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**October University for Modern Sciences and Arts  
(MSA)**

**B.Sc. Honours  
Electrical Communication and Electronic  
Systems Engineering Programme**

**Student Handbook 2021/2022**

**Validated by the University of Greenwich,  
London UK**

Faculty of Engineering

**Electrical Communication and Electronic Systems Engineering**

**Programme Leader: Assoc. Prof. Dr. Ahmed Mohamed Diaa ElDin**

### Vision

"The Faculty is nationally accredited, and internationally validated, and its programmes are among the top according to global subject ranking criteria".

### الرؤية

"الكلية معتمدة قومياً ومعترف بها عالمياً وتحظى برامجها بترتيب متقدم في التصنيف الدولي في مجال الهندسة".

### Mission

"The Faculty of Engineering of October University for Modern Sciences and Arts offers modern educational programmes in cooperation with a British partner, supports entrepreneurship and meets job market needs, prepares graduates who are qualified with creative thinking and with engineering, technical, intellectual, professional, and managerial skills, conducts applied scientific research, and participates in community service and environmental development".

### الرسالة

"تُقدم كلية الهندسة بجامعة أكتوبر للعلوم الحديثة والآداب برامج تعليمية حديثة، بالتعاون مع شريك بريطاني، تدعم ريادة الأعمال وتلبي احتياجات سوق العمل، وتُعد خريجين مؤهلين للتفكير الإبداعي ومزودين بمهارات هندسية وتقنية وذهنية ومهنية وإدارية؛ وتقوم بالبحث العلمي التطبيقي، وتساهم في خدمة المجتمع وتنمية البيئة".

## القيم الجوهرية للكلية

Justice and Non-Discrimination

Quality and Excellence

Integrity and Honesty

Intellectual Freedom

Transparency

Creativity

Respect and Acceptance of Others

• العدالة وعدم التمييز

• الجودة و التميز

• النزاهة والأمانة

• الحرية الفكرية

• الشفافية

• الإبداع

• إحترام وقبول الآخر

## الأهداف الاستراتيجية للكلية

الأهداف الاستراتيجية	الأهداف الفرعية
1- إستيفاء متطلبات الاعتماد من الهيئات القومية/الدولية.	1/1 تطوير عمل وحدة ضمان الجودة.
	1/2 تأهيل الكوادر الأكاديمية والإدارية فى مجالات الجودة.
	1/3 عمل توعية ونشر لثقافة الجودة.
	1/4 التقدم للإعتماد القومى/الدولى.
2- تطوير الخدمات التعليمية للكلية.	2/1 تنمية مهارات وقدرات كوادر الكلية فى مجالات التعليم والتدريس والتقييم.
	2/2 تقديم تعليم إلكتروني يواكب التقنيات العالمية.
	2/3 تقديم دعم أكاديمي فعال للطلاب.
	2/4 إنشاء برامج تعليمية جديدة تواكب احتياجات سوق العمل.
	2/5 تطوير المعامل بأحدث الآلات والمعدات والأجهزة والبرمجيات.
3- عمل بحث علمي يلبى التطورات العالمية.	1/3 ربط البحث العلمي بالكلية باحتياجات الخطط بمستوياتها المختلفة.
	3/2 تطوير كفاءة أعضاء هيئة التدريس والهيئة المعاونة البحثية.
	3/3 نشر أبحاث وإقامة مؤتمرات وندوات وورش عمل علمية.
	3/4 عمل مشروعات بحثية ممولة محليا/دوليا.
	3/5 إنشاء برامج دراسات عليا.
4- تطوير المشاركة المجتمعية للكلية.	4/1 تحديد مجالات المشاركة المجتمعية لتلبى احتياجات المجتمع المختلفة.
	4/2 فتح مجال فى التعليم المستمر والتدريب للمجتمع الخارجى.
	4/3 إنشاء وحدات ذات طابع خاص .
	4/4 تحفيز مشاركة الخريجين والمجتمع الخارجى فى أنشطة الكلية.
5- تحقيق المرونة المؤسسية فى التعامل مع التحديات.	5/1 إعداد الكوادر الأكاديمية والإدارية للتعامل مع معطيات الظروف المحيطة.
	5/2 إعداد الطلاب للتعامل مع معطيات الظروف المحيطة.
6- توفير حياة جامعية ثرية ومتنوعة.	6/1 دعم الأنشطة المختلفة المقدمة للطلاب.
	6/2 نشر التجارب الناجحة من أبناء الكلية وخريجها.

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## A. Purpose and Status of your Student Handbook

The purpose of this handbook is to provide you with information about your programme of study and to direct you to other general information about studying for a University of Greenwich award.

This handbook must be read in conjunction with the University Catalogue and University Guide and Regulations (<http://www.gre.ac.uk/intranet/students.htm>).

The material in this handbook is as accurate as possible at the date of production.

Your comments on any improvements to this handbook are welcome - please put them in writing (with name of handbook) to the programme leader **Prof. Dr. Ahmed Mohamed Diaa EIDin**

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## B. University and Programme Academic Calendar

