between mechanical waves and electromagnetic waves
- Recognize different phenomena related to waves such as interference and diffraction.
- Identify different states of polarization.
- Interpret the basic thermodynamics terminology.
- Implement the laws of thermodynamics to provide explanations for practical applications.
- Perform laboratory experiments to realize optical waves phenomena and measure the corresponding parameters.
- Modern physics: Plank's theory of quantization of energy of radiation,
- Photo-electric effect, x-rays and Compton's effect, Wave properties of matter and wave function,
- Principles of quantum mechanics and Schrödinger equation,
- Atomic structure and study of the tunnelling phenomenon.
- Solution of Schrödinger equations in Quantum well, quantum dot and periodic structures.
- Bloch function, Kronig-Penny model. Quantum theory of free electrons in metals, Statistical distribution laws. Fermi-Dirac Distribution.

Learning Outcomes for the Module

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

Knowledge

1. Interpret the concept of oscillations, wave interference and diffraction;
2. Explain important phenomena in modern physics and the nature of the quantum mechanics.

Thinking skills

3. Implement wave interference and diffraction principles in simple system designs;
4. Apply quantum mechanics techniques to solve quantum mechanical systems.

Subject-based practical skills

5. Design oscillatory electrical systems and heat engine;
6. Shows the ability to differentiate between quantum and classical systems.

Skills for life and work (general skills)

7. Write a technical report and present using digital libraries;
8. Undertake independent research.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50%	1,3,5,7,8
Portfolio 2 (105 hours)	50%	2,4,6,7,8
Each portfolio in the module contains: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Serway, R. A., & Jewett, J. W. (2018) *Physics for scientists and engineers with modern physics*. 10th edn. Cengage learning.
- Neamen, D. A. (2012) *Semiconductor physics and devices: basic principles*. 4th edn. New York, NY: McGraw-Hill.

Recommended

- Young, H. D., & Freedman, R. A. (2015) *University physics with modern physics*. 14th edn. Pearson Higher Ed.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Engineering and Electronic Materials	**UEL Module Code:** EG3XXX **ASU Module Code:** EG10313 **Level:** 3 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To provide the fundamental skills necessary to distinguish between different classes of materials.
- To provide the basic principles of solid-state electronic materials.
- To outline the origin of mechanical, electrical, thermal, optical and magnetic properties and explain how they are related to their structure.

Main Topics of Study:

- Classification of materials.
- Atomic structure and bonding in solids.
- Metallic' Structure.
- Ceramics' structure.
- Structure of Polymers.
- Imperfection in Metals and Ceramics.
- Mechanical properties.
- Electron in a periodic potential, energy bands and energy gaps in solids.
- Semiconductors, the Fermi level, electrons and holes.
- Intrinsic and extrinsic semiconductors.
- n-type and p-type, Diffusion and Drift Current.
- Excess carriers in semiconductors, Optical generation and recombination, the continuity equation, nonhomogeneous doping.
- PN-junction: I-V characteristics, Reverse saturation current depletion layer capacitance, Diffusion capacitance, Zener diodes.

Learning Outcomes for the Module

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

Knowledge

1. Distinguish different classes of materials and different types of structure;
2. Identify the different properties of semiconductor materials and the concept of energy bands.

Thinking skills

3. Outline the origin of mechanical, electrical, thermal, optical and magnetic properties and explain how they are related to their structure;
4. Evaluate the characteristics of semiconductors under equilibrium and nonequilibrium conditions and the characteristics of a PN junction.

Subject-based practical skills

5. Making practical building blocks for various types of crystal structures;

6. Write MATLAB programs for Kronig-Penney model, Fermi distribution function and related mathematical functions.

Skills for life and work (general skills)

7. Write a technical report and presentation using digital libraries;
8. Undertake independent research.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50%	1,3,7,8
Portfolio 2 (105 hours)	50%	2,4-8
Each portfolio in the module contains: • Participation • Practical demonstrations • TCAD Simulation Report • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Callister Jr, W. D., & Rethwisch, D. G. (2015) *Fundamentals of Materials Science and Engineering*. 5th edn. John Wiley and Sons Inc.
- Neamen, D. A. (2012) *Semiconductor physics and devices: basic principles*. 4th edn. New York, NY: McGraw-Hill.

Recommended

- Shackelford, J. F. (2014) *Introduction to Materials Science for Engineers*. 8th edn. Prentice-Hall.
- Kasap, S. O. (2006) *Principles of electronic materials and devices* (Vol. 2) .3rd edn. New York: McGraw-Hill.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Circuits and Fields theory	**UEL Module Code:** EG3XXX **ASU Module Code:** EG10314 **Level:** 3 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Angie Reda Eldamak & Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To develop the ability to analyse and solve dc and ac circuits.
- To solve circuit problems using computer facilities.
- To explain the relevant mathematical tools required for further study in the field of electromagnetic waves.

Main Topics of Study:

- Circuit Theorems.
- Basic Circuit Laws.
- Electrical Circuits Theorems, Nodal Analysis.
- Mesh Analysis and Superposition Theorem.
- Thevenin's and Norton's Theorem.
- Inductors and Capacitors.
- Analysis of Sinusoidal Steady State Circuits.
- Resonance in Electric Circuits.
- Response of First and Second Order RL-C Circuits.
- Two-Port and Filter Networks.
- Magnetically Coupled Circuits.
- Coulomb's Law and Electric Field Intensity.
- Field of Point Charge, Line Charge, Surface Charge, and Continuous Volume Charge.
- Electric Flux, Gauss's Law, Divergence, Electric Energy and Potential.
- Dielectrics and Boundary Conditions.
- Steady Magnetic Fields and Ampere's Law.
- Magnetic Materials, Magnetic flux and Inductance.
- Magnetic Boundary Conditions.
- Time-Varying Fields, Faraday's Law and Maxwell's Equations.

Learning Outcomes for the Module

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

Knowledge

1. Define the different theories that can be applied to electric circuits;
2. Recognize the main principles of electromagnetism as a foundation for electrical engineering.

Thinking skills

3. Apply the different theories to solve electrical circuits;
4. Select the relevant scientific arguments when explaining and applying electromagnetic concepts.

Subject-based practical skills

5. Select the appropriate analysis technique to solve electrical circuits with direct and time varying sources in the steady state;
6. Estimate key quantities occurring in practical electromagnetic problems.

Skills for life and work (general skills)

7. Work and communicate effectively in team;
8. Develop skills related to creative thinking and problem solving.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50%	1,3,5,7,8
Portfolio 2 (105 hours)	50%	2,4,6-8
Each portfolio in the module contains: • Participation • Reports & Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Irwin, J. D., & Nelms, R. M. (2011) *Basic engineering circuit analysis* (Vol. 900) .10th edn. John Wiley & Sons.
- Ulaby, F. T., Michielssen, E., & Ravaioli, U. (2014) *Fundamentals of applied electromagnetics*.7th edn. Boston, Massachusetts: Prentice Hall.

Recommended

- Nilsson, J. W. (2008) *Electric circuits*. 8th edn. Pearson Education India.
- Hayt, W. H., Kemmerly, J. E., & Durbin, S. M. (2007) *Engineering Circuit Analysis*. 7th edn. Mc Graw Hill.
- Alexander, C. K., & no Sadiku, M. (2009) *Fundamental of electrical circuits*. 4th edn. Mc Graw Hill.
- Hayt, W. H., & Buck, J. A. (2011*) Engineering electromagnetics*. 8th edn. New York: McGraw-Hill.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	 Lectures/ Tutorials/ Practicals

2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Digital Design and Computer architecture	**UEL Module Code:** EG4XXX **ASU Module Code:** EG10421 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Mohamed Taher & Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To design algorithms and combinational and sequential logic circuits.
- To learn about memory-based systems.
- To provide the fundamental skills necessary to describe the structure and behaviour of digital computers at several levels of abstraction.

Main Topics of Study:

- Introduction to computer algorithms and flow charts.
- Basic Structure of C++ program.
- The conditional statement, the for loop, the while loop, the do while loop.
- Arrays definition, programming with Arrays.
- Pointer Overview.
- Structures.
- Introduction to digital and number systems.
- Design of combinational circuits using AND/OR/Inverters and NAND/NOR gates.
- Arithmetic circuits: adders and subtractors.
- Multiplexers, encoders, and decoders.
- Storage devices: FFs, edge triggered FFs, master-slave FFs, and excitation tables.
- State tables and transition diagrams.
- Design of sequential circuits, counters, and shift registers.
- The MIPS instruction set and assembly programming.
- MIPS single-cycle and pipelined implementation.
- Exceptions and interrupts.
- Superscalar architectures.
- Caching and Virtual Memory.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Explain the programming concepts and different data structures and logic gates;
2. Explain how computers execute programs and how a data-path with or without pipelining is designed.

Thinking skills
3. Develop map problems into circuits;
4. Translate C programs to assembly and assembly programs to machine code.

Subject-based practical skills
5. Manage computer systems resources;

6. Utilize Logisim to design and simulate digital circuits.

Skills for life and work (general skills)

7. Undertake independent research.
8. Work and communicate effectively in team by effective collaboration and task management.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (63 hours)	30%	1, 4,7,8
Portfolio 2 (73 hours)	35%	3, 6-8
Portfolio 3 (73 hours)	35%	2, 5,7,8
Each portfolio in the module contains: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Malik, D. S. (2012) *C++ Programming: From Problem Analysis to Program Design*. 6th edn. Course Technology.
- Mano, M.M. & Ciletti, M. D. (2013) *Digital Design*. 5th edn. Prentice Hall.
- Patterson, D. A. & Hennessy, J. L. (2016) *Computer Organization and Design: The Hardware/Software Interface*. 5th edn. Elsevier.

