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**October University for Modern Sciences and Arts**

**(MSA)**

**B.Sc. Honours**

**Industrial Systems Engineering Programme**

**Student Handbook 2021/2022**

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

**Faculty of Engineering**

**Industrial Systems Engineering**

**Programme Leader: Prof. Dr. Nahed Sobhi Abdel Nour**

**Co-Programme Leader: Dr. Mohamed Hassan**

### 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 فى التصنيف الدولى فى 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	• العدالة وعدم التمييز
Quality and Excellence	• الجودة و التميز
Integrity and Honesty	• النزاهة والأمانة
Intellectual Freedom	• الحرية الفكرية
Transparency	• الشفافية
Creativity	• الإبداع
Respect and Acceptance of Others	• إحترام وقبول الآخر

## الأهداف الاستراتيجية للكلية

الأهداف الاستراتيجية	الأهداف الفرعية
1- إستيفاء متطلبات الإعتتماد 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 للإعتتماد 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 MSA University Rules and Regulations document (<https://msa.edu.eg/msauniversity/>).

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. Nahed Sobhy**

**Name of Head of School of Engineering at Medway**

**Professor Ndy Ekere**

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**Name of MSA Dean of Engineering**

**Prof. Dr. Nahed Sobhi Abdel Nour**

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26 July Mehwar Road  
Intersection with Wahat Road  
6<sup>th</sup> October City

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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

<b>Fall Senior Graduation Photo Week</b> 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*</b> <b>Last day of exams: Thurs 10 Feb 2022*</b> <b>*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*</b> <b>*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</b> <b>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</b> <b>Wed 30 March 2022</b> <b>Thurs 31 March 2022</b>
<b>Start of Ramadan</b>	<b>Sat 2 April 2022*</b> <b>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*</b> *Subject to amendment as per Governmental Official Announcement
<b>Sinai Liberation Day</b>	<b>Mon 25<sup>th</sup> April 2022*</b> *Subject to amendment as per Governmental Official Announcement
<b>Eid EL Fetr*</b>	<b>Sun 1 May – Wed 4 May 2022*</b> *Subject to amendment via governmental official announcement
<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> *Subject to amendment as per Governmental Official Announcement
<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> *Subject to amendment to as per Governmental Official Announcement
<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> Subject to amendment via governmental authorities
<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, 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:** <https://msa.edu.eg/msauniversity/>

## 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 Industrial Systems Engineering (ISE) programme which is concerned with the design, improvement, and installation of integrated systems of material, equipment, manpower, energy, information and technology, among all other inputs.

**ISE** 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.

**ISE B.Sc. (Hons)** 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).

**ISE** students are introduced to a broad spectrum of Industrial Systems Engineering topics augmented by modern engineering experimentation, methodology, and practice. The interaction of management with various inputs to the manufacturing and service systems are like a piece of a puzzle. Finding the best fit takes creativity and a great deal of technical knowledge. Once it all comes together, there is an improved productivity, efficiency, quality, and safety. As a result, business saves time, effort, and money.

**ISE** graduates usually work in the industrial sector which includes manufacturing of food, chemicals, cement, cars, and other manufacturing industries; as well as, in the service sector which includes governmental, military, energy, environmental, transportation, banking, hospitals, educational institutions, and other service industries. Since industrial engineering students have a training in working with both men and machines, they often advance quickly into management positions.