### Fall 2021 Academic Calendar -Academic Year 2021 / 2022

Graduation Ceremony Class 2019/2020	Pls refer to MSA Official Facebook for dates
Graduation Ceremony Class 2020/2021	Pls refer to MSA Official Facebook for dates
Fall 2021 Semester	
Commencement of online Registration for Continuing Students & Approval of Online Schedules: Note: Each faculty will determine and publish its respective dates for registration on MSA official platforms. Students should kindly contact their faculties for exact dates	Sun 19 Sept 2021 – Thurs 30 Sept 2021
Newcomers Only: Orientation & Course Registration (Proceedings of the orientation day will be sent to students via email & MSA official platforms)	Sat 2 Oct – Wed 6 Oct 2021*
October 6th Armed Forces Victory	* Wed 6 Oct 2021 *Subject to transfer to Thursday 7 <sup>th</sup> Oct 2021 as per Governmental Official Announcement
First Day of Classes for <u>All students</u>	Sat 9 Oct 2021
Last Day of Classes for all students Fall 2021	Thurs 13 Jan 2022
New student Activity Week (Details to be sent via emails to students)	Sat 9 Oct 2021 - Thurs 14 Oct 2021
El Mawled El Nabawi	Tues 19 Oct* Subject to transfer to Thursday 21 Oct as per Governmental Official Announcement
Deadline to ADD, DROP, WITHDRAW Courses	Student should refer to their respective faculty for ADD, DROP, WITHDRAW Courses Deadline
BOS Board of Study Meeting (Manag, CS & Engineering) Board of Study Meeting (Pharmacy, Bio) Board of Study Meeting (Lang, Mcom & Arts)	Tues 9 Nov 2021 Wed 10 Nov 2021 Thurs 11 Nov 2021
MID Term Exams	Sat 20 Nov – Thurs 2 Dec 2021 Subject to amendment via MSA Examination Unit
Classes Resume	Students should refer to MSA Examination Unit & Respective Faculty for class resume date
Student Online Course & Instructors Evaluation	Dec 2021 – final exams
Registration date for UK Student Summer Abroad Programme (Academic, Cultural & Entertainment Programme)	Programme to be confirmed subject to Covid 19 unforeseen updates.
Commencement of Payment of Fees for Spring 2020	December 2021
Fall Senior Graduation Photo Week To be confirmed subject to further notice	Pls refer to MSA Official Facebook for dates

<b>Western Christmas</b>	<b>Saturday 25<sup>th</sup> Dec 2021</b>
<b>New Year Commencement</b>	<b>Saturday 1<sup>st</sup> Jan 2022</b>
<b>Eastern Christmas</b>	<b>Fri 7<sup>th</sup> &amp; Sat 8<sup>th</sup> Jan 2022</b>
<b>Final Day of classes for Fall 2021</b>	<b>Thurs 13 Jan 2022</b>
<b>Final Exams Duration Fall 2021</b>	<b>First day of exams: Sat 15 Jan 2022* Last day of exams: Thurs 10 Feb 2022* *Subject to amendment via Governmental Notice &amp; MSA Examination Unit</b>
<b>Baptism Day</b>	<b>Wed 19<sup>th</sup> Jan 2022</b>
<b>National Day</b>	<b>Monday 25<sup>th</sup> Jan 2022* *Subject to transfer to Thursday 27 Jan as per Governmental official notice</b>
<b>Moderation &amp; Fall University Assessment Boards</b>	<b>Exam Boards UoG: Mon 21 Feb 2022 UoB Exam Board: TBC</b>

### Spring 2022 & Summer 2022

<b>SPRING 2022 SEMESTER</b>	
<b>Schedule Registration starts</b> (Students should refer to his/her respective faculty for details)	<b>Tues 22 Feb 2022 – Fri 25 Feb 2022</b>
<b>First Day of Classes Spring 2022</b>	<b>Sat 26 Feb 2022</b>
<b>Last Day for Classes Spring 2022</b>	<b>Thurs 9 June 2022</b>
<b>Start of Additional 5% fine</b>	<b>Mon 7 March 2022</b>
<b>Start of Additional 10% fine</b>	<b>Mon 14 March 2022</b>
<b>Deadline to Add, Drop, Withdraw courses</b>	<b>Refer to respective faculty for dates and approval</b>
<b>BOS</b> <b>Board of Study Meeting (Pharmacy, Bio)</b> <b>Board of Study Meeting (Manag, CS &amp; Engineering)</b> <b>Board of Study Meeting (Lang, Arts &amp; Design, Mcom)</b>	<b>Tues 29 March 2022 Wed 30 March 2022 Thurs 31 March 2022</b>
<b>Start of Ramadan</b>	<b>Sat 2 April 2022* Subject to amendment via governmental authorities</b>
<b>Mid Term Exams</b>	<b>Sat 9 April 2022 - Thurs 21 April 2022</b>
<b>Student Online Course &amp; Instructors Evaluation</b>	<b>Mid April 2022 – final exams</b>
<b>Palm Sunday</b>	<b>Sun 17<sup>th</sup> April 2022</b>
<b>Holy Thursday</b>	<b>Thurs 21<sup>th</sup> April 2022</b>
<b>Sham El Nasseem &amp; Eastern Day</b>	<b>Sun 24<sup>th</sup> &amp; Mon 25<sup>th</sup> April 2022* *Subject to amendment as per Governmental Official Announcement</b>

<b>Sinai Liberation Day</b>	<b>Mon 25<sup>th</sup> April 2022*</b> <b>*Subject to amendment as per Governmental Official Announcement</b>
<b>Eid EL Fetr*</b>	<b>Sun 1 May – Wed 4 May 2022*</b> <b>*Subject to amendment via governmental official announcement</b>
<b>Labor Day</b>	<b>Thurs 5<sup>th</sup> May 2022</b>
<b>Last date of classes Spring 2022</b>	<b>Thurs 9 June 2022</b>
<b>Spring 2021 Final Exams Start Date - End Date</b>	<b>Sat 11 June 2022 - Thurs 7 July 2022 As per Ministry</b>
<b>Eid El Adha</b>	<b>Fri 8 July 2022- Tues 12 July 2022*</b> <b>*Subject to amendment as per Governmental Official Announcement</b>
<b>June 2013 Revolution</b>	<b>Thurs 30 June 2022</b>
<b>Spring 2022 University Assessment Boards</b>	<b>UoG: Thur 21 July 2022 -UoB: (TBC)</b>
<b>July Revolution Day</b>	<b>Sat 23 July 2022*</b> <b>*Subject to amendment to as per Governmental Official Announcement</b>
<b>SUMMER SEMESTER 2022</b>	
<b>First day of classes Summer 2022</b>	<b>Sun 24 July 2022</b>
<b>Last day of classes Summer 2022</b>	<b>Wed 31 Aug 2022</b>
<b>Hejri Islamic new year</b>	<b>Sat 30 July 2022</b> <b>Subject to amendment via governmental authorities</b>
<b>Summer 2022 Exams Start date - Summer 2022 Exams End date</b>	<b>Thurs 1 Sept – Wed 7 Sept 2022</b>
<b>Summer 2022 Exam Boards</b>	<b>UoG: Thurs 15 Sept 2022</b> <b>UoB: TBC</b>
<b>Registration returning</b>	<b>Thursday 15 Sept 2022</b>
<b>Orientation new comer</b>	<b>Sat 17 Sept 2022- Thurs 22 Sept 2022</b>
<b>Fall 2022 (Tentative Date)</b>	<b>Sat 24 Sep 2022</b>