Recommended

- Brown, S. & Vranesic, Z. (2005) *Fundamentals of Digital Logic with VHDL Design*. 2nd edn. McGraw Hill.
- Katz, R. H. & Borriello, G. (2005) *Contemporary Logic Design*. 2nd edn. Prentice Hall.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Electronic Devices & Circuits	**UEL Module Code:** EG4XXX **ASU Module Code:** EG10422 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To provide foundational background, theories and mechanism of operation of principle semiconductor devices with emphasis on physical concepts.
- To provide good understanding of the link between device physics and circuit design by introducing to them design parameters, performance parameters, CAD models, and device scaling theory, etc.
- To build background in issues related to microelectronic circuits.

Main Topics of Study:

- Introduction to Semiconductor Devices.
- BJTs.
- JFETs and MESFETs.
- MOSFETs.
- MOSFET Applications.
- Device simulators.
- Diode Models and Circuits.
- Bipolar Transistors Physics and Amplifiers.
- MOS Transistors Physics and Amplifiers.
- OPAMP Circuits.
- Introduction to Filters, ADCS, DACs, and PLLs.

Learning Outcomes for the Module

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

Knowledge

1. Identify the mechanisms of operation of principle semiconductor devices;
2. Recognize the different BJT and MOS amplifier topologies.

Thinking skills

3. Develop analytical models for semiconductor devices;
4. Analyse and design diode circuits, BJT and MOS amplifiers.

Subject-based practical skills

5. Design different amplifier circuits meeting certain specifications;
6. Build and measure practical experiments for diode, BJT, MOS, and Opamp circuits.

Skills for life and work (general skills)

7. Write a technical report and presentation using digital libraries;

8. Undertake independent research.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50%	1, 3,7,8
Portfolio 2 (105 hours)	50%	2, 4-8
Each portfolio in the module contains: • Participation • Practical demonstrations • Assignments • TCAD Simulation Report • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Streetman, B. G. & Banerjee, S. K. (2006) *Solid State Electronic Devices*. 6th edn. Prentice-Hall, New Jersey.
- Sedra, A. S., & Smith, K. C. (2016) *Microelectronic circuits*. 7th edn. Oxford University Press.

Recommended

- Yang, E. S. (1988) *Microelectronic devices*. New York: McGraw-Hill.
- Razavi, B. (2013) *Fundamentals of microelectronics*. 2nd edn. John Wiley & Sons.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Fundamentals of Microwave Engineering	**UEL Module Code:** EG4XXX **ASU Module Code:** EG10423 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof. Amr Safwat

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To define and recognize basic concepts in electromagnetic waves.
- To explain the behaviour of electromagnetic waves propagation in the presence of material media and their interfaces.
- To recognize the fundamental properties of high frequency transmission lines.

Main Topics of Study:

- Plane electromagnetic waves.
- Propagation of electromagnetic waves in matter.
- Power and energy relations.
- Reflection and refraction.
- Transmission line Theory.
- Transverse Electro-Magnetic Waves and Power flow on TL.
- Circuit analysis of transmission lines.
- Graphical solution of transmission lines (Smith chart).
- Impedance matching using Smith chart.
- Generalized Maxwell's equations and parallel plate waveguide.
- Closed waveguides (rectangular and circular).
- Microstrip transmission line.
- Symmetric and asymmetric dielectric slab planar waveguide and step-index optical fibre.
- Equivalent circuit of waveguide. N- port circuit description.
- Scattering parameters of waveguides and waveguide coupling by aperture.
- Resonators.
- Passive devices: Terminations, attenuators, directional couplers, hybrid junctions, and nonreciprocal devices.

Learning Outcomes for the Module

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

Knowledge

1. Identify fundamental properties of high frequency transmission lines for communication systems;
2. Analyse wave propagation in different waveguides and optical fibers.

Thinking skills

3. Use appropriate mathematical tools and techniques for analyzing range of electromagnetic waves related problems;
4. Evaluate the characteristics of transmission lines.

Subject-based practical skills

5. Implement mathematical techniques to solve electromagnetic wave propagation and transmission line related problems;
6. Develop microwave circuits measurement skills.

Skills for life and work (general skills)

7. Work in a team and share ideas to achieve a task in a timely manner;
8. Test microwave circuits.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50 %	3, 5,7
Portfolio 2 (105 hours)	50%	1, 2, 4, 6-8
Each portfolio in the module contains: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final exam		

Reading and resources for the module:

Core

- Hayt, W. H., & Buck, J. A. (2001) *Engineering electromagnetics*. 6th edn. New York: McGraw-Hill.
- Pozar, D. M. (2011) *Microwave engineering* .4th edn. John Wiley & Sons.

Recommended

- Ulaby, F. T., Michielssen, E., & Ravaioli, U. (2014) *Fundamentals of applied electromagnetics*. 7th edn. Boston, Massachusetts: Prentice Hall.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Fundamentals of signals & Communications	**UEL Module Code:** EG4XXX **ASU Module Code:** EG10424 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Hussein Abdel Atty Elsayed

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To provide good understanding of the basic concepts of signals and systems.
- To develop the student's ability to analyse digital signals and systems both in time and frequency domains.
- To build background in issues related to communication systems.

Main Topics of Study:

- Signals types.
- Basic system properties.
- Linear time-invariant systems.
- Convolution.
- Fourier representation signals.
- Z-transform.
- Sampling theorem.
- Digital filters.
- FIR filter.
- IIR filter.
- Amplitude modulation.
- Frequency modulation.
- Phase modulation.
- Pulse modulation systems.
- Heterodyne receiver.
- TV broadcasting system.
- Random Processes and noise.

Learning Outcomes for the Module

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

Knowledge

1. Identify the different types of signals and system types;
2. Explain the operation of modulation and demodulation techniques (AM, FM, and PM);
3. Describe the effect of the noise on the communication systems.

Thinking skills

4. Analyse discrete-time systems both in time and frequency domains;
5. Analyse the individual building blocks of analog communication systems.

Subject-based practical skills

6. Simulate using MATLAB to get the effect of the systems on different types of signals;

7. Conduct laboratory experiments to investigate the modulators and demodulator operation.

Skills for life and work (general skills)

8. Write reports about experiments' simulation results;

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (73 hours)	35%	1, 6
Portfolio 2 (73 hours)	35%	2-3, 5,7,8
Portfolio 3 (63 hours)	30%	4
Each portfolio in the module contains: • Participation • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Haykin, S., & Van Veen, B. (2007) *Signals and systems*. 2nd edn. John Wiley & Sons.
- Manolakis, D. G., & Ingle, V. K. (2011) *Applied digital signal processing: theory and practice*. 1st edn. Cambridge University Press.
- Haykin, S. (2009) *Communication Systems*. 5th edn. John Wiley & Sons.

Recommended

- Oppenheim, A.V., Willsky, A.S. & Nawab, S.H. (1997) *Signals and Systems*. 2nd edn. Prentice-Hall.
- Couch, L. W., Kulkarni, M., & Acharya, U. S. (2013) *Digital and analog communication systems*. 8th edn. Upper Saddle River, NJ: Prentice Hall.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Analog and Digital Circuits	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10531 **Level:** 5 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Sameh Ibrahim

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To understand analogue circuits.
- To understand, analyse and design different digital gates.
- To design and optimize any analogue circuit.

Main Topics of Study:

- Analysis and design of differential amplifiers in bipolar and CMOS technologies.
- Current mirrors and active loads. Frequency response of amplifiers.
- Feedback and its properties.
- Stability issues and frequency compensation.
- Oscillators and Voltage Controlled Oscillators.
- CMOS Inverter: Noise margin, Propagation delay, Power dissipation
- CMOS combinational circuits: Static design, Pass transistors and transmission gates, Dynamic design.
- CMOS sequential circuits: Latches, Flip-flops, Counters, Monostable Ring oscillator,
- Random Access Memory RAM and Read Only Memory ROM
- Datapath building blocks: Shifters, adders, and multipliers.

Learning Outcomes for the Module

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

Knowledge

1. Distinguish main building blocks and the various pros and cons of different analog circuits;
2. Compare different digital circuit families;
3. Determine the operation of semiconductor memories and Datapath blocks.

Thinking skills

4. Design a variety of multifunction analog circuits;
5. Evaluate the performance of static and dynamic logic circuits.

Subject-based practical skills

6. Design the device parameters to meet the required functionality from analog circuit;
7. Create simulation testbenches for digital circuits.

Skills for life and work (general skills)

8. Propose different useful simulation tools.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50%	1,4,6,8
Portfolio 2 (105 hours)	50%	2,3,5, 7,8
Each portfolio in the module contains: • Participation • Assignments • Project • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Sedra, A. S., & Smith, K. C. (2016) *Microelectronic circuits*. 7th edn. Oxford University Press.
- Rabaey, J. M., Chandrakasan, A. P., & Nikolic, B. (2003) *Digital integrated circuits*.2nd edn. Englewood Cliffs: Prentice hall.

Recommended

- Johns, D. & Martin, K. (2011) *Analog Integrated Circuit Design*. 2nd edn. Jon Wiley & sons.
- Sansen, W. M. (2007*) Analog design essentials*.1st edn. Springer Science & Business Media.
- N. H., & Harris, D. (2015) *CMOS VLSI design: a circuits and systems perspective*. 4th edn. Pearson Education India.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Antenna Engineering	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10532 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Prof. Amr Safwat

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To enrich knowledge in the field of antennas.
- To develop students' ability to analyse basic antennas structures.
- To develop students' ability to design simple antennas.

Main Topics of Study:

- Infinitesimal dipole.
- Antennas parameters.
- Wire antennas.
- Feeding networks and ground effects.
- Loop antennas.
- Uniform arrays.
- Non-uniform arrays.
- Aperture antennas.
- Rectangular and circular apertures.
- Reflector antennas.
- Broadband antennas.

Learning Outcomes for the Module

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

Knowledge

1. Demonstrate the antenna fundamental parameters;
2. Examine the operation of antennas arrays;
3. Interpret the operation of broadband antennas.

