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

IN COLLABORATION WITH

SCHOOL OF ARCHITECTURE, COMPUTING AND ENGINEERING

BEng (Hons) Manufacturing Engineering

Programme Handbook

Academic Year 2019-2020

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1 WELCOME AND INTRODUCTION

Congratulations on your enrolment into the BEng (Hons) Manufacturing Engineering programme – a programme that has been validated by the University of East London (UEL), our collaborative partner in the UK. UEL is an internationally renowned university which just like Ain Shams University (ASU) strives to achieve the highest possible standard of academic excellence. Apart from being one of the UK's most diverse and fastest growing universities, UEL is a global learning community with internationally recognised research. We are most confident that our collaboration with UEL will yield significant academic benefits both for ASU as an institution, and for the students who will enrol the BEng (Hons) Manufacturing Engineering programme.

Our vision at ASU is to provide our students with a holistic education to develop them into well-rounded individuals who excel both academically and professionally in areas such as leadership, entrepreneurship, social and personal development and growth. The programme is thus aligned closely with the tenets of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE). The framework for NAQAAE was established in 2006 by a presidential decree to enhance the quality of education in Egypt with a mandate to ensure the development of basic reference standards for education - National Academic Reference Standards (NARS).

According to the NARS, quality education that is based on well-defined standards is one of the most important determinants of national sustainable development in Egypt. Therefore, the requirements of the NARS form the basis for the development of Manufacturing Engineering programme at ASU. Thus, the programme is designed to inspire students to be innovative and creative by using appropriate teaching and learning technologies and pursuing independent and life-long learning. Graduates of the programme are expected to be able to apply knowledge of mathematics and natural sciences to develop ways to economically utilize the materials and forces of nature for the benefit of society.

Our graduates are expected to have productive and very rewarding careers in a variety of capacities. Graduates of the programme may work as Manufacturing managers, production line supervisors, mechanical designers and process planners for private and public organizations in multiple disciplines involving manufacturing and industry in its wide spectrum.

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

Dr. Mohammed M. El-Beheiry
Programme Leader

2 INTRODUCTION TO THE PROGRAMME

Programme Philosophy

Nowadays there are rising needs to modernize manufacturing industry to cope with the global challenges of producing cost-effective products, competing at international markets and adapting to rapidly changing technologies for modern industry. Manufacturing Engineering is a complex discipline that requires a great deal of diverse and specialized knowledge. Manufacturing engineers are required by companies involved in manufacturing any kind of products, ranging from machines, equipment and robotics to all consumer products. The Program provides a broad technical background for students, in addition to proficiency in engineering methods, problem-solving and decision-making skills to a variety of manufacturing engineering issues. The aim of the program is to produce manufacturing engineers who will be responsible for the design, selection of materials, specifications and the improvement of production processes and equipment. Responsibility for design and enhancement of manufacturing systems, production management and control, as well as plant maintenance are also required by manufacturing engineers.

Manufacturing engineering program aims to graduate engineers with the ability to deal with the latest developments in the fields of advanced manufacturing, various fields of mechanical, mechatronics and electronic to meet current moral and professional requirements both theoretically and practically. This is done by creating appropriate environment for the development of different skills of students and faculty members and cooperation with competent industrial and research bodies locally and internationally

BEng (Hons) in Manufacturing Engineering Program Graduates may seek jobs at companies involved in manufacturing any kind of products, ranging from machines, equipment and robotics to all consumer products. They often have their choice of challenging positions such as manufacturing engineer, production manager, design engineer, quality specialist, process analyst, maintenance engineer, operations manager, continuous improvement engineer, or technical sales engineer.

Furthermore, a validated degree via a UK HEI will provide the students with a richer competency and skills-set. Finally, the skills which the students will gain on the programme will enhance the civil engineering discipline in Egypt and build capacity for sustainable development of the built environment.

Programme duration and modes of study

The BEng (Hons) Manufacturing Engineering programme is a 4-year full-time degree programme which includes a foundation year and three (3) years for the specialised courses.

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

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

It is possible to move from full-time to part-time study and vice-versa to accommodate any external factors such as financial constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period and the fees students pay annually, depending on the agreed financial arrangements.