## C. Faculty of Engineering Dean's Welcome

Welcome to the Faculty of Engineering at MSA University.

Programs in the Faculty are connected by a common focus of providing exceptional education in fields that directly support the Faculty of Engineering mission of enriching the quality of life for our students and the community connecting learning to life.

In carrying out this purpose, the Faculty of Engineering is committed to: providing high-quality programs of study, instruction and practice; understanding, promoting, and respecting diversity; supporting students, faculty, staff, and program development; insuring that resources support appropriate classroom and lab experiments; promoting internal and external partnerships; and ensuring students and staff to be engaged in activities that promote effective teaching, assessment, advisement, and professional and community service.

We are dedicated to providing you with the skills, creativity, and resolve to be effective in your future. The education you receive here will provide you with amazing opportunities – in your ability to work in your chosen profession, but more importantly in the way you view the world.

I hope you are able to take full advantage of these life-changing opportunities, and the challenges that accompany them. I wish you much continued success in your academic studies.

Sincerely yours,

*Nahed Sobhi*

Prof. Dr. Nahed Sobhi Abdel Nour  
Dean, Faculty of Engineering

## D. Introduction to MSA University

October University for Modern Sciences and Arts (MSA) has been established under Republican Decree No. 244 for 1996 to introduce state-of-the-art technologies and concepts in all disciplines. MSA is proud that its different programmes were fully accredited before the graduation of its first class in Spring 2000.

MSA is, by all means, the outcome of 4 decades of experience in the field of education on the local and international levels. Dar El Tarbiah was the first Language School founded by Egyptians in 1956. The institution has maintained an excellent reputation, based on the high quality of teaching and facilities that has been recognized both locally and internationally in GCE, IGCSE, GCSE, as well as Egyptian Thanaweya Amma and American Diploma. Our students' excellent performance in the British System has encouraged us to expand the British Section in our school to include both IGCSE & GCSE, simultaneously. Our success in teaching all AL and AS subjects for almost 12 years, with outstanding results in the IGCSE, encouraged us to complete the undergraduate programmes.

The English Language is the medium of instruction at MSA University. The current academic work of the university is divided into nine faculties, namely: Faculty of Management Sciences, Faculty of Engineering, Faculty of Computer Sciences, Faculty of Mass Communication, Faculty of Arts and Design, Faculty of Biotechnology, Faculty of Dentistry, Faculty of Pharmacy, and Faculty of Languages.. We are keen on providing our students with all the up-to-date tools needed to cope with the Information and Communication Technology Era. That is why we are dedicated to the pursuit of excellence in curricula, facilities, staff and students. That is the main reason why our modern and progressive policy has been internationally acknowledged by universities in the UK and USA, as we have several cooperation agreements with prominent universities there. MSA programmes are designed and implemented according to the most up-to-date international standards. All course outlines highlight the role of new and emerging technologies in meeting challenges posed by the Information and Communication Technology Era.

MSA aims to provide its students with an exceptional learning experience that will enable them to compete in the global highly competitive job market. The vast experience of Dar El Tarbiah Institution and MSA University in the field of education made its Top Management keen on adopting the British Education System due to its unique characteristics that provide students with the necessary up-to-date tools and skills in a flexible environment, while at the same time ensuring that students are highly committed and competitive.

**Institution Website:** [www.msa.eun.eg](http://www.msa.eun.eg)

## E. Introduction to the Faculty of Engineering

The faculty of Engineering at MSA offers four programmes: B.Sc. (Hons) Architectural Engineering, B.Sc. (Hons) Electrical Communication & Electronic Systems Engineering, B.Sc. (Hons) Computer Systems Engineering, and B.Sc. (Hons) Industrial Systems Engineering. The Faculty of Engineering emphasizes creative and professional aspects of Engineering and Technology; students do not only learn theories, they also mix theory with practice. By the time they graduate, they would have been trained and qualified; and thus ready to work in the field as professionals.

The Faculty of Engineering offers an Electrical Communication and Electronic Systems Engineering (ECE) which is concerned with the theory, design, implementation, and applications, both actual and potential, of various devices and systems based on electrical communication and electronic phenomena and properties.

ECE programme has been developed so that it would follow reputable international standards. It meets with the criteria established by The Committee for Engineering Education Sector set up by The Supreme Council of Egyptian Universities, and fulfils local industrial and service sectors.

ECE B.Sc. (Hons) in Electrical Communication and Electronic Systems Engineering is awarded upon the successful completion of an approved curriculum comprised of 168 credit hours, normally effected and completed in five academic years (10 semesters).

ECE students are introduced to a broad spectrum of Electrical Communication and Electronic Engineering topics augmented by modern engineering experimentation, methodology, and practice.

ECE graduates should be capable of adapting to the ever-evolving engineering tools and procedures in the practice of all aspects of life long electrical engineering profession. Graduates should be able to tackle unstructured engineering problems as a teamwork, think critically, function perfectly, and communicate effectively.