Thinking skills

4. Differentiate various antennas structures;
5. Select appropriate specifications for simple antennas structures.

Subject-based practical skills

6. Design simple antennas structures.

Skills for life and work (general skills)

7. Work in a team and share ideas to achieve a task in a timely manner;
8. Undertake independent research.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • Lab Reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Balanis, C. A. (2016) *Antenna theory: analysis and design*. 4th edn. John Wiley & sons.

Recommended

- Volakis, J. L. (2019) *Antenna engineering handbook*.5th edn. McGraw-Hill Education.
- Russer, P. (2006) *Electromagnetics, microwave circuit and antenna design for communications engineering*. 2nd edn. Artech House.
- Chen, Y., & Wang, C. F. (2015) *Characteristic modes: Theory and applications in antenna engineering*. John Wiley & Sons.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Digital Transmission and Networks	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10533 **Level:** 5 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Hussein Abdel Atty Elsayed

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To provide good understanding of pulse code modulation.
- To explain spread spectrum techniques.
- To understand the basic terminologies and the operation of some communication networks.

Main Topics of Study:

- Sampling Process.
- Pulse Amplitude Modulation.
- Pulse Code modulation.
- Interference.
- Nyquist criterion.
- Repeaters.
- Signal space analysis.
- ASK.
- FSK.
- PSK.
- Network topology.
- Switching.
- PSTN.
- Network multiplexing.
- DSL.
- Transmission media.
- Network applications.

Learning Outcomes for the Module

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

Knowledge

1. Differentiate digital modulation techniques;
2. Compare the different types of network topologies.

Thinking skills

3. Design passband digital transmission systems;
4. Evaluate the network end to end delay.

Subject-based practical skills

5. Experiment using MATLAB to get the effect of the systems on different types digital modulation (by conducting laboratory experiments);

6. Design multiplexing/demultiplexing system to meet certain requirements.

Skills for life and work (general skills)

7. Work in a team and share ideas to achieve a task in a timely manner;
8. Write reports about experiments' simulation results.

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

Lectures/tutorials/practical sessions/workshops. 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 that include:		
Portfolio 1 (105 hours)	50%	1, 3, 5-8
Portfolio 2 (105 hours)	50%	2, 4, 7
Each portfolio in the module contains: • Participation • Lab Reports (if laboratory exists) • Project • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Haykin, S. (2009) *Communication systems*. 5th edn. John Wiley & Sons.
- Tanenbaum, A. S. (2003) *Computer networks*. 4th edn. *ed: Prentice Hall*.

Recommended

- Proakis, J. G., & Salehi, M. (2008) *Digital communications*. 5th edn. New York: McGraw-hill.
- Stallings, W. (2007) *Data and computer communications*. 8th edn. Pearson Education India.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Control Engineering	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10534 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To demonstrate knowledge and understanding of different control systems and control techniques.
- To select the appropriate controller for a given system and adjust its parameters.
- To demonstrate knowledge and understanding of control theory.

Main Topics of Study:

- Open and closed loop control systems.
- Disturbance and parameters change.
- Transfer function and block diagram reduction.
- Time response and frequency response.
- Stability of control systems and Steady state errors.
- DC servo case study.
- PID controllers.
- Root Locus and Bode Plot.
- Lead and Lag compensators.
- Feedforward, Cascade and Ration Control.
- Computer based Control PLC and micro controllers.

Learning Outcomes for the Module

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

Knowledge

1. Compare the different techniques for systems control;
2. Classify the systems with respect to their type and order.

Thinking skills

3. Employ alternative controllers as to get rid of noise and disturbance;
4. Design PID controllers and adjust their parameters.

Subject-based practical skills

5. Design an entire control system;
6. Experiment and test developing software and hardware controllers.

Skills for life and work (general skills)

7. Write control system characteristics;
8. Develop software applications though MATLAB and C to control systems.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • Lab reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Kuo, B. C., & Golnaraghi, F. (2017) *Automatic control systems*.10th edn. Englewood Cliffs, NJ: Prentice-Hall.

Recommended

- Franklin, G. F., Powell, J. D., & Emami-Naeini, A. (2018) *Feedback control of dynamic systems*. 8th edn. Prentice Hall Press.
- Ogata, K. (2009) *Modern Control Engineering*. 5th edn. Pearson.
- Lavagno, L., Markov, I. L., Martin, G., & Scheffer, L. K. (Eds.). (2016) *Electronic Design Automation for IC Implementation, Circuit Design, and Process Technology: Circuit Design, and Process Technology*. 2nd edn. CRC Press.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/ Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Satellite Communications	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10535 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Bassant Abdelhamid

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To build the student's knowledge in the fields of satellite communication.
- To improve the student's skills in the definition, analysis, and solving of problems related to satellite communication.
- To improve student's skills in the design of satellite communication subsystems.

Main Topics of Study:

- Overview of satellite systems
- Satellite orbits and launching methods
- The Geostationary orbit
- The space segments
- Radio wave propagation
- Polarization of satellite signals
- Antennas for satellites and ground stations
- Space link budget

Learning Outcomes for the Module

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

Knowledge

1. Distinguish the space segment and the reliability of the satellite system modules;
2. Judge orbits, radio wave propagation, polarization, and antennas for satellite.

Thinking skills

3. Analyse a complete satellite system;
4. Design components and systems for specific applications related to satellite systems.

Subject-based practical skills

5. Explain set up's preparation, use and maintenance;
6. Write Technical Reports.

Skills for life and work (general skills)

7. Work in a team and share ideas to achieve a task in a timely manner;
8. Communicate effectively.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • Research Reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Roody, D. (2006) Satellite *Communications*. 4th edn. McGraw-Hill.

Recommended

- Ippolito, L. J., & Ippolito Jr, L. J. (2017) *Satellite communications systems engineering: atmospheric effects, satellite link design and system performance*. 2nd edn. John Wiley & Sons.
- Maral, G. & Bousquet, M. (2009) *Satellite Communications Systems: Systems, Techniques and Technologies*. 5th edn. John Wiley and Sons Ltd.
- Maini, A. K., & Agrawal, V. (2014) *Satellite technology: principles and applications*. 3rd edn. John Wiley & Sons.
- Gagliardi, R. M. (2012) *Satellite communications*.1st edn. Springer Science & Business Media.
- Kolawole, M. O. (2002) *Satellite communication engineering*. CRC Press.
- Mitra, M. (2005) *Satellite Communication*. PHI Learning Pvt. Ltd.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Statistical Signal Processing	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10536 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Bassant Abdelhamid

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To enrich the student knowledge about stochastic signals and stochastic processes.
- To develop the students' ability to develop algorithms for estimation, adaptive filtering, and detection.
- To train the students to use software packages to develop their own algorithms.

Main Topics of Study:

- Statistical signal processing review.
- Discrete time random processes.
- Linear Algebra and error bounds.
- Least Square Method.
- Adaptive filters.
- Estimators.
- Introduction to detection.

Learning Outcomes for the Module

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

Knowledge

1. Predict the statistical properties of random signals and processes;
2. Estimate the best estimator to minimize certain cost function.

Thinking skills

3. Analyse the type of random process according to its properties;
4. Solve linear systems using least square method.

Subject-based practical skills

5. Design an adaptive filter in a certain application;
6. Use software package to design an estimator/detector for certain application.

Skills for life and work (general skills)

7. Effectively manage tasks, time;
8. Search for information and refer to relevant literatures.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • Reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Manolakis, D. G., Ingle, V. K., & Kogon, S. M. (2005) *Statistical and Adaptive Signal Processing*. Artech House. *Inc., Norwood*.

Recommended

- Meyer, C. D. (2000) *Matrix analysis and applied linear algebra* (Vol. 71). Siam.
- Haykin, S. (1996) *Adaptive Filter Theory*. 3rd edn. Englewood Cliffs, NJ: Prentice-Hall.
- Kay, S. M. (1993) Fundamentals *of statistical signal processing, volume I: Estimation theory*. Prentice Hall.

Indicative Teaching and Learning Time (10 hrs per credit):	Activity
1.Student/Tutor interaction, some of which may be online: 100 hours	 Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	 Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: VLSI Technology	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10537 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Sameh Ibrahim

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To build student background in issues related to electronic technology.
- To help students develop a thorough understanding of different integrated circuits fabrication processes, their environment, and their requirements.

Main Topics of Study:

- Introduction to IC fabrication environment and clean rooms.
- The complete MOS transistor design flow.
- Ion Implantation.
- Diffusion.
- Lithography.
- Etching.
- Oxidation.
- Metallization and Epitaxy.
- Passives and Actives Layout.
- Layout Flow.
- Layout Techniques.

Learning Outcomes for the Module

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

Knowledge

1. Differentiate the different processes required for integrated circuits fabrication;
2. Distinguish layout techniques, rules and guidelines.

Thinking skills

3. Evaluate the quality of integrated circuits design and fabrication;
4. Plan a transistor fabrication process from start to end.

Subject-based practical skills

5. Design a fabrication process with right parameters;
6. Develop an integrated circuit on layout level.

Skills for life and work (general skills)

7. Work in a group to achieve a task in a timely manner;
8. Refer to relevant literatures.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • Research Reports • Project • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Campbell, S. (2013) *Fabrication Engineering at the Micro- and Nanoscale*. 4th edn. Oxford University Press.

Recommended

- Hastings, A. (2005) *The Art of Analog Layout*. 2nd edn. Pearson.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Introduction to Embedded Systems	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10538 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Mohamed Abouelatta

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To provide the technical background of embedded systems.
- To provide knowledge of different architectures of embedded systems.
- To train on design skills with embedded systems.