**ISE** graduates should be capable of adapting to the ever-evolving engineering tools and procedures in the practice of all aspects of life long industrial systems engineering profession. Graduates should be able to tackle unstructured engineering problems as a teamwork to 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 Industrial 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		Industrial Systems Engineering
4. Final Award		5. Programme Title and approved endorsements:		6. Qualification Level as defined by the UK Framework for Higher Education Qualifications (Please refer to D5 Guidance notes)		
B.Sc. (Hons) Industrial Systems Engineering(MSA)		Industrial 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 Minimum 5 years – Maximum 10 years 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.) P11230				July 2017		
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						
<u>General Requirements:</u> <ul style="list-style-type: none"><li>• The programme accepts students who passed Egyptian Thanaweya Amma Degree (National High School Certificate) or any other equivalent High School Degree (IGCSE, GCSE, American High School Diploma, Abitur, IB, French BACC, National High School Certificate from Arab Countries).</li><li>• The Supreme Council of Egyptian Universities declares the conditions for enrolling into the different faculties at MSA and other private universities that operate under the regulations of the Supreme Council of Egyptian Universities. The minimum percentage varies from one year to the other and is declared to all applicants during the summer prior to their admission to the university.</li></ul>						
After fulfilling the general requirements, the applicant should satisfy the following: 1. The applicant acquiring the previously determined Entry-score set by Supreme Council for Egyptian Universities 2. Passing MSA English placement Exam with a score not less than level 90 <ul style="list-style-type: none"><li>• 3. Submitting authenticated original certificates and documentation for the applicant that adhere to the governments’ specifications and regulations.</li></ul>						

**14. Educational Aims of the Programme and Potential Career Destinations of Graduates [Maximum 150 words]:**

Industrial Systems Engineering (ISE) is concerned with the design, improvement, and installation of integrated systems of material, equipment, manpower, energy, information and technology, among all other inputs. The program aims to:

- Provide a flexible and versatile route through the Industrial Engineering areas. Students can acquire practical expertise in a wide and more varied background by choosing their own minor in either Engineering Manufacturing or Engineering Management.
- Provide considerable understanding and confidence in the Engineering Manufacturing and Engineering Management areas.
- Enhance the personal and professional development of individual students.
- Develop the necessary knowledge and skills to prepare students for a career in the industrial and service sector for further study.
- Develop the intellectual and practical skills necessary for the students in the Industrial Engineering areas.
- Provide support for a multinational base and local institutions.

Because of the wide range of studying areas, such as design, manufacturing, production planning, quality, operations research in addition to varieties of elective courses, the student is equipped with a wide career range in different productive and services establishments.

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

The BSc degree in Industrial Systems Engineering provides a solid foundation in the areas of manufacturing and design, as well as the areas of operations, project, and quality management; through a large number of consecutive courses dealing with these different areas. The degree program 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 be able to develop basic skills in mechanical design, manufacturing, and management of industrial sites. Upon graduation, the student will be able to work creatively and flexibly in a variety of media from design, operation or maintenance of industrial systems. Furthermore, the program 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:****COMETENCIES OF ENGINEERING GRADUATE (all programs)****The Engineering Graduate must be able to:**

- C1- Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
- C2- Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
- C3- Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
- C4- Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
- C5- Practice research techniques and methods of investigation as an inherent part of learning.
- C6- Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
- C7- Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.
- C8- Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

C9- Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

C10- Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

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

**In addition to the Competencies for All Engineering Programs the Industrial Engineering Graduate must be able to:**

C11- Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.

C12- Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field.

C13- Select conventional mechanical equipment according to the required performance.

C14- Adopt suitable national and international standards and codes; and integrate legal, economic and financial aspects to: design, build, operate, inspect and maintain mechanical equipment and systems.

C15- Demonstrate additional abilities to analyze, design, integrate, operate, evaluate, control, and implement methods and techniques to manage industrial systems.

**Graduate Attributes:**

**The Engineering Graduate (all programs) must:**

01. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations.
02. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.
03. Behave professionally and adhere to engineering ethics and standards.
04. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.
05. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community.
06. Value the importance of the environment, both physical and natural, and work to promote sustainability principles.
07. Use techniques, skills and modern engineering tools necessary for engineering practice.
08. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies.
09. Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.
10. Demonstrate leadership qualities, business administration and entrepreneurial skills.