## F. Introduction to The University of Greenwich

### **The programmes**

The programme is validated by The University of Greenwich. This means that students, successfully completing all parts of the programme, will receive a dual award: the B.Sc. (Hons) from the University of Greenwich, and the B.Sc. (Hons) from October University for Modern Sciences and Arts (MSA); and may, if they wish to, attend the appropriate Greenwich graduation ceremony. Students will enrol as students of October University for Modern Sciences and Arts (MSA), and will be registered with the University of Greenwich.

If a student does not complete the full programme, he/she will be given a transcript recording any individual elements of the programme successfully completed.

The programme is supervised by the programme leader Prof. Dr. Samer Ibrahim Mohamed, Campus Building C, Address 26 July Mehwar Road, Intersection with Wahat Road, 6<sup>th</sup> October City; Telephone 33365037; Fax 37603811.

### **The University regulations**

MSA acts in accordance with its procedures, discussed in the University Assessment Board, in the case of student dishonesty or a student appeal.

### **Further Documents held by MSA**

The Faculty should, also, hold reference copies of the following documents for consultation by the students and staff:

- The University of Greenwich Charter for Students on Collaborative Programmes.
- The Memorandum of Co-operation for the Programme. This is the formal agreement between the University of Greenwich and MSA University on the delivery of the Programme.
- Quality Assurance Agency for Higher Education Code for England and Wales: Code of Practice: Collaborative Provision.

# I.B.Sc. Honours Electrical Communication and Electronic Systems Engineering

## Programme specification

1. Awarding Institution	2. Teaching Institution	3. Faculty/Department		
University of Greenwich	October University for Modern Sciences and Arts (MSA)	Engineering	Electrical Communication and Electronic Systems Engineering	
4. Final Award	5. Programme Title and approved end or segments:	6. Qualification Level as defined by the UK Framework for Higher Education Qualifications (Please refer to D5 Guidance notes)		
B.Sc. (Hons) Electrical Communication and Electronic Systems Engineering(MSA)	Electrical Communication and Electronic Systems Engineering	4	5	6
		---	---	✓
7. Accredited by:	8. UCAS Code:			
Supreme Council for Egyptian Universities	None			
9. Maximum/ Minimum Period(s) of Registration				
F/T Minimum5 years –Maximum10years N.B. Minimum period can be 4.5 years equivalent to 9 regular semesters with condition of 168 credits completed.	P/T N/A	SW N/A	D/L N/A	
10. Programme Code		11. Last Revision date for Programme Specification		
BSc (Hons.) P11229		2017/2018		
12. External Reference Points, e.g. subject benchmark statements and professional body requirements				
The following reference points were used in designing the program: <ul style="list-style-type: none"><li>• Supreme Council for Egyptian Universities (SCEU) Regulations.</li><li>• Criteria established by the Committee for Engineering Education set up by SCEU.</li><li>• QAA guidelines for program specifications.</li><li>• MSA University Council.</li><li>• Faculty of Engineering Quality Assurance Audit Unit.</li></ul>				
13. Entry Requirements				
<ul style="list-style-type: none"><li>• Accruing the Entry score set by Supreme Council for Egyptian Universities.</li><li>• Passing MSA English placement entry Exam.</li><li>• Submitting authenticated original certificate and documentation.</li></ul>				
14. Educational Aims of the Programme and Potential Career Destinations of Graduates [Maximum 150 words]:				
Electrical Communication and Electronic Systems Engineering (ECE) is concerned with the theory, design, implementation, and applications, both actual and potential, of various devices and systems based on electrical communication and electronic phenomena and properties. The programme aims to: <ul style="list-style-type: none"><li>• Provide a flexible and versatile route through the Electrical and Electronic Systems Engineering area.</li><li>• Acquire particular expertise in a wider and more varied background by choosing their own minor in either</li></ul>				

Engineering Communications, or Engineering Electronics concentrations.

- Provide considerable understanding and confidence in the Engineering Communications and Engineering Electronics.
- Enhance the personal and professional development of individual students.
- Develop the necessary knowledge and skills to prepare students for a career in the Electrical Communications and Electronics sector for further study.
- Develop the intellectual and practical skills necessary for the student in Electrical Engineering area.
- Provide support for multinational and local institutions.

#### **15. Summary of Skills Development for Students within the Programme [Maximum 150 words]:**

The BSc degree in Communication and Electronics Engineering provides a solid foundation in the design of communication and electronic systems through a large number of consecutive courses dealing with different areas. The degree programme develops the student's ability to design and represent projects of a variety of system types, and produce analysis and validation that meet the design specifications.

The student will develop basic skills in electrical circuits, communication, electronics and electromagnetics. Upon graduation, the student will be able to work creatively and flexibly in a variety of media from design, operation or maintenance of communication and electronic systems. Furthermore, the programme provides the opportunity to improve the capacity for independent thought while maintaining and developing the student's ability to work in groups.

#### **16. The programme provides opportunities for students to achieve the following outcomes:**

##### **Knowledge and Understanding :**

After completion of the programme, the student will be able to demonstrate knowledge and understanding of:

- A1. Concepts and theories of engineering mathematics, engineering physics, engineering mechanics, and Engineering Drawing.
- A2. Basics of Information and Communication Technology (ICT)
- A3. Characteristics of engineering materials used in electrical and electronic circuits and components.
- A4. Technical language and research writing.
- A5. Methodologies of circuit analysis, digital logic, solving engineering problems, data collection and interpretation.
- A6. Codes of practice and standards, health and safety requirements, Topics related to humanitarian interests, and environmental issues.
- A7. Business and management principles relevant to engineering, professional ethics and impacts of Engineering solutions on society and environment.
- A8. Current engineering technologies related to communication systems.
- A9. Principles of design of electronic circuits and components.
- A10. Basics of programming and software development.
- A11. Analysis of digital Digital Signal Processing.
- A12. Embedded systems Principles using Microprocessors, Microcontrollers, FPGAs, and PLC.
- A13. Information theory, Coding and decoding techniques.
- A14. Basics of electromagnetism, antennas, wave propagation and transmission lines for communication systems.
- A15. Microwave and optical communication components and systems for transmission and reception.
- A16. Measurement and instrumentation of electrical, electronic, microwave, and optical circuits and components.
- A17. Engineering systems description, analysis and control.
- A18. Advanced and new trends of Communication and Electronic systems and networks.
- A19. Advanced and contemporary engineering topics.