Main Topics of Study:

- Embedded systems overview.
- The Embedded System Design Process.
- Formalisms for System Design, Case Study-1: Model Train Controller.
- Instruction Sets, ARM Processor and assembly.
- Programming Input and Output.
- Supervisor Mode, Exceptions, and Traps; Co-Processors.
- Memory System Mechanisms.
- Pipelining, Caching and power consumption Architecture.
- Bus-Based Computer Systems, DMA controller.
- I/O devices and Interfacing system design flow, codesign.
- Designing with Microprocessors, Development and Debugging.
- USB interfacing.
- Program Design and Analysis.
- Processes and Operating Systems.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Outline the architecture of embedded systems;
2. Compare embedded systems interfacing methods.

Thinking skills
3. Write metrics of embedded system design;
4. Analyse embedded system hardware and software.

Subject-based practical skills
5. Use hardware description of embedded systems circuits;
6. Design an embedded systems RTOS.

Skills for life and work (general skills)
7. Share system design skills;
8. Produce technical writing.

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

Lectures/tutorials/practical sessions/videos. 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 that include: Final Exam Coursework divided as: • Participation • Project • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Wolf, M. (2012) *Computers as components: principles of embedded computing system design*. Elsevier.

Recommended

- Kopetz, H. (2011) *Real-time systems: design principles for distributed embedded applications*. Springer Science & Business Media.
- Lee, E. A., & Seshia, S. A. (2016) *Introduction to embedded systems: A cyber-physical systems approach*. 2nd edn. MIT Press.
- White, E. (2011) *Making Embedded Systems: Design Patterns for Great Software*. 1st edn. O'Reilly Media, Inc.
- Bai, Y. (2015) *Practical microcontroller engineering with ARM technology*. 1st edn. John Wiley & Sons.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/ Practical
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Microwave Circuits	**UEL Module Code:** EG5XXX **ASU Module Code:** EG10539 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Prof. Amr Safwat

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To enrich knowledge in the field of microwave and millimeter wave.
- To analyse the building blocks in microwave/millimeter wave circuits
- To develop the ability to use EM and circuit simulators.

Main Topics of Study:

- Network theory.
- Planar transmission lines.
- Microwave components.
- Matching networks.
- Microwave Filters.
- Microwave Amplifiers.
- Microwave measurements.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Compare different configurations of transmission lines;
2. Interpret the operation of various microwave components.

Thinking skills
3. Design matching network;
4. Implement microwave amplifier.

Subject-based practical skills
5. Use microwave simulators to implement circuits in the available technology;
6. Measure the performance of the implemented microwave circuits.

Skills for life and work (general skills)
7. Work in a team;
8. Develop ideas and share then with others.

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

Lectures/tutorials/practical sessions/videos. 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: **Portfolio** Continuous assessment tasks that include: Final Exam Coursework divided as: • Participation • Lab reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	**Weighting:** 100%	**Learning Outcomes demonstrated** 1- 8

Reading and resources for the module:

Core

- Pozar, D. M. (2011) *Microwave engineering*. 4th edn. John Wiley & Sons.

Recommended

- Mongia, R. K., Hong, J., Bhartia, P., & Bahl, I. J. (1999) *RF and microwave coupled-line circuits*. 2nd edn. Artech house.
- Russer, P. (2006) *Electromagnetics, microwave circuit and antenna design for communications engineering*. 2nd edn. Artech House.
- Montgomery, C. G., Dicke, R. H., & Purcell, E. M. (Eds.) (1987) *Principles of microwave circuits* (No. 25). Iet.
- Gupta, K. C., Garg, R., & Chadha, R. (1981) *Computer aided design of microwave circuits*. NASA STI/Recon Technical Report A, 82.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/ Practical
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Optical Sensing	**UEL Module Code:** EG5XXX **ASU Module Code:** EG105310 **Level:** 5 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Yasser Sabry Aboelmagd

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To recognize optical sensors and instruments.
- To understand the specifications and translate it to design requirements and practical aspects of the optical instruments and sensors.

Main Topics of Study:

- Optical design.
- Interferometry.
- Spectroscopy.
- Polarization based instruments.
- Coherent imaging.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Differentiate current engineering technologies related to optical instrumentation;
2. Examine different techniques of material and structure characterization.

Thinking skills
3. Create methodical approaches when dealing with analysis of optical characterization problems;
4. Design characterization equipment combining components and concepts components.

Subject-based practical skills
5. Simulate optical sensing devices using CAD;
6. Read instruments manual and understand the specifications.

Skills for life and work (general skills)
7. Demonstrate efficient IT capabilities;
8. Undertake independent research.

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

Lectures/tutorials/practical sessions/videos. 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 that include: Final Exam Coursework divided as: • Participation • Lab reports • practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Nagabhushana, S. (2010) *Lasers and optical instrumentation*. 10th edn. IK International Pvt Ltd.

Recommended

- Goodwin, E. P., & Wyant, J. C. (2006) *Field guide to interferometric optical testing*. Bellingham, WA: SPIE.
- Udd, E., & Spillman, W. B. (2014) *Field guide to fiber optic sensors*. Proc. SPIE.
- Gåsvik, K. J. (2003) *Optical metrology*. 3rd edn. John Wiley & Sons.
- Griffiths, P. R., & De Haseth, J. A. (2007) *Fourier transform infrared spectrometry*. 2nd edn. John Wiley & Sons.
- Fujimoto, J. G., & Farkas, D. (2009) *Biomedical optical imaging*. 1st edn. Oxford University Press.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/ Practical
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Advanced Communication Networks	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10641 **Level:** 6 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Hussein Abdel Atty Elsayed

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To understand the terminologies and elements of computer networks.
- To understand the operation of some computer networks.
- To illustrate network addressing.

Main Topics of Study:

- Network architecture.
- TCP/IP model.
- Network topology.
- Physical layer.
- Data link protocols.
- Network layer protocols.
- Local, area networks.
- Transport layer protocols.
- VoIP applications.

Learning Outcomes for the Module

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

Knowledge

1. Distinguish the different type of networks;
2. Interpret the operation of Ethernet networks and IP, TCP and UDP protocols.

Thinking skills

3. Design IP address subnetting;
4. Interpret the performance of different protocols.

Subject-based practical skills

5. Differentiate congestion control techniques;
6. Design IP address subnet.

Skills for life and work (general skills)

7. Work in a team;
8. Formulate computer network problems.

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

Lectures/tutorials/practical sessions/workshops. 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: **Portfolio** Continuous assessment tasks that include: Final Exam Coursework divided as: • Participation • Lab reports • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	**Weighting:** 100%	**Learning Outcomes demonstrated** 1- 8
Reading and resources for the module: **Core** - Tanenbaum, A. S. (2008) *Computer Networks*. 6th edn. Prentice Hall. **Recommended** - Stallings, W. (2013) *Data and computer communications*. 10th edn. Prentice Hall.		

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Graduation Project	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10642 **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Hussein Abdel Atty Elsayed

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None
Locations of delivery: ASU	

Main Aim(s) of the Module:

- Teach students the analysis and design of a complete engineering system using the fundamentals, principles, and skills gained during their study.
- Increase the student capability in technical report writing and presentation in engineering problems.

Main Topics of Study:

A single or group project performed under the supervision of a faculty member and an industrial entity. The main topics of study:

- Project Overview and Understanding
- Identification of a suitable project topic
- Research methods
- Project Design
- Project Implementation
- Project testing, validation, and verification
- Project Documentation and Presentation

Learning Outcomes for the Module

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

Knowledge

1. Conduct a literature review in the project domain;
2. Collect data of the current engineering problems in industry related to the graduation project topic;

Thinking skills

3. Select appropriate analytical methods, tools, and computer software for a specific communication system problem;
4. Design an engineering system for a specific application.

Subject-based practical skills

5. Solve engineering problems and implement solutions
6. Test and verify the implemented system.

Skills for life and work (general skills)

7. Work in a team and share ideas to achieve a task in a timely manner;
8. Present reports, discuss results and defend ideas of experiments.

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

Lectures will be used to provide an overview of the project, its requirements and organisation and an introduction to research methods, literature surveys and referencing. In addition, every student will be allocated a supervisor at an early stage within the module. The supervisor will support the student for the duration of the project. Feedback, in the form of formative assessment, will be provided by supervisors on a regular basis.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated**
Portfolio Continuous assessment tasks that include:		
Portfolio 1 (105 hours)	50%	1-3, 5, 7, 8
Portfolio 2 (105 hours)	50%	4, 5-8
Each portfolio includes 8000-word project report, intermediate deliverables and a 15-minute viva presentation.		

Reading and resources for the module:

Core

- Jagodzinski, P., Reid, F. J. M., Culverhouse, P., Parsons, R., & Phillips, I. (2000) *A study of electronics engineering design teams*. Design Studies, 21(4), 375-402.
- Brinkman, G. W., & van der Geest, T. M. (2003) *Assessment of communication competencies in engineering design projects.* Technical communication quarterly, 12(1), 67-81.

Recommended

- Bartol, K, Martin, D, Tein, M & Matthews, G (2011) *Management: a pacific RIM focus*. 6th edn, McGraw-Hill, North Ryde, NSW.
- Yong-chun, L. X. M. Z. (2004) *Study and Practice of Quality Control on Graduation Project [J]*. Journal of Nanjing University of Science and Technology, 2.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	 Lectures/ Supervision/ Practicals
2.Student Learning Time: 200 hours	 Essential and background reading, tutorial preparation, assignment planning and preparation.
Total hours (1 and 2):	300 hours

Module Title: Entrepreneurship	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10643 **Level:** 6 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: P. Amr Safwat

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To improve the professional skills in establishing business models.
- To write a small business plan and effectively manage tasks, time, and resources.
- To use available project management software.

Main Topics of Study:

- Product development and idea protection: NASA Technology readiness level and product life cycle.
- Intellectual property: patent, claims, protection, national phase, international patent application.
- Funding: Government funding versus venture capital.
- Finance: Basic Accounting Equations.
- Finance: Financial statements.
- Finance: Adjustments.
- Finance: Worksheet.
- Corporate and stock market growth versus dilution.
- Project management: work breakdown structure.
- Project management: time flow, critical paths, slack.
- Project management: Gantt Chart.
- Business model Canvas.
- Business plan: return of investment, Net present value.
- Pitching strategy.