**Greenwich Graduate Attributes**

The Industrial Engineering program of study will be developing the Greenwich Graduate Attributes. This will be reflected

in its graduate competencies 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 ISE Program:**

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 University, department of Industrial Systems Engineering graduates **have an informed understanding of their discipline** prior to graduation through years 4 and 5 courses, **namely:** Work Analysis and Measurement (ISE 354), Production Planning and Control (ISE 451), Maintenance Planning and Control (ISE 461),



Statistical Quality Control (ISE 452), Facilities Planning and Design (ISE 456), Quality Management and Assurance (ISE 465) and Project Management (ISE 466) which prepare students to life after university. The former introduces them to the various career paths they might tread as graduates of Industrial Systems Engineering, the professional body to which they will become members (Egyptian Syndicate of Engineers).

The key issues of Industrial Engineering, the organizations, globalization and key concepts of Quality Engineering (Competencies **C4, C5, C10, C14, and C15** of the *ISE program graduate competencies* that students will be able to compete and items **5 and 7** of the graduate attributes mentioned above).

They will be able to **interact critically with the institutional structures within which Industrial Engineering practice takes place** (competencies: **C6, C7, C8, C14 and C15** of the *ISE program graduate competencies* and items **4, 5 9 and 10** of the *Graduate Attributes, previously mentioned*).

Through the latter along with the Manufacturing courses (MFG 253, and MFG 263), the Numerical Control Machines course (MFG 353), and the Engineering Materials courses (GSE 252, GSE 365 and ISE 463x) they become **familiar with the technical engineering knowledge** and concepts necessary for the chosen profession (items **C1, C3, C5, and C6** of the *ISE program graduate competencies* and item **2 and 7** of the *Graduate attributes* mentioned above).

They come to **appreciate disciplines and forms of professional practice beyond their own** through the Automatic Control course (ISE 454) and the CAD/CAM course (MFG 455) which introduce them to the related disciplines which they will be dealing with in the industry when they graduate. They will be able to **Work effectively with professionals from other disciplines and in response to challenges** (items C7, C10, C11, and C12 of the *ISE program graduate competencies* and 1,2,3,8 and 10 of the *Graduate Attributes mentioned above*).

The Industrial Engineer **heads a team** of Mechanical and Production engineers, and professional workers in his/her role as leader of a project or a department in an industrial or service sector. He/she has the ability to understand, assemble and coordinate all those disciplines to see a design project materialize into a product or a system (items C6, C7, and C9 of the *ISE program graduate competencies* and items 4, 9 and 10 of the *Graduate attributes* mentioned above).

Lastly, and through sampling related courses such as Robotics (ISE 464), students in Industrial Systems Engineering could specialize in any of those related disciplines upon graduation which opens up career paths for MSA graduates other than Industrial Engineering.

**Creativity and enterprise:** MSA department of Industrial Systems Engineering graduates learn to be **creative** through the Machine Design course (DES 362) and the Product Development and Design course (DES 462) in years 3 and 4 of the program, and through the Graduation Projects (ISE 554 and ISE 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 C3, C4, C9, C12, and C15 of the *ISE program graduate competencies* and items **1, 2 ,7, and 9** of the *Graduate Attribute* mentioned above).

Through the Engineering Drawing course (GSE 154), Engineering Computer Programming Courses (COM 255 and COM 265), the Design of Experiments course (ISE 551) and the Simulation Modelling and Analysis Course (ISE 561), they are equipped with the tools necessary to explore and experiment with new software and **emerging information and communication technologies** (items C2, C5, C8, C12 and C15 of the *ISE program graduate competencies* and items 7 and 9 of the graduate attributes mentioned above).

**Cross-cultural and International Awareness:** MSA department of Industrial 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** (C5, C7, and C14 of the *ISE program graduate competencies* and items 4, 7 and 9 of the *Graduate Attribute*).