#### **17. The programme provides opportunities for students to develop the following skills:**

##### **Intellectual Skills:**

After completion of the programme, the student will be able to:

- B1. Select appropriate mathematical and computer-based methods for solving electronics and communication systems problems
- B2. Select appropriate solutions for communication systems problems based on analytical thinking.
- B3. Think in a creative and innovative way in problem solving and design.
- B4. Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
- B5. Assess and evaluate the characteristics and performance of electronic components, systems and processes.
- B6. Investigate and troubleshoot the failure of electronic components, systems, and processes.
- B7. Solve industrial problems, often on the basis of limited and possibly contradicting information.
- B8. Select and appraise appropriate ICT tools to a variety of engineering problems.
- B9. Evaluate engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
- B10. Incorporate economic, societal, environmental dimensions and risk management in design.
- B11. Analyze results of numerical models and assess their limitations.
- B12. Create systematic and methodical approaches when dealing with new and advancing technology.
- B13. Develop analytical models for engineering problems
- B14. Develop innovative solutions for the practical industrial problems.
- B15. Analyse the performance of digital and analogue communication, mobile communication, coding, and decoding systems.

### **Professional and Practical Skills:**

After completion of the programme, the student will be able to:

- C1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve communication systems problems.
- C2. Professionally merge the communication systems knowledge, understanding, and feedback to improve design, products and/or services.
- C3. Create and/or re-design a process, component or system, and carry out specialized communication systems designs.
- C4. Practice the neatness and aesthetics in communication systems design and approach.
- C5. Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyse and interpret results.
- C6. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
- C7. Apply numerical modelling methods to communication systems problems.
- C8. Apply safe systems at work and observe the appropriate steps to manage risks.
- C9. Apply quality assurance procedures and follow communication systems codes and standards.
- C10. Exchange knowledge and skills with communication systems engineering community and industry.
- C11. Apply appropriate mathematical methods or IT tools.
- C12. Use relevant laboratory equipment and analyse the results correctly.
- C13. Use the standard tools to maintain and repair almost all types of electronic systems.
- C14. Identify appropriate specifications for required devices.
- C15. Apply computer programming for the design and diagnostics of digital and analogue communication, mobile communication, coding, and decoding systems.
- C16. Prepare appropriate tools to measure system performance.
- C17. Synthesize and integrate electronic systems for certain specific function using the right equipment.

### **General and Transferable Skills:**

After completion of the program, the student will be able to:

- D1. Collaborate effectively within multidisciplinary team.
- D2. Work in stressful environment and within constraints and apply risk analysis.
- D3. Communicate effectively.
- D4. Demonstrate efficient IT capabilities.

- D5. Lead and motivate individuals
- D6. Effectively manage tasks, time, and resources
- D7. Search for information and engage in life-long self-learning discipline.
- D8. Acquire entrepreneurial skills.
- D9. Refer to relevant literatures.
- D10. Acquire basic project management skills
- D11. Demonstrate basic organizational and project management skills.
- D12. Prepare and present technical reports.

### **Graduate Attributes:**

The graduates of the Electronics and Communication Engineering programme should be able to:

- a. Apply basic knowledge and concepts of mathematics and sciences and engineering principles to electronics systems.
- b. Be able to communicate effectively, both orally and in writing.
- c. Have the ability to design and execute an individual project.
- d. Be able to understand environmental, economics and community impacts on development.
- e. Have the relevant mathematical and computational skills.
- f. Participate in and lead quality improvement projects.
- g. Know the technology required to design, build, operate and maintain electronic systems, analog m/and digital, and all types of computers.
- h. Manipulate with the electronic circuits, all the way from the discrete components level, circuits' analysis and design, to the troubleshooting with emphasis on electronic power devices.
- i. Realize control theory and measurement systems for industrial variables, signal conversion, conditioning and processing.
- j. Deal with the computers hardware, software, operating systems and interfacing.
- k. Know the field of digital and analog communication, mobile communication, coding, and decoding.
- l. Familiarize her/him-self with the nano-technology that will invade the electronics world in the future.

### **Greenwich Graduate Attributes**

Your programme of study will be developing the Greenwich Graduate Attributes. This will be reflected in its learning outcomes and will be embedded in its specific discipline areas.

The University of Greenwich has always aimed to provide an environment that allows students to maximize their potential. In meeting the challenges of today's tough and changing world our consultation with staff and students resulted in defining distinctive characteristics for the Greenwich Graduate. These explicit behaviors, values, skills and dispositions that we expect our students to develop will best prepare them for their future careers and help us to reshape student learning and assessment activities.

A flourishing scholarly community, with an ethos of sustainability and a global outlook, full of confident, distinctive students, always learning, always developing.

### **Scholarship and autonomy**

The University of Greenwich is committed to developing graduates who:

- Have an informed understanding of their discipline or professional practice, and the ability to question its principles, practices and boundaries.
- Think independently, analytically and creatively, and engage imaginatively with new areas of investigation.
- Appreciate disciplines and forms of professional practice beyond their own, and draw connections between them.
- Are intellectually curious, responsive to challenges, and demonstrate initiative and resilience.

### **Creativity and enterprise**

The University of Greenwich is committed to giving its graduates the confidence to:



- Recognize and create opportunities, and respond effectively to unfamiliar or unprecedented situations or problems.
- Generate new ideas and develop creative solutions or syntheses.
- Communicate clearly and effectively, in a range of forms, taking account of different audiences.
- Make use of familiar and emerging information and communication technologies.
- Seize and shape the opportunities open to them on leaving university.