Learning Outcomes for the Module

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

Knowledge

1. Prepare the four financial statements;
2. Examine Project life cycle;
3. Develop Gantt and PERT charts.

Thinking skills

4. Analyse financial statements;
5. Develop Plans for managing a project efficiently.

Subject-based practical skills

6. Demonstrate organizational and project management skills;
7. Write a small business plan.

Skills for life and work (general skills)

8. Effectively manage tasks, time, and resources.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • Project • Fieldwork reports • Oral presentations • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Larson, E., and Gray, C. (2014) *Project Management*. McGraw-Hill.

Recommended

- Weygandt, J., Kimmel, P., and Kieso, D. (2015) *Accounting Principles*. 12nd edn John-Wiley & Sons.
- Bravo, M. (2012), *Dream, Design, Surf How to design new ventures for rapid growth, lower risk and global impact*. Academy Press.
- Kerzener, H. (2013) *Project Management: A system Approach to Planning, Scheduling, and control*. 13rd edn. John Wiley & Sons, Inc.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Information Theory and Coding	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10644 **Level:** 6 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Bassant Abdelhamid

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To explain the concept of information theory.
- To design different channel encoders (linear block encoders and convolution encoders).

Main Topics of Study:

- Uncertainty, Information, Entropy and its properties.
- Source coding: Prefix coding, First Shannon theorem, Huffman coding.
- Discrete memoryless channels, Binary symmetric channel, Mutual information and its properties. Channel capacity.
- Channel coding, Second Shannon theorem, Mutual information. Channel capacity, Compression of information.
- Linear block codes, cyclic codes, Well-Known Block codes.
- Convolution codes: Code tree, Trellis and state diagram. Maximum likelihood decoding of convolution codes.

Learning Outcomes for the Module

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

Knowledge

1. Distinguish the difference between source coding and channel coding;
2. Compare the linear block and the convolution codes.

Thinking skills

3. Differentiate discrete memoryless sources;
4. Analyse channel encoder and decoder.

Subject-based practical skills

5. Apply the coding and decoding algorithms in a practical application;
6. Design channel coder.

Skills for life and work (general skills)

7. Work in a team and share ideas;
8. Communicate effectively.

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

Lectures/tutorials/practical sessions/workshops. 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: **Portfolio** Continuous assessment tasks that include: Final Exam Coursework divided as: • Participation • Lab reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	**Weighting:** 100%	**Learning Outcomes demonstrated** 1- 8

Reading and resources for the module:

Core

- Haykin, S. (2009) *Communication* Systems. 5th edn. John Wiley & Sons.

Recommended

- Praxis, J. & Salehi, M. (2008) *Digital Communications*. 5th edn. McGraw-Hill.
- Cover, T. M., & Thomas, J. A. (2012) *Elements of information theory*. 3rd edn. John Wiley & Sons.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Wireless and Mobile Communications	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10645 **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Bassant Abdelhamid
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite: None	**Excluded Combination:** None	
Locations of delivery: ASU		

Main Aim(s) of the Module:

- To describe frequency planning.
- To explain propagation models.
- To study wireless and mobile standard systems as: GSM, CDMA, 3G, 4G and 5G.

Main Topics of Study:

- Review of Frequency planning.
- Multipath wireless channel.
- Propagation models (small and large scale).
- GSM system.
- CDMA system.
- 3G, 4G and 5G system.

Learning Outcomes for the Module

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

Knowledge

1. Plan frequency planning steps;
2. Distinguish GSM and CDMA mobile system standard;
3. Compare 3G, 4G and 5G mobile systems.

Thinking skills

4. Analyse cellular system;
5. Design GSM system.

Subject-based practical skills

6. Create a mobile system.

Skills for life and work (general skills)

7. Collaborate effectively within multidisciplinary team;
8. Undertake independent research.

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

Lectures/tutorials/practical sessions/workshops. 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 1 (105 hours)	50%	1, 2, 7
Portfolio 2 (105 hours)	50%	3, 4, 5-6,8
Each portfolio in the module contains: • Participation • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam (210 hours)		

Reading and resources for the module:

Core

- Rappaport, T. S. (2001) *Wireless Communication System*. 2nd edn. New Jersey: prentice hall PTR.
- Lee, W. C. (1982) *Mobile communications engineering*. McGraw-Hill Professional.

Recommended

- Nee, R. V., & Prasad, R. (2000) *OFDM for wireless multimedia communications*. Artech House, Inc.
- Lee, W. C. (2010) *Mobile communications design fundamentals*. (Vol. 25). John Wiley & Sons.
- Rappaport, T. S. (1996) *Wireless communications: principles and practice*. (Vol. 2). New Jersey: prentice hall PTR.

Indicative Teaching and Learning Time (10 hrs per credit):	Activity
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Processing for Multimedia	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10646 **Level:** 6 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Bassant Abdelhamid

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To understand the theory and algorithms that are widely used in digital image processing.
- To understand current technologies and issues that are specific to image processing systems.
- To apply critical thinking about shortcomings of the state of the art in image processing.

Main Topics of Study:

- Image Enhancement: Spatial Domain.
- Image Enhancement: frequency Domain.
- Image Restoration: Noise Removal.
- Image Restoration: Degradation Model.
- Image Compression: Mathematical Methods.
- Image Compression: JPEG Compression.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Distinguish the bases of digital image formation;
2. Deduce the essential mathematics relevant to image compression, image enhancement and restoration.

Thinking skills
3. Discriminate between spatial filters for image enhancement;
4. Demonstrate alternative methods for image restoration techniques and image compression techniques.

Subject-based practical skills
5. Use image processing toolboxes and other related software;
6. Implement image processing techniques to real-world applications.

Skills for life and work (general skills)
7. Present reports, discuss results and defend their ideas of experiments;
8. Communicate effectively and share ideas ethically in a team work.

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

Lectures/tutorials/practical sessions/videos. 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 that include: Final Exam Coursework divided as: • Participation • Oral presentations • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Gonzalez, R. C., & Woods, R. E. (2007) *Digital image processing*. 3rd edn. Prentice Hall.

Recommended

- Sayood, K. (2005) *Introduction to Data Compression*. 3rd edn. Morgan Kaufmann.
- Szeliski, R. (2010) *Computer vision: algorithms and applications*. Springer Science & Business Media.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/ Practical
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Analog and RF Circuit Design	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10647 **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Hesham Omran

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To apply analytical skills that can be used in the field of analog circuit design.
- To apply intuition as to quickly assess analog and RF circuit performance and functionality.
- To apply analytical skills that can be used in the field of RF circuit design.

Main Topics of Study:

- Review of transistor models and amplifier circuits.
- Advanced current mirrors.
- Operational amplifiers design (basic, two-stage, telescopic, folded).
- Stability and frequency compensation.
- Fully differential operation and common-mode feedback circuits.
- Voltage and current references.
- Noise and mismatch in analog circuits.
- Basic concepts of RF circuits and systems.
- RF transceivers architectures.
- Noise and distortion in RF systems.
- Impedance matching and smith chart.
- Building blocks of RF systems: Low noise amplifiers, mixers, oscillators, phase noise.
- RF frequency synthesizers.
- RF power amplifiers.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Simulate the characteristics of analog integrated circuits;
2. Distinguish analog and RF circuits noise sources and performance;
3. Examine the specifications of RF circuit blocks.

Thinking skills
4. Implement advanced analog integrated circuits;
5. Analyse RF circuit blocks (LNA, mixer, oscillator).

Subject-based practical skills
6. Design analog and RF circuits using simulation tools;

7. Create technical reports.

Skills for life and work (general skills)

8. Work in teams.

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

Lectures/tutorials/practical sessions/videos. 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 that include:		
Portfolio 1 (105 hours)	50%	1, 4, 6-8
Portfolio 2 (105 hours)	50%	2,3, 5-8
Each portfolio in the module contains: • Participation • Fieldwork reports • Project • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Razavi, B. (2017) *Design of analog CMOS integrated* circuits. 2nd edn. McGraw-Hill.
- Razavi, B. (2011) *RF Microelectronics*. 2nd edn. Prentice Hall.

Recommended

- Johns, D.A. & Martin, K. (2011) *Analog integrated circuit design*. 2nd edn. John Wiley & Sons.
- Sansen, W. M. (2007) *Analog design essentials*. Springer Science & Business Media.
- Jespers, P. G., & Murmann, B. (2017) *Systematic Design of Analog CMOS Circuits*. Cambridge University Press.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	 Lectures/ Tutorials/ Practical
2.Student Learning Time: 100 hours	 Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: ASIC Design & Automation	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10648 **Level:** 6 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Sameh Ibrahim

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To enrich the student's knowledge in designing application specific digital integrated circuits.
- To enrich the student's knowledge in fully-automated digital design flow.
- To enhance the student ability to use integrated circuit computer-aided design and verification tools.

Main Topics of Study:

- IC Subsystems.
- Standard-cell design.
- Digital Flow – High-Level Design.
- VHDL – Basics.
- VHDL - Combinational Design.
- VHDL - Sequential Design.
- CAD System.
- Simulation Flow.
- Finite-State Machines.
- Logic Synthesis - Two-level.
- Logic Synthesis - Multi-level.
- Design for Test.
- Placement.
- Routing.
- Chip Integration.

Learning Outcomes for the Module

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

Knowledge

1. Compare digital design and verification flows;
2. Distinguish basic hardware description language HDL (VHDL/Verilog);
3. Evaluate different integrated circuit test strategies.

Thinking skills

4. Create a state-machine from a problem description;
5. Compile a synthesizable HDL code.

Subject-based practical skills

6. Isolate design challenges during digital design process;
7. Build a simple chip from specifications down to layout using CAD tools.