Programme aims and objectives

This programme is designed to:

- Apply knowledge of mathematics, science and engineering concepts to the solution of engineering problems.
- Design a system; component and process to meet the required needs within realistic constraints.
- Design and conduct experiments as well as analyse and interpret data.
- Identify, formulate and solve fundamental engineering problems.
- Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.
- Work effectively within multi-disciplinary teams.
- Communicate effectively.
- Consider the impacts of engineering solutions on society & environment.
- Demonstrate knowledge of contemporary engineering issues.
- Display professional and ethical responsibilities; and contextual understanding
- Engage in self- and life- long learning.
- Use of mathematics and physical and engineering sciences and systems analysis tools in engineering products, machines and electro-mechanical systems design and manufacture.
- Work with products and machines designs and manufacturing systems.
- Demonstrate the ability to design, develop, implement, and improve manufacturing systems that incorporates people, materials, information and equipment.
- Operate the inter-disciplinary characteristics of automated and hydraulic systems.
- Use the computer graphics for design, communication and visualization.
- Analyse the interaction between managerial tasks, and the human elements in production and industry in general.

Programme Intended learning outcomes (ILO's)

The graduates of the BEng (Hons) Manufacturing Engineering program should be able to demonstrate the knowledge and understanding of:
Knowledge

- Concepts & theories of mathematics and sciences, appropriate to the discipline.
- Basics of information and communication technology (ICT)
- Characteristics of engineering materials related to the discipline.
- Principles of design including elements design, process and/or a system related to specific disciplines.
- Methodologies of solving engineering problems, data collection and interpretation
- Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
- Business and management principles relevant to engineering.
- Current engineering technologies as related to disciplines.
- Topics related to humanitarian interests and moral issues.
- Technical language and report writing
- Professional ethics and impacts of engineering solutions on society and environment
- Contemporary engineering topics.
- Concepts, principles and theories relevant to Mechanical Engineering and manufacturing;
- Basic science and engineering fundamentals in mechanics, electronics and automation;
- The fundamental manufacturing processes and the most recent technologies that are used in that field. In addition to, the most important materials used in industry, their structure, and their modes of failure.
- Basic electrical, control and computer engineering subjects related to the discipline
- Engineering design principles and techniques.
- The specifications, programming and range of application of CAD and CAD/CAM facilities
- Basics of industrial engineering such as production planning and control, production scheduling, and inventory management.
- The key concepts of quality engineering and reliability and their importance in the production of goods and services.
- Relevant contemporary issues in Production engineering.

Thinking skills

- Select appropriate mathematical and computer-based methods for modelling and analysing problems.
- Select appropriate solutions for engineering problems based on analytical thinking.
- Think in a creative and innovative way in problem solving and design.
- Combine, exchange, and assess different ideas, views, and knowledge

from a range of sources.
- Assess and evaluate the characteristics and performance of components, systems and processes.
- Investigate the failure of components, systems, and processes.
- Solve engineering problems, often on the basis of limited and possibly contradicting information.
- Select and appraise appropriate ICT tools to a variety of engineering problems.
- Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
- Incorporate economic, societal, environmental dimensions and risk management in design.
- Analyse results of numerical models and assess their limitations.
- Create systematic and methodical approaches when dealing with new and advancing technology.
- Apply the principles of mathematics, science and technology in problem solving scenarios in manufacturing engineering;
- Evaluate and appraise designs, processes and products, and propose improvements;
- Use the principles of engineering science in developing solutions to practical manufacturing engineering problems.
- Select appropriate manufacturing method considering design requirements.
- Solve a wide range of problems related to the analysis, design, and construction of production systems.
- Analyze and solve the problems presented by industrial entities.
- Create solutions to mechatronics systems especially to manufacturing, maintenance and interfacing problems in a creative way, taking account of industrial and commercial constraints.

Subject-Based Practical skills

- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.
- Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
- Create and/or re-design a process, component or system, and carry out specialized engineering designs.
- Practice the neatness and aesthetics in design and approach.
- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyse and interpret results.
- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
- Apply numerical modelling methods to engineering problems.
- Apply safe systems at work and observe the appropriate steps to manage risks.

- Demonstrate basic organizational and project management skills.
- Apply quality assurance procedures and follow codes and standards.
- Exchange knowledge and skills with engineering community and industry.
- Prepare and present technical reports.
- Utilize practical systems approach to design and performance evaluation;
- Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly.
- Employ the traditional and modern CAD and CAD/CAM facilities in design and production processes.
- Prepare the process plan for manufacturing
- Operate and maintain mechanical equipment.
- Use basic workshop equipment safely;
- Use laboratory equipment and related computer software;
- Use appropriate computer-based support tools for problem-solving and analysis of results.
- Apply the principles of sustainable design and development;

Skills for life and work (general skills)

- Collaborate effectively within multidisciplinary team.
- Work in stressful environment and within constraints.
- Communicate effectively.
- Demonstrate efficient IT capabilities.
- Lead and motivate individuals.
- Effectively manage tasks, time, and resources.
- Search for information and engage in life-long self-learning discipline.
- Acquire entrepreneurial skills.
- Refer to relevant literatures.