### **Cross-cultural and international awareness**

The University of Greenwich is committed to producing graduates who:

- Engage effectively in groups whose members are from diverse backgrounds.
- Appreciate the importance of behaving sustainably.
- Move fluently between different cultural, social and political contexts.
- Value the ability to communicate in more than one language.

### **MSA Mapping of Greenwich Graduate Attributes for ECE Programme:**

The University of Greenwich initiative for graduates (Greenwich Graduate Attributes) seeks to recognize that while disciplinary knowledge is important, graduates will leave with skills and values which will equip them for life outside the university. At MSA, the same objective has been in place although not similarly categorized. Much of what lies at the heart of the initiative is present in the MSA Graduate Attributes, as will be discussed below.

The initiative recognizes three core elements: *Scholarship and autonomy*, *Creativity and enterprise*, and *Cross-cultural and International awareness* which are seen as the elements which reflect most the University of Greenwich.

### **Scholarship and autonomy:**

MSA department of ECE Systems Engineering graduates *have an informed understanding of their discipline* prior to graduation through years 2, 3, 4 and 5 courses, namely:

ECE353 Electronic Circuits I, ECE 354 Electromagnetics I, ECE 355 Data Communication, ECE 356 Measurement Instruments, CSE 362 Digital Systems Interfacing, ECE 363 Electronic Circuits I, ECE 364 Electromagnetics I, ECE 365 Linear Systems, ECE366 Communication Networks, ECE 451 Electronic Circuits III, ECE 452 Communication Systems I, ECE 454 Microwave Engineering, ECE 455 Automatic Control, ECE 456 Computer Architecture, ECE 461 Electronic Circuits IV, ECE 462 Communication Systems II, ECE 464 Antenna, ECE 465 Information Theory and Coding, ECE466 Digital Signal Processing, ECE 551 Energy Conversion, ECE552 Mobile Comm. Systems, and ECE 561 VLSI.

which prepare students to life after university. The former introduces them to the various career paths they might tread as graduates of ECE Systems Engineering, the professional body to which they will become members (Egyptian Syndicate of Engineers). The key issues of ECE Engineering, the intelligent systems, automation and key concepts of inter-disciplinary Engineering (items of the knowledge and Understanding) Intended Learning Outcomes, and items of the Intellectual Skills that students will be able to demonstrate). They will be able to interact critically with the institutional structures within which ECE Engineering practice takes place (items of Graduate Attributes, previously mentioned). Through the latter along with the Design courses they become familiar with the technical engineering knowledge and concepts necessary for the chosen profession (items of the knowledge and Understanding Intended Learning Outcomes, and items of the Professional and Practical Skills).

They come to appreciate disciplines and forms of professional practice through the choice between elective courses in years 4 and 5. The Special Topics in Communication (ECE 5635), Advanced Topics in Communication (ECE 5636), and Mobile Communication(ECE 552) which introduce them to the related disciplines which they will be dealing with in the field when they graduate. Lastly, and through the previous courses, students in ECE Systems Engineering could specialize in any of those related disciplines upon graduation which opens up career paths for MSA graduates.

### **Creativity and enterprise:**

MSA department of ECE Systems Engineering graduates learn to be creative through the Digital Logic Design courses (ECE 254, ECE264), Electrical Systems Design courses (ESE253, ESE263) and the Electronic System Design courses (ECE353, ECE363, ECE451, ECE461) in years 2, 3 and 4 of the programme, and through the Graduation Projects (ECE 554 and ECE 564) during the 5<sup>th</sup> year of the program. They are mentally challenged to come up with unique and original conceptions. Through this rigorous process they are taught to be innovative and resourceful. Additionally, they are drilled to be able to defend their design decisions through presentations. They develop confidence with graphic and verbal communication and presentation skills. Accordingly, they can

*communicate clearly and effectively* both graphically using a variety of media and verbally *to different audiences* (items of the *Graduate Attribute*), and (items of the *Transferable skills*).

Through the Engineering Drawing course (GSE 154n), Engineering Computer Programming Course (COM 253), the Mathematical Analysis and Numerical Methods course (MAT 351), and the Probability and Statistics Course (MAT 361), , they are equipped with the tools necessary to explore and experiment with new software and *emerging information and communication technologies* (items of *Practical Skills* and *Graduate Attributes*).

#### **Cross-cultural and International Awareness:**

MSA department of ECE Systems Engineering students of level 4 can opt for the joint summer elective with the University of Greenwich whereby they work jointly with their British counterparts. Moreover, the student body at MSA is diverse with Egyptian and Non-Egyptian students especially from other Arab Countries. Most MSA students are multi-lingual and can converse in English and Arabic, those from French schools could speak the three languages. This could enhance their chances of employability in multi-national establishments worldwide (*Graduate Attribute* items).

### **18. Teaching, Learning and Assessment Methods related to the programme learning outcomes and skills sets**

#### **1- Knowledge and Understanding :**

##### **Teaching/Learning methods:**

- Attainment of item 1 to 7 through lectures and tutorials in years 1, 2 and 3.
- Attainment of item 8 to 17 through lectures, tutorials, workshop sessions, and labs sessions and through field trips in years 1 and 2.
- Attainment of item 18 and 19 through lectures, tutorials, mini projects, research subjects, summer training, and that in years 3, 4, and 5.

##### **Assessment:**

- Assessment of items 1 to 17 through assignments with various levels of complexity, class exams, unseen mid-term and final exams, discussions of research papers, case-studies and mini-projects both individual and team or group work.
- Assessment of items 18 and 19 as above in addition to through presentation and discussion of the summer training,

#### **2- Intellectual Skills**

##### **Teaching/Learning:**

- Attainment of items 1 to 8 through assignments, and mini projects in years 2, 3, 4, and 5.
- Attainment of items 9 to 15 through mini projects and graduation project (both individual and team or group work) in years 4, and 5.

##### **Assessment:**

- Assessment of all items through class exams, unseen mid-term and final exams, oral presentations and discussion of mini and graduations projects (Power point or Poster presentations).