Skills for life and work (general skills)

8. Formulate ideas.

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

Lectures/tutorials/practical sessions/workshops. 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 that include: Final Exam Coursework divided as: • Participation • CAD reports • Oral presentations • Assignments • Quizzes • A midterm exam • Final Exam (105 hours of student effort)	100%	1- 8

Reading and resources for the module:

Core

- Weste, N. H., & Harris, D. (2010) *CMOS VLSI design: a circuits and systems perspective*. 4th edn. Pearson Education India.

Recommended

- Wolf, W. (2002) *Modern VLSI Design*. 3rd edn. PEARSON, Prentice Hall.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/Practicals
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

Module Title: Microwave Systems	**UEL Module Code:** EG6XXX **ASU Module Code:** EG10649 **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof. Amr Safwat

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To provide knowledge and understanding of microwave tubes and semiconductor devices
- To perform testing measurements in microwave domain.
- To enrich the student's knowledge in handling and dealing with microwave technology including installation of components, devices, and systems.

Main Topics of Study:

- Two-cavity Klystron.
- Reflex Klystron.
- Travelling wave amplifier.
- Magnetron.
- Microwave Transistors (BJT, HBT, FET, HEMT).
- Negative resistance devices (Tunnel diodes, Gunn diodes and avalanche diode).
- Parametric amplifiers.
- Microwave Cavities.
- Planar transmission lines characterization.
- Injection phase locking of microwave oscillator.
- Antennas characterization.
- CAD and analysis of microstrip discontinuities, couplers, and antennas.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Compare solid knowledge of structure and operation of Klystrons, Magnetrons and travelling wave tubes;
2. Distinguish microwave transistors and their use as amplifiers and oscillators.

Thinking skills
3. Analyse and design microwave oscillators;
4. Select appropriate amplifiers and oscillators for microwave systems and subsystems.

Subject-based practical skills
5. Use software package to design different microwave components;
6. Perform experiments in the microwave domain.

Skills for life and work (general skills)

7. Work in a team and share ideas to achieve a task in a timely manner;
8. Develop ideas and share with others.

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

Lectures/tutorials/practical sessions/videos. 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 that include:		
Portfolio 1 (105 hours)	50%	1-4
Portfolio 2 (105 hours)	50%	5-8
Each portfolio in the module contains: • Participation • Fieldwork reports • Assignments • Quizzes • A midterm exam • Final Exam		

Reading and resources for the module:

Core

- Liao, S. Y. (2003) *Microwave devices and circuits*. 3rd edn. Pearson Education India.
- Pozar, D. M. (2011) *Microwave engineering*. 4th edn. John Wiley & Sons.

Recommended

- Gupta, K. C., Garg, R., Bahl, I. J., & Bhartia, P. (2013) *Microstrip Lines and Slot lines*. 3rd edn. Artech House.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 200 hours	Lectures/ Tutorials/ Practical
2.Student Learning Time: 100 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Optical Communications	**UEL Module Code:** EG6XXX **ASU Module Code:** EG106410 **Level:** 6 **Credit:** 15 **ECTS credit:** 7.5	**Module Leader**: Dr. Yasser Sabry Aboelmagd

Pre-requisite: None	**Pre-cursor:** None
Co-requisite: None	**Excluded Combination:** None

Locations of delivery: ASU

Main Aim(s) of the Module:

- To distinguish between the various modes of operation of optical fibers
- To identify the various causes for signal degradation including losses and dispersion
- To analyse and design optical components for communication applications

Main Topics of Study:

- Optical fibers.
- Semiconductor lasers.
- Optical components.
- Optical modulation.
- Optical amplifiers.

Learning Outcomes for the Module
At the end of this module, students will be able to:

Knowledge
1. Express the guided-wave phenomena and light-matter interactions and their engineering applications;
2. Distinguish the fiber systems and their applications in optical communications.

Thinking skills
3. Develop analytical models for optical communication devices and systems;
4. Design of optical components and systems for specific applications.

Subject-based practical skills
5. Create fiber connectorization and splicing;
6. Perform optical components characterization.

Skills for life and work (general skills)
7. Work in a team to achieve a task in a timely manner;
8. Develop and share ideas.

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

Lectures/tutorials/practical sessions/videos. 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 that include: Final Exam Coursework divided as: • Participation • Lab reports • Practical demonstrations • Assignments • Quizzes • A midterm exam • Final Exam (105 hours)	100%	1- 8

Reading and resources for the module:

Core

- Kumar, S. & Jamal Deen, M. (2014) *Fiber Optic Communications: Fundamentals and applications*. 1st edn. John Wiley and Sons.

Recommended

- Papen, G. C. & Blahut, R. E. (2019) *Lightwave Communications*. 1st edn. Cambridge University Press.
- Chrostowski, L., & Hochberg, M. (2015) *Silicon photonics design: from devices to systems* .1st edn. Cambridge University Press.
- Agrawal, G. P. (2012) *Fiber-optic communication systems*. John Wiley & Sons.
- Solgaard, O. (2009) *Photonic microsystems: Micro and nanotechnology applied to optical devices and systems*. Springer Science & Business Media.
- Yariv, A. & Yeh, P. (2007) Photonics*: Optical Electronics in modern communications*. 6th edn. Oxford University Press.

Indicative Teaching and Learning Time (10 hrs per credit):	**Activity**
1.Student/Tutor interaction, some of which may be online: 100 hours	Lectures/ Tutorials/ Practical
2.Student Learning Time: 50 hours	Essential and background reading, tutorial preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	150 hours

7 PLACEMENT REQUIREMENTS

Although there is no compulsory placement system, we encourage all students to seek work experience during their summer vacations. Training could be performed in an industrial/service facility related to the student's program and must be under the full supervision of the faculty according to the requirements stipulated in Article (37) of the ASU Credit-hour Educational Programmes bylaws. The training is mandatory for the normal ASU degree.

Scholarships

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 and receives partial exemption from charges on the next semester. This exemption is dependent on the student's GPA as recommended by the Programmes Administration Council in this regard and after approval of the Council of the Faculty of Engineering. The student who keeps an accumulative GPA of 3.3 or higher in every semester all through his course of study and does not fail any course, graduates with an Honor Degree, which is documented in his graduation certificate. Additionally, the top 30 students in Thanaweya Amma, mathematics section, who enrolled in the credit hours programmes, are fully exempted from paying any tuition fees in their first semester.

To maintain this exemption in the following semesters, the student should maintain an accumulative GPA of 3.6 or higher in every semester. This exemption is declined once the student fails to achieve this accumulative GPA in any semester. The faculty sets a system for encouraging distinguished students through reducing their tuition fees in accordance with their accumulative GPAs. At the beginning of each semester, the distinguished students' list is announced together with the associated tuition fees reductions.

Reference to the Suitability procedure and provide web link

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

8 PROGRAMME MANAGEMENT

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

- The programme pays special attention 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 programme's learning management system is setup to have a page for each course studied during the semester. The student can access courses from the main programme web-page.

- All electronic services provided to the students requires the use of university e-mail, hence, it is created automatically for the programme's student when first enrolled to the programme, and this e-mail is retained until graduation.

- The Student Information System (SIS) is the place where students can access all your academic records. It can be reached on the main programme web-page, which also provides brief information about the mission and vision of the programme, 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 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 programme of study.

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

Students Involvement

There are different facilities that ensure students involvement that include:

a) Students' Affairs Administration

The students' affairs administration is chaired by the Vice-Dean for education and students' affairs and is located in the main building. This administration has representatives at the programmes' administration offices (Ground Floor of the New Educational Building). The secretariat of each programme (at the programmes secretariat office – Ground Floor of the New Educational 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 Engineering, the programmes' 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 programmes' financial affairs administration, located at the Ground Floor of the New Educational 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. Programmes' students who fail to present copies of the payment to the programmes' financial administration risk having no payment records at the programmes.

d) Library

The Faculty library provides a service specially designed to fulfil the requirements of all academic programmes. It is open for all Faculty members for reference use and borrowing. The main library has a shelf space for over 40,700 books on all subjects forming part of the Faculty curriculum. It has 353 technical periodicals (the Faculty receives 23 periodicals yearly in a regular basis). Additionally, it has more than 3,340 Ph.D. and M.Sc. theses resulted from all Faculty departments' activities. The students' library has multiple copies of textbooks, amounting to over 13,000, available for short-term borrowing to students. According to the Engineering Faculties libraries

development project, annexed to the Ministry of Higher Education, the library is interconnected through the Internet with all the libraries of engineering faculties nationwide. VTLS library software system has been installed which contains all the modules to provide library services to the Faculty community.

e) ASU - FoE Information Systems

ASU - FoE have a solid understanding of the importance of information systems in each aspect in the CHEP academic environment. Hence, a comprehensive web portal has been created for CHEP that has all information and services needed for the student, parents, and staff members. Learning Management System (LMS) is one of the available service at the ASU - FoE portal for all students mainly to have their course materials posted regularly on it with a dedicated protected access to the courses he enrolled in them. 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 academic records, course registration, request open courses that are not offered, or even request advising appointment with academic advisors.

9 STUDENT SUPPORT

9.1 Local arrangements for academic and pastoral care for students

Induction

Students' support and guidance are provided through a range of resources. A welcome and induction process starts in their first week, where all students are guided to their programme studies. Student induction and orientation takes place on the first day of each academic year. The purpose of induction is to introduce new students to their peers, the academic and support staff, to familiarize them with the access to and use and of facilities and to outline the relevant Policies, Procedures, Rules and Regulations. Information on the programme, student support services and the teaching and learning philosophy adopted by the College is communicated verbally and in writing.