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

Prog. Graduate competencies	Teaching & Learning Methods	Assessment Methods
C1	Lectures, Tutorials.	Participation, Assignments / tests and quizzes, individual & group projects/ unseen midterm and final exams
C2	Lectures, Tutorials, Experimental work, presentation, case study, simulation, Reports, Co-Operative learning, Projects, Field trips, summer training.	Participation, Assignments, presentation, tests and quizzes, laboratory tests, Individual & group projects, unseen midterm and final exams.
C3	Lectures, Tutorials, presentation, case study, simulation, Reports, projects.	Participation, Assignments, presentation, tests and quizzes, Individual & group projects, unseen midterm and final exams.
C4	Lectures, Experimental work, presentation, case study, simulation, Reports, projects.	Presentation, Assignments, Term paper/ reports, Laboratory test, Individual & group projects.
C5	Experimental work, simulation, Reports, Co-Operative learning, Projects, Field trips, summer training.	Participation, Term paper / Reports, individual & group projects.
C6	Lectures, Experimental work, presentation, case study, simulation, Reports, Projects, Field trips, summer	Presentation, Participation, Individual & group projects.
C7	Tutorials, Reports, Co-Operative learning, Field trips, summer training.	Participation, Laboratory test, Individual & group projects.
C8	Lectures, Tutorials, Co-Operative learning, Projects, Field trips, summer	Participation, Participation, Laboratory test, Individual & group projects
C9	Lectures, Tutorials, presentation, case study, simulation, Reports, Co-Operative learning, Projects.	Participation, presentation, Assignments, Term paper / Reports, Individual & group projects, unseen midterm and final exams.
C10	Lectures, Tutorials, simulation, Reports, projects.	Participation, Assignments / tests and quizzes, Individual & group projects/ unseen midterm and final exams.
C11	Lectures, Tutorials, presentation, case study, Reports, projects.	Presentation, Participation, Assignments, / tests and quizzes, individual & group projects/ unseen midterm and final exams.
C12	Lectures, Tutorials, Experimental work, presentation, case study, Reports, Co-Operative learning, Projects.	Presentation, Participation, Assignments, Term paper / Reports, individual & group projects/ unseen midterm and final exams.
C13	Lectures, Tutorials, Experimental work, simulation, Reports, Projects, Field trips, summer training.	Presentation, Participation, Assignments, Term paper / Reports, Laboratory tests, Individual & group projects.

C14	Lectures, Tutorials, Experimental work, presentation, case study, simulation, Reports, Co-Operative learning, Projects, Field trips, summer training.	Presentation, Participation, Assignments, Term paper / Reports, individual & group projects/ unseen midterm and final exams.
C15	Lectures, Tutorials, Experimental work, presentation, case study, simulation, Reports, Co-Operative learning, projects, Field trips, summer training.	Presentation, Participation, Assignments, Term paper / Reports, individual & group projects/ unseen midterm and final exams.
19. Programme Structure: Levels, Courses <sup>1</sup> and Credits		Awards and Credits
Level 4	<p><b>Compulsory Courses</b>  <b>Term : Fall</b>  MAT 351 Mathematical Analysis and Numerical Methods.  DES 352 Stress Analysis.  MFG 353 Numerical Control Machines.  ISE 354 Work Analysis and Measurement.  ISE 355 Operations Research.  GSE 356 Fund. Of Electrical Engineering.</p> <p><b>Term : Spring</b>  MAT 361 Probability and Statistics.  DES 362 Machine Design.  DES 363 Tool Design.  ISE 364 Engineering Economy.  GSE 365 Engineering Materials II.  GSE 366 Fund. Of Electronics Engineering.</p> <p><b>Optional Courses: -----</b>  <b>Courses required for named endorsements (if applicable N/A))</b></p>	<p>Certificate of Higher Education (Cert. HE)</p> <p>N/A</p>
Level 5	<p><b>Compulsory Courses:</b>  <b>Term : Fall</b>  ISE 451 Production Planning and Control.  ISE 452 Statistical Quality Control.  ISE 453x Elective I.  ISE 454 Automatic Control.  MFG 455 Introduction to CAD/ CAM.  ISE 456 Facilities Planning and Design.</p> <p><b>Term : Spring</b>  ISE 461 Maintenance Planning and Control.  DES 462 Product Development and Design.  ISE 463x Elective II.  ISE 464 Robotics.  ISE 465 Quality Management and Assurance.  ISE 466 Project Management.</p> <p><b>Optional Courses: Elective I and II</b>  Optional courses required for named endorsements (if applicable)</p>	<p>Diploma of Higher Education (Dip. HE)</p> <p>N/A</p>
Level 6	<p><b>Compulsory Courses</b>  <b>Term : Fall</b>  ISE 4551 Design of Experiments.  GSE 552 Legislations and Contracts.  ISE 553x Elective III.  ISE 454 Graduation Project (Part I).</p> <p><b>Term : Spring</b>  ISE 561 Simulation Modelling and Analysis.  HUM 562 Legislation and Contracts.</p>	<p>Honours Degree:  BSc. (Hons.) , Industrial Systems Engineering  168 Credits.</p>