#### **3- Practical Skills:**

##### **Teaching/learning:**

- Attainment of items 1 to 7 through case studies, mini-projects, and graduation project and that in years 2, 3 and 4 (both individual and team or group work).
- Attainment of items 8 to 17 through computer labs, and graduation project and that in years 3, 4 and 5 and summer training.

##### **Assessment:**

- Assessment of items 1 to 7 is through reports, oral presentations and discussions (power point or poster presentations).
- Assessment of items 8 to 17 is through computer lab exams, and oral (power point or poster) presentations and summer training.

#### **4- Transferable Skills:**

##### **Teaching/learning:**

- Attainment of items 1 to 4 through lectures, mini-projects, research work, graduation projects, and summer training, and that in years 1 to 5.
- Attainment of items 5 to 12 through graduation project and training especially in year 5.

##### **Assessment:**

- Assessment of all items through class exams, unseen mid-term and final exams, oral presentations and discussion of mini and graduations projects (Power point or Poster presentations).

19. Programme Structure: Levels, Courses <sup>1</sup> and Credits		Awards and Credits
Level4	<p><b>Compulsory Courses</b>  <b>Term : Fall</b>            MAT 351 Mathematical Analysis and Numerical Methods.            CSE352 Microprocessor            ECE353 Electronic Circuits I            ECE 354 Electromagnetics I            ECE 355 Data Communication            ECE 356 Measurement Instruments</p> <p><b>Term : Spring</b>            MAT 361 Probability and Statistics.            CSE 362 Digital Systems Interfacing            ECE 363 Electronic Circuits II.            ECE 364 Electromagnetics II.            ECE 365 Linear Systems.            ECE366 Communication Networks.</p> <p><b>Optional Courses: -----</b>  <b>Courses required for named endorsements</b> (if applicable N/A))</p>	<p>Certificate of Higher Education (Cert. HE)</p> <p>NA</p>
Level5	<p><b>Compulsory Courses:</b>  <b>Term : Fall</b>            ECE 451 Electronic Circuits III            ECE 452 Communication Systems I.            ECE 453x ECE Elective I.            ECE 454 Microwave Engineering.            ECE 455 Automatic Control.            ECE 456 Computer Architecture.</p> <p><b>Term : Spring</b>            ECE 461 Electronic Circuits IV.            ECE 462 Communication Systems II            ECE 463x ECE Elective II.            ECE 464 Antenna.            ECE 465 Information Theory and Coding.            ECE466 Digital Signal Processing.</p> <p><b>Optional Courses: Electives I and II</b>  <b>Optional courses required for named endorsements</b> (if applicable)</p>	<p>Diploma of Higher Education (Dip. HE)</p> <p>NA</p>

<sup>1</sup>Please indicate clearly whether a course runs in Term 1, Term 2 or across the academic year

Level6	<p><b>Compulsory Courses</b></p> <p><b><u>Term : Fall</u></b></p> <p>ECE 551 Energy Conversion.  ECE552 Mobile Comm. Systems.  ECE 553x ECE Elective III.  ECE 554 Graduation Project (Part I).</p> <p><b><u>Term : Spring</u></b></p> <p>ECE 561 VLSI.  HUM 562 Ethics, Safety and Health.  ECE 563x ECE Elective IV.  ECE 564 Graduation Project (Part II).</p> <p><b>Optional Courses: Electives III and IV</b></p> <p><b>Optional courses required for named endorsements (if applicable)</b></p>	<p>Honours Degree:  BSc. (Hons.) ,  Mechatronics Systems Engineering  168 Credits.</p> <p>NA</p>
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## 4.1 ECE Five-Year Plan:

56 Courses					168 Credits				
Fall Semester					Spring Semester				
Year 1	Code	Subject	Cr.	Prereq.	Code	Subject	Cr.	Prereq.	Year 1
	MAT151	Calculus I	3	None	MAT161	Calculus II	3	MAT151	
	BSC152	Engineering Physics I	3	None	BSC162	Engineering Physics II	3	BSC152	
	GSE153	Engineering Mechanics I	3	None	GSE163	Engineering Mechanics II	3	GSE153	
	GSE154n	Engineering Drawing	3	None	BSC164	Chemistry	3	None	
	COM155	Intr. to Information Technology	3	None	GSE165	Workshop Technology	3	None	
	ENG156	Academic English Writing	3	None	ENG166	Technical English Writing	3	ENG156	
Year 2	Code	Subject	Cr.	Prereq.	Code	Subject	Cr.	Prereq.	Year 2
	MAT251	Linear Algebra	3	MAT161	MAT261	Differential Equations	3	MAT161	
	BSC252	Modern Physics	3	BSC162	ESE262	Physics of Electrical Materials	3	BSC252	
	ESE253	Electric Circuit Analysis I	3	BSC162	ESE263	Electric Circuit Analysis II	3	ESE253	
	ECE254	Digital Logic Design I	3	Co-Req ESE253	ECE264	Digital Logic Design II	3	ECE254	
	COM255	Engineering Computer Programming I	3	COM155	COM265	Engineering Computer Programming II	3	COM255	
	ENG256	Research English Writing	3	ENG166	HUM266	Project Management Systems	3	ENG256	
Year 3	Code	Subject	Cr.	Prereq.	Code	Subject	Cr.	Prereq.	Year 3
	MAT351	Mathematical Analysis and Numerical Methods	3	MAT261	MAT361	Probability and Statistics	3	MAT351	
	CSE352	Microprocessor Systems	3	ECE264+ COM265	CSE362	Digital System Interfacing	3	CSE352 + COM265	
	ECE353	Electronic Circuits Analysis I	3	ESE263	ECE363	Electronic Circuits Analysis II	3	ECE 353	
	ECE354	Electromagnetics I	3	MAT251	ECE364	Electromagnetics II	3	ECE354	
	ECE355	Data Communication	3	MAT251	ECE365	Linear Systems	3	ESE263+ MAT351	
	ECE356	Electronic Measurement Instruments	3	ESE263	ECE366	Communication Networks	3	ECE355	
Year 4	Code	Subject	Cr.	Prereq.	Code	Subject	Cr.	Prereq.	Year 4
	ECE451	Electronic Circuits Analysis III	3	ECE363	ECE461	Electronic Circuits Analysis IV	3	ECE451	
	ECE452	Communication Systems I	3	ECE365	ECE462	Communication Systems II	3	ECE452 + MAT361	
	ECE453x	ECE Elective I	3	As per elective	ECE463x	ECE Elective II	3	As per elective	
	ECE454	Microwave Engineering	3	ECE364	ECE464	Antenna Theory and Design	3	ECE454	
	ECE455	Automatic Control Systems	3	ECE365	ECE465	Information Theory and Coding	3	Co or Pre- Req ECE462	
	CSE456	Computer Architecture	3	CSE362	ESE466	Digital Signal Processing	3	ECE365	
Year 5	Code	Subject	Cr.	Prereq.	Code	Subject	Cr.	Prereq.	Year 5
	ESE551	Energy Conversion	3	ECE455	ECE561	VLSI	3	ECE264 + ECE363	
	ECE552	Mobile Communication Systems	3	ECE464	HUM562	Ethics, Safety and Health	3	5th year standing	
	ECE553x	ECE Elective III	3	As per elective	ECE563x	ECE Elective IV	3	As per elective	
	ECE554	Graduation Project (Part I)	3	Min 138 Cr	ECE564	Graduation Project (Part II)	3	ECE554	