Currently, at the beginning of the each programme, the faculty meets and greets the new cohort and addresses the following topics in an induction programme:

(1) Programme Structure (how and when modules are assessed)
(2) Programme Content
(3) Assessment Grading
(4) Attendance
(5) Responsibilities they have in learning process – the importance of meeting assessment deadlines
(6) Importance of presenting authentic work and being clear on what constitutes plagiarism rules
(7) Appeals procedures
(8) Allocation of Personal Tutors
(9) Access to UEL electronic learning resources
(10) Access to UEL Library and Learning Services
(11) UEL Academic Framework
(12) Assessment regulations
(13) Extenuation

At the start of the programme each student will be given either a hard copy of the programme handbook or access to the VLE where this will be published.

English language Support

For those who require additional support in English language additional sessions are scheduled by ELTU (English Language Teaching Unit).

Student Mentorship

The Academic staff must provide each and every student with the support required to perform academically, and encourage active engagement from the students through:

- Establishing a supportive relationship with all students
- Adopting a creative approach to teaching and learning
- Providing regular constructive assessment feedback
- Mentoring and coaching

Students may make an appointment to meet with any tutor or the programme leader to discuss their progress and request additional assistance with managing their workload or to ask for additional tutoring in an area that she/he may be struggling with.

Academic Advisor

All students enrol on the programme will be assigned an Academic Advisor (AA).
This Academic Advisor will:

- Assist students with the process of induction and orientation into academic life and the University/College community and respond promptly to any communication from him/her;
- Work with students to build personal academic relationships;
- Retain an interest in their students' personal and general academic and professional development throughout their academic careers while at the University/College, providing information and guidance on academic choice;
- Monitor both academic performance and student engagement in a proactive manner and advise on constructive strategies to enable improvement, for example through the use of a personal portfolio or personal development plan;
- Listen and offer students help and advice about pastoral/non-academic matters and to signpost students to other student services for further assistance if necessary;
- Ensure that a note is kept of discussions at each meeting (with the student) and any follow-up actions agreed with the student;
- Provide references to students in their quest for employment of further study.

Academic Support Systems

AT ASU, students have full access to all required facilities and receive the best preparation for their undergraduate studies. These are including Library, Lab Room, ICT Room, Photocopying Facilities, etc. In addition, all students are assigned an Academic Advisor. Students participate in class activities that help develop their presentation and language skills, leadership skills, critical thinking skills and social skills, giving them greater confidence for their future academic challenges.

Teaching

At the FoE, teaching follows university practice with lectures, tutorials, assignments, projects and in college tests designed by an experienced teaching team. The programme’s learning management system is setup to have a page for each course studied during the semester. The student can access their courses from the main programme web-page. All electronic services provided to the students requires the use of university e-mail, hence, it is created automatically for the programme’s student when they are first enrolled to the programme, and they retain this e-mail until they graduate.

Student Affairs

At ASU there are Student Affairs Officers who offer friendly and caring support and mentorship to students, not just for academic matters but also for personal problems.

Throughout the programme, the Students' Affairs Officer organizes weekly meetings, business trips and outings to places of interest in and around Cairo, as well as international trips during the summer holiday.

Safe Environment

FoE ASU provides a safe, caring and nurturing learning environment with friendly, supportive mentors and teachers who have many years of experience in teaching and mentoring.

Mental health support is provided by FoE- ASU Advising system. Advisors support students who are experiencing mental health problems that are affecting their ability to study. ASU has agreements with NOGs that help students to face study stress in addition to ASU 13 hospitals which may help students in such issues.

9.2 Technical support for learners and staff

ASU employs a team of technical IT support and professional services staff to help staff and students with their teaching and assessment activities. The centre employs a dedicated IT Manager to provide the learners and staff with the necessary advice about the technical needs of the mode of study throughout the length of the programme. The students and staff have the full access to the ICT room, photocopiers, printers and e-library throughout the course of the term. The IT team provide learners and teaching staff with the necessary technical support in using 'Turnitin' software throughout the assignment submission and assessment process.

The team provides specialist technical support for teaching, learning and assessment activities to ensure they run smoothly. This can be anything from preparing resources, operating specialist laboratories and quantity surveying, to setting up classrooms.

Technical teams frequently have responsibility for related areas such as managing health and safety, contingency planning and capital planning, maintenance of both hardware and software.

9.3 Information on how the entitlements of disabled students have been addressed within curriculum design

As a UEL validated programme, the curriculum has been designed to adequately address needs and requirements of disabled students. From a local perspective the programme team will ensure that if there are disabled students on the programme the following will apply:

- Step free access to laboratories/classes
- Larger fonts sizes for presentation materials
- The use of scribes
- Voice recorders will be allowed (with the permission of the presenting lecturer)
- Extra time for examinations
- Use of word processor (PC) without Internet access for examinations.
- Separate room for special needs students (if requested)

Equality and Diversity

The curriculum has been designed to meet the needs of all undergraduate students, with all ages, genders, or learning / physical disabilities. There is a strong emphasis on work-based learning. By using a full range of assessment techniques this enables students with different learning styles to be accommodated for. ASU has a policy of designing an inclusive curriculum where appropriate adjustments are made to the design, delivering and assessment process to cater for students with any learning difficulties. Teaching materials and module content has been designed to be inclusive addressing the needs of our diverse student body. Teaching methods include lectures, seminars, tutorials, discussions and workshops to address the needs of diverse learning needs.

Access to UEL Academic Link Tutor (ALT)

All ASU students on the proposed programmes (being submitted for approval) will have access to the respective Academic Link Tutor generally via email. Students are encouraged to discuss any issue or concerns with their in-house tutors at the first instance before contacting the Academic Link Tutor.

UEL Resources

As UEL registered students, FoE - ASU students will also have access the following UEL resources:

- UEL Library including e-resources, databases and e-journals (subject to licence allowances)
- Study skills Plus – an online diagnostic and assessment tool which can help students develop their core English and maths skills.
- UEL Direct Information and communications technology (ICT) resources such as Office365

The role of the UEL Academic Partnership Office (APO)

The APO will work in liaison with the ALT, however principally the role of the APO is administrative support for the ALT and the Partner. The APO will be the first point of contact for the partner and will channel concerns, issues, queries to all UEL Central Services such as Registry, Assessment Unit, The Hub, Courses and Systems, UEL Library and so on.

9.4 Student Feedback Mechanisms

Student representatives will be either elected or nominated for each programme. These representatives are the means of formal communication to the various committees at FoE - ASU Campus and UEL. There will be two formal meetings per year with the student representatives, module leaders and the programme coordinator at FoE - ASU Campus. The External Examiner report will also be made available for students to access. The issues raised at these meetings will be communicated to the Academic Link Tutor or APO at UEL. Actions resulting from these issues will be

monitored and taken in the next committee meeting, where the representative will get an update, if not solved then and there.
We ask that student representatives discuss all matters informally with their Module Tutor at FoE - ASU before raising them at committee level. It should be possible to solve most problems by an informal approach. The earlier the programme team are made aware of any problems, the earlier FoE - ASU will attempt to correct problems.
Student support is appreciated and acknowledged consistently in the student End-of-Module Evaluation Questionnaires and verbal feedback. The information collected from the Questionnaires is delivered to the Senior Management of FoE - ASU for analysis and taking any remedial actions.

Academic Progress

Students on the double degree programme will be able to access their records/profile via UEL Direct. ASU also has its own The Student Information System (SIS) platform where students can access all their academic records. It can be reached on the main programme web-page, which also provides brief information about the mission and vision of the programme, and the important dates related to student academic activities. Students receive an Academic report on a quarterly basis to assist them to monitor their progress and to identify any areas of concern. Students also meet with the Academic Head and the relevant facilitators to discuss their progress. Recommendations for improvement are made and the feedback is minuted
.

Students with learning challenges

Students with learning challenges are accommodated as far as possible, taking the current College resources into consideration. The Academic Board is responsible for approving any recommendations made by the Student Counselor to accommodate a student with any of the following learning challenges:

- A cognitive disadvantage which affects their ability to learn at the same rate as their peers.
- A specific learning difficulty which may or may not be linked to a cognitive disability
- A speech and language impairment affecting their ability to comprehend
- A physical disability and sensory impairment
- An emotional disability which can affect their ability to learn
- An extended period of absence which could occur for a variety of reasons
- A behavioral impairment affecting their ability to concentrate and therefore learn effectively
- Students who speak a different language at home than the one they speak at College

Online information and support:

As previously mentioned, the programme team will use their own VLE. A bespoke section will be created for

- Induction information
- Academic support for students available both at FoE - ASU and UEL

- FoE - ASU Student Enquiries Desk opening hours
- FoE - ASU Library opening hours
- Link to UEL Library online resources
- Copy of Programme Handbook

Please refer to Appendix F for Student Entitlements, for support available at UEL.

10 RESOURCES

a) Local library and IT resources

ASU - FoE central library 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) halls according to the following:

- The student library hall contains (16,461) books.
- The teaching staff hall contains (29,607) 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 a presidential initiative started at 2016 and 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 give access to their contents in all scientific and cultural disciplines. Generally, 25 global publishing house and specialised companies, have their content at the Egyptian Knowledge Bank such as Emerald, John Wiley Elsevier etc. 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 supporting the programme

The faculty offers students Training Support through **Global Training Technology Centre**. It aims to be a centre for innovation in technology and entrepreneurship, as to form a link between academic study and labour market. The centre offers training programmes to serve students and graduates at the same time, these training programmes aim to develop the creative sense of the trainees in order to integrate them into creative and innovative works that would serve the industrial field and the community. Depends on the overlap between the different disciplines in various fields and at various levels. The centre is nearly 1000 m² area, it works as the headquarters for the students to practice their activities in the future, and the college is preparing the headquarters of the centre to accommodate the necessary training activities.

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 Faculty of Engineering and another headquarter in Ain Shams University. It provides special training programmes 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.