<sup>1</sup>Please indicate clearly whether a course runs in Term 1, Term 2 or across the academic year  
ISE Students Handbook 2021/2022

	ISE 563x Elective IV. ISE 564 Graduation Project (Part II). <b>Optional Courses: Electives III and IV</b> <b>Optional courses required for named endorsements (if applicable)</b>	
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## 5.1 ISE FIVE-YEAR PLAN

56 Courses					168 Credits				
Fall Semester					Spring Semester				
Year 1	Code	Subject	Cr.	Pre.req.	Code	Subject	Cr.	Pre.req.	Year 1
	MAT 151	Calculus I	3	None	MAT 161	Calculus II	3	MAT 151	
	BSC 152	Engineering Physics I	3	None	BSC 162	Engineering Physics II	3	BSC 152	
	GSE 153	Engineering Mechanics I	3	None	GSE 163	Engineering Mechanics II	3	GSE 153	
	GSE154n	Engineering Drawing	3	None	BSC 164	Chemistry	3	None	
	COM 155	Introduction to Information Technology	3	None	GSE 165	Workshop Technology	3	None	
	ENG 156	Academic English Writing	3	None	ENG 166	Technical English Writing	3	ENG 156	
Year 2	Code	Subject	Cr.	Pre.req.	Code	Subject	Cr.	Pre.req.	Year 2
	MAT 251	Linear Algebra	3	MAT 161	MAT261	Differential Equations	3	MAT 161	
	GSE 252	Engineering Materials I	3	BSC 152	GSE 262	Engineering Measurements	3	BSC 162	
	MFG 253	Forming Manufacturing Processes	3	GSE 165	MFG263	Cutting Mfg. Processes	3	GSE 165	
	GSE 254	Fundamentals of Thermodynamics and Heat Transfer.	3	BSC 152	GSE 264	Fundamentals of Fluid Mechanics	3	BSC 152	
	COM 255	Engineering Computer Programming I	3	COM 155	COM 265	Engineering Computer Programming II	3	COM 255	
	ENG 256	Research English Writing	3	ENG 166	HUM 266	Ethics, Safety and Health	3	ENG 256	
Year 3	Code	Subject	Cr.	Pre.req.	Code	Subject	Cr.	Pre.req.	Year 3
	MAT 351	Mathematical Analysis and Numerical Methods	3	MAT 261	MAT 361	Probability and Statistics	3	MAT 351	
	DES 352	Stress Analysis	3	GSE 252	DES 362	Machine Design	3	DES 352	
	MFG 353	Numerical Control Machines	3	MFG 263	DES 363	Tool Design	3	MFG 263	
	ISE 354	Work Analysis and Measurement	3	MFG 263	ISE 364	Engineering Economy	3	MAT 251	
	ISE 355	Operations Research	3	MAT 251	GSE 365	Engineering Materials II	3	GSE 252	
	GSE 356	Fundamentals of Electrical Engineering	3	BSC 162	GSE 366	Fundamentals of Electronics Engineering	3	GSE 356	
Year 4	Code	Subject	Cr.	Pre.req.	Code	Subject	Cr.	Pre.req.	Year 4
	ISE 451	Production Planning and Control	3	ISE 355	ISE 461	Maintenance Planning and Control	3	ISE 451	
	ISE 452	Statistical Quality Control	3	MAT 361	DES 462	Product Development and Design	3	DES 352	
	ISE 453x	Elective I	3		ISE 463x	Elective II	3		
	ISE 454	Automatic Control	3	MAT 351	ISE 464	Robotics	3	ISE454	
	MFG 455	Introduction to CAD/CAM	3	MFG353	ISE 465	Quality Management and Assurance	3	ISE 452	
	ISE 456	Facilities Planning and Design	3	ISE 355	ISE 466	Project Management	3	ISE355	
Year 5	Code	Subject	Cr.	Pre.req.	Code	Subject	Cr.	Pre.req.	Year 5
	ISE 551	Design of Experiments	3	ISE 465	ISE 561	Simulation Modeling and Analysis	3	ISE 355	
	HUM 552x	Humanity Elective	3	ISE451	HUM 562	Legislations and Contracts	3	ISE 466	
	ISE 553x	Elective III	3		ISE 563x	Elective IV	3		
	ISE 554	Graduation Project (Part I)	3	Min. 138 Cr.	ISE 564	Graduation Project (Part II)	3	ISE 554	