## Communication and Electronic Electives

Students majoring in ECE shall choose 4 modules (12 credit hours) to support the graduation project which will be in one of the following areas:

- Engineering Communication
- Wireless Communication.
- Digital Systems.
- Engineering Electronics
- Industrial Electronics.
- Control Systems.

The courses are selected from the following list of modules:

ECE 4531: Satellite Communication Systems. ECE 4532: Microwave Devices ECE 4533: Process Control. ECE 4534: Industrial Electronics in Practice. ECE 4535: Special Topics in Electronics ECE 4536: Advanced Topics in Electronics	ECE 4631: Communication Transmission Systems. ECE 4632: Digital Image Processing. ECE 4633: Programmable Logic controller. ECE 4634: Power Electronics. ECE 4635: AVIONICS
ECE 5531: Global Positioning Systems. ECE 5532: Fiber Optics and Laser Technology ECE 5533: Digital Control. ECE 5534: Biomedical Electronic Engineering. ECE 5535: RADAR SYSTEMS HUM 5536: Entrepreneurship and Small Business Management	ECE 5631: Spread Spectrum Techniques. ECE 5632: Cryptography. ECE 5633: Robot Dynamics and Control. ECE 5634: Fundamental of Nanotechnology ECE 5635: Special Topics in Communication ECE 5636: Advanced Topics in Communication

## **K. Faculty Regulations: Electrical Communication and Electronic Systems Engineering Programmes**

- Engineering students who passed the English Placement Test, and registered ENG156 or above, must complete 56 courses (168 credit hours) with a Cum. GPA 2.0 as a minimum, in not less than four years and half-academic years.
- The 56 courses are distributed over the 5 academic years as follows:

level	Fall Semester		Spring Semester	
	Courses	Credits	Courses	Credits
1 <sup>st</sup>	6	18	6	18
2 <sup>nd</sup>	6	18	6	18
3 <sup>rd</sup>	6	18	6	18
4 <sup>th</sup>	6	18	6	18
5 <sup>th</sup>	4*	12	4*	12

\*including the Graduation Project (Part I & II)

### **Graduation Project Regulations**

- Registration of Graduation Project (Part I) requires the following:
  - A minimum Cum. GPA of 2.0.
  - A minimum credits of 138.
- Registration of Graduation Project (Part II) requires the following:
  - A minimum Cum. GPA of 2.0.

### **ENG 50 & 80 & 90 Student Regulations**

- ENG50 students could register 3 courses, in addition to the intensive English course requirement.
- ENG80 students could register 4 courses, in addition to the intensive English course requirement.
- ENG90 students could register 5 courses, in addition to the intensive English course requirement.
- ENG50 & 80 & 90 students, who pass the intensive English requirements and more to register ENG156, will be treated as newcomers; and therefore, they can register 6 courses regardless of their GPA.

## **K. Faculty Regulations: Electrical Communication and Electronic Systems Engineering Programmes (cont.)**

### **Students on Probation Regulations**

- Student who gets a Cum. GPA less than 2.0, he/she becomes on probation and will not be allowed to register the following semester, unless he/she signs a warning and his/her parents will be notified officially.
- Student who reaches a probation level 6 or above, his/her parents will be notified officially, and will not be able to register the following semester unless his/her parents meet the Dean.
- Student, who continues to get a Cum. GPA less than 2.0 and reaches probation level 10, will be dismissed from the Faculty and will not be able to return.

### **Deprived Students Regulations**

- Student is aware upon registration that he/she is not allowed being absent for any excuses (medical, travel, accident, or any other reasons) more than 25 % in any course. Otherwise, he/she will be deprived from the course, and be given an Automatic “F1”.



**L. Subject/Programme Staff List and Contact Details**  
**Electrical Communications & Electronic Systems Engineering (ECE) Department**  
**Full-Time Staff Contacts**

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2	Essam AbdelFatah Sorour	Professor	-	D 125
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10	Nouran Magdy Mohamed Hassan	Teaching Assistant	noumagdy@msa.edu.eg	D 126

## Lab Technicians

No	Name	E-mail	Room
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3	Gamal Abdel Gawad Ibrahim Saleh	gabdelgawaad@msa.edu.eg	WS 101 & WS 102 & WS 103
4	Mohamed Ahmed Mahmoud El Deeb	madeeb@msa.edu.eg	WS 201 & WS 204