The number of computers available to students is about 600 modern machines. A suitable number of computers are available for faculty members in their respective

laboratories and offices in different sections. The number of computers available to employees is 250 devices. Computer labs are run centrally for students. The method of using these labs has been adopted by setting a nominal fee of not less than two pounds per hour to use the central labs which are open to access the network, while the student does not bear any burdens to enter the laboratories associated with the ministry while the Income is suitable for the maintenance and modernization of computers in college. 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 Engineering has a website through the main website of Ain Shams University. The website is: ***https://eng.asu.edu.eg/*** . The website provides various services for students and faculty members by presenting the internal regulations of the bachelor's degree course as well as higher 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.

Library and Learning Services at UEL have excellent range of resources and facilities to help the students with their studies. students can access the Library and Learning Services at UEL using the following link: ***https://www.uel.ac.uk/lls/***

11 INFORMATION ABOUT QUALITY AND STANDARDS

11.1 Assuring the quality and standards of the award

You are enrolled on a programme 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 ASU- FoE and both institutions work together to ensure the quality and standards of the programme on which you are registered. The final responsibility for all quality assurance, validation and standards' matters rests with UEL.

Some of the ways in which we ensure the quality and standards of the programme include:

Approval of the programme and institution at which you are studying

Before the programme started, our University, through an approval process, checked that:

- there would be enough qualified staff to teach the programme;
- adequate resources would be in place;
- the overall aims and objectives were appropriate;
- the content of the programme met national benchmark requirements, where applicable
- the programme met any professional/statutory body requirements if applicable;
- the proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

Appointment of external examiners

The standard of this programme is monitored by at least one external examiner external to UEL, appointed by UEL. External examiners have two primary responsibilities:

- To ensure the standard of the programme;
- To ensure that justice is done to all students.

External examiners fulfil these responsibilities in a variety of ways including:

- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating standards;
- Ensuring that regulations are followed;
- Providing feedback to the University through an annual report that enables us to make improvements for the future.

Review and Enhancement Process

- This annual review includes the evaluation of and the development of an action plan based on:
- external examiner reports and accreditation reports (considering quality and standards);
- statistical information (considering issues such as the pass rate);

- student feedback obtained via programme committee and module evaluation questionnaires.

Periodic reviews of the partnership and programme

- This is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to students and speaks to staff before drawing its conclusions.

Award certificates

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

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 and receives partial exemption from charges on the next semester. This exemption is dependent on the student's GPA as recommended by the Programme Administration Council in this regard and after approval of the Council of the Faculty of Engineering.

Students who complete 480 credits, graduate with an Honours Degree, which is documented in their graduation certificate. The faculty sets a system for encouraging distinguished students through reducing their tuition fees in accordance with their academic performance. At the beginning of each semester, the distinguished students' list is announced together with the associated tuition fees reductions.

Students who manage to fulfil all graduation requirement are awarded a double degree from ASU – FoE in Communication Systems Engineering programme.

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.

- The university 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.

UEL Equality and Diversity Strategy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (for all general policies)

12 ACADEMIC APPEALS

12.1 Students who wish to appeal against a decision of an Assessment 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).

12.2 Disagreement with the academic judgement of a Board of Examiners' decision cannot, in itself constitute 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 section 4 of Part 7 of the Manual of General Regulations.

12.3 Students are strongly advised to make every reasonable effort to resolve their appeal informally, through meeting with the member of staff most directly concerned with the matter, such as the Programme or Module Leader, before proceeding to submission of a formal Academic Appeal. At open conciliation stage the appeal should be raised as soon as possible and normally no more than 10 working days after the publication of relevant assessment results via UEL Direct.

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

12.5 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***

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

13 COMPLAINTS

13.1 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, in accordance with section 14 of the *Manual of General Regulations*. The Complaints Procedure 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. A complaint may be submitted collectively by a group of students who should nominate a spokesperson who will be the channel of communication for the group, however, a complaint may not be lodged by a third party on behalf of the complainant. The complaints procedure is an internal process.

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

- appeals against the decisions of Assessment Boards (see Part 7 of the Manual of General Regulations);
- appeals against annual monitoring reviews, transfer of research degree registration or oral examination decision for postgraduate research students (see Part 9 of the Manual of General Regulations);
- appeals against the decisions of the Extenuation Panel (see Part 6 of the Manual of General Regulations);
- complaints against the Students' Union (see the Complaints Procedure in the Students' Union constitution);
- appeals against decisions taken under disciplinary proceedings (see Part 12 of the Manual of General Regulations);
- 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).

13.3 Students wishing to submit a complaint must, in the first instance, follow the complaints policy of ASU - FoE 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 ASU - FoE complaints policy is available at:
https://eng.asu.edu.eg/front/bylaws/show/appeals
https://eng.asu.edu.eg/uploads/uploadcenter/asu_337_file.pdf

13.4 ASU- FoE 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.

13.5 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

13.6 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.

13.7 Complainants are strongly advised to make every reasonable effort to resolve their complaint informally through meeting with the member of ASU - FoE staff most directly concerned with the matter, such as the Programme or Module Leader, before submitting a formal complaint.

13.8 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.

13.9 If you would like to request that the University of East London undertake a review, following the exhaustion of the ASU – FoE complaints policy, please email the Institutional Compliance Office at ***complaints@uel.ac.uk***

14 EXTENUATION

General Information about extenuation can be found at
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Extenuation-Procedures

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

The BEng (Hons) Communication Systems Engineering Students programme will be subject to equivalent procedures, with the process being administered by, and the panel being held within Ain Shams University – Faculty of Engineering

If granted by the panel, **Extenuation can**

(i) Allow students to hand in coursework up to 7 days late.

or

(ii) Allow students to proceed to their next attempt uncapped.

Extenuation doesn't

(i) Give students more attempts to pass a module
(ii) Reschedule exams
(iii) Uncap a capped module
(iv) Give students a higher mark.
(v) 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 an 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.

More information and student guidance notes can be found at:
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Extenuation-Procedures

14.1 Seeking Advice: Academic Advisor

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.
The Academic Advisor may ask the student to repeat courses which he already passed or ask him to register in additional courses to raise his accumulative GPA to that required for graduation

APPENDIX A

ACADEMIC CALENDAR 2019-2020

Academic Calendar 2019/2020

Semester	Activity	From	To
First Semester Fall 2019	Course Registration	07/09/2019	19/09/2019
	Classes	21/09/2019	02/01/2020
	Adding Courses	21/09/2019	26/09/2019
	Dropping Courses	21/09/2019	03/10/2019
	Midterm Exams	08/11/2019	15/11/2019
	Withdraw Courses	19/10/2019	28/11/2019
	Final Exams	04/01/2020	24/01/2020
	Break	25/01/2020	06/02/2020
Second Semester Spring 2020	Course Registration	01/02/2020	06/02/2020
	Classes	08/02/2020	21/05/2020
	Adding Courses	08/02/2020	13/02/2020
	Dropping Courses	08/02/2020	20/02/2020
	Midterm Exams	27/03/2020	03/04/2020
	Withdraw Courses	07/03/2020	16/04/2020
	Final Exams	27/05/2020	19/06/2020
	Break	20/06/2020	09/07/2020
Summer 2020 Semester	Course Registration	27/06/2020	02/07/2020
	Classes	04/07/2020	20/08/2020
	Adding Courses	04/07/2020	06/07/2020
	Dropping Courses	04/07/2020	09/07/2020
	Withdraw Courses	08/08/2020	13/08/2020
	Final Exams	21/08/2020	28/08/2020
	Break	29/08/2020	17/09/2020
Start of Academic Year 2020/2021		19/09/2020	

USEFUL WEB PAGES **APPENDIX B**

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

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

Accreditation of Experiential Learning
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations
(Manual of General Regulations – Part 2 – Admission of Students)

Assessment and Feedback Policy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Assessment-and-Feedback-Policy

Civic Engagement
https://www.uel.ac.uk/Connect/Civic-Engagement

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

Equality and Diversity Strategy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies
(for all general policies)

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

Library and Learning Services
https://www.uel.ac.uk/lls/

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

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

Skills Curriculum
https://www.uel.ac.uk/discover/governance/policies-regulations-corporate-documents/student-policies/skills-curriculum

Skills Portal
https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Skillzone.aspx

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

Write it Right ***http://writeitright.uelconnect.org.uk/***

UEL Intranet (UEL ID required to login) ***https://www.uel.ac.uk/students***

APPENDIX C

Student Attendance and Engagement Policy – Guidance for Students

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.

Course Syllabus: Each course 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 course 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 course.

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. Assignments should constitute 20% of the total grade. 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. These quizzes should constitute 10% of the total grade. 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 course syllabus. The midterm exam should be given during the 6th - 7th week. This exam will be held during lectures/tutorials based on course progress and will constitute 25% of the grade. 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 constitutes 40% of the grade. It should be a comprehensive exam covering all material. The student fails the course if he gets less than 30% of the final exam total grade. Instructors may select to have all exams open-book or closed-book.

APPENDIX D

UNIVERSITY OF EAST LONDON

TITLE: PROGRAMME COMMITTEE (COLLABORATIVE)

TERMS OF REFERENCE

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

- Providing a forum in which students can express their views about the management of the programme, 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 programme as input into the preparation of the Programme REP.

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

- Receiving, considering and approving the Programme 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 programme structure (validated programmes only) and noting implementation arrangements for modifications.

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

MEMBERSHIP

Programme Leader (Chair)
Administrator/Servicing Officer (ex-officio)
Programme staff making a significant teaching contribution to the programme
Learning Support Services representative
Technician representative (for laboratory based programmes)
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.

APPENDIX E

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 (or, for postgraduate research students, Appendix I)* 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 programme.

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 programme, 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 need 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 on line 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.

APPENDIX F

COLLABORATIVE STUDENT ENTITLEMENTS AT UEL

[Please append the student entitlement letter provided by UEL]

APPENDIX G

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 is 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.