## Industrial Engineering Electives:

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

- Manufacturing Engineering
- Industrial Engineering

The courses are selected from the following two lists of modules:

<b>ISE 453x, ISE 463x, ISE 553x and ISE 563x</b>	
<b>Manufacturing Engineering</b>	<b>Industrial Engineering</b>
MFG 4531 Theory of Metal Cutting and Forming	ISE 4532 Lean-Six Sigma Manufacturing Systems
MFG 4631 Materials and Process Selection	ISE 4632 Green Manufacturing Systems
MFG 5531 Non-Conventional Manufacturing Processes	ISE 5532 Design for X
MFG 5631 Reverse Engineering.	ISE 5632 Manufacturing Information Systems.

## K. Faculty Regulations: Industrial 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: Industrial 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**

### **Faculty of Engineering Industrial Systems Engineering (ISE) Department Full-Time Staff Contacts**

<b>No</b>	<b>Name</b>	<b>Title</b>	<b>E-mail</b>	<b>Room</b>
1	Nahed Sobhi Abdel Nour Mohamed	Professor – Dean - Head of ISE Department	nsobhi@msa.edu.eg	C 207
2	Tarek Mahmoud Moustafa El-Hossainy	Professor	telhossainy@msa.edu.eg	C 200
3	Mohamed El Said Hassan	Lecturer	mosaid@msa.edu.eg	E 244
4	Sameh Ahmed Salah El din	Lecturer	ssalaheldein@msa.edu.eg	E 242

### **Full-Time Lecturer Assistant and Teaching Assistant Contacts**

<b>No</b>	<b>Name</b>	<b>Title</b>	<b>E-mail</b>	<b>Room</b>
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5	Ahmed Maher Khairy	Teaching Assistant	amkhairy@msa.edu.eg	D 126

### **Lab Technicians**

<b>No</b>	<b>Name</b>	<b>E-mail</b>	<b>Room</b>
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4	Mahmoud Hussein Salam Radwan	mhradwan@msa.edu.eg	D 123 - CNC Lab
5	Salah Ahmed Saied Ali	ssaied@msa.edu.eg	Workshop