Programme Structure & Content

The BEng (Hons) Manufacturing Engineering degree is a four-year UEL/ASU double award programme, i.e. levels 3–6. The programme conforms to UEL's Academic Framework structure. Essentially, this means that 30-credit modules will be delivered across two semesters (September – May). The modules have been repackaged from ASU existing programme(s) and /or modules, in order to comply with criteria UEL's Academic Framework.

All modules will be taught/delivered and assessed in English. Each module will have a named Module Leader from ASU. The Programme Leader, who has overall responsibility for the day-to-day running of the programme is Dr. Mohammed M. El-Beheiry. Students will pay all tuition/study/workshop/course field trip fees directly to ASU. Details of the programme structure can be seen in below.

Intermediate Awards

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

- A minimum of 120 credits at level four or higher

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

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

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

– In order to gain an University Certificate student will need to obtain 40 credits at level three or higher.

Design of the Programme

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

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

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

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

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

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

Details of the programme structure[1]:

Level	Year	Code	Module title	credit	Core/ Pathway Related
UEL Level 3 Modules Engineering Design BEng (Hons) – ASU Manufacturing Engineering Programme					
3	1	EG11311	Mechanical and Electrical Engineering Principles	30	Core
3	1	EG11312	Engineering Materials and Manufacturing Technology	30	Core
3	1	EG11313	Engineering Mathematics and Fluid Mechanics	30	Core
3	1	EG11314	Engineering Design and Practice	30	Core
UEL Level 4 Modules Engineering Design BEng (Hons) – ASU Manufacturing Engineering Programme					
4	2	EG11421	Mechanical Systems and Design	30	Core
4	2	EG11422	Design for Manufacture	30	Core
4	2	EG11423	Automation for Manufacturing Processes	30	Core
4	2	EG11424	Manufacturing management essentials	30	Core
UEL Level 5 Modules Engineering Design BEng (Hons) – ASU Manufacturing Engineering Programme					
5	3	EG11531	Computer and Automation in Manufacturing	30	Core
5	3	EG11532	Advanced Manufacturing Management	30	Core
5	3	EG11533	Manufacturing Processes	30	Core
5	3	EG11534	Manufacturing Systems and Technologies	30	Core
UEL Level 6 Modules Engineering Design BEng (Hons) – ASU Manufacturing Engineering Programme					
6	4	EG11641	Design Future and Interactions	30	Core
6	4	EG11642	Trends in Modern Manufacturing Systems and Technologies	30	Core
6	4	EG11643	Quality Control and Production Planning	30	Core
6	4	EG11643	Individual Research Project	30	Core
Additional details about the programme module structure: A core module for a programme is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a programme is a module selected from a range of modules available on the programme.					

[1] The listed modules' codes are temporary, and they will be updated latter according to the UEL partner Web Marks Entry (WME) system

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

The following Table shows the content of each module of the MANF programme courses, percentage weighting and the assessment method:

Module Code	Module Name	Bylaw 2013		Bylaw 2018		Assessment Method
		Component of Assessment	Per-centage Weighing	Component of Assessment	Per-centage Weighing	
Design Engineering Program (UEL) Level 3 – (ASU) Level 1						
30Credits	Mechanical and Electrical Engineering Principles	MDP 164 Mechanical Design (1)	50%	EPM116 Electrical Circuits and Machines	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		HUM 014 Engineering Profession, Practice, and Responsibilities	20%	PHM131 Rigid body dynamics	20%	
		PHM 114 Statistics and Probability for Engineering	30%	MDP212 Mechanics of Machines	40%	
30Credits	Engineering Materials and Manufacturing Technology	MDP 132 Structures and Properties of Materials	30%	MDP151 Structures and properties of materials	30%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments Lab data sheets (1st Module) 2 Quizzes 1 Midterm Exam Final Exam
		MDP 121 Manufacturing Technology (1)	30%	MDP182 Metal Forming Theory & Processes	30%	
		MDP 134 Mechanical Behaviour and Testing of Materials	40%	MDP152 Metallurgy & Material Testing	40%	
30Credits	Engineering Mathematics and Fluid Mechanics	PHM 115 Differential Equations and Partial Differential Equations	40%	PHM112 Differential Equations and Numerical Analysis	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments
		MDP 141	35%	MEP111 Thermal Physics	20%	

		Mechanical Engineering Measurements				Lab data sheets (2nd Module) 2 Quizzes 1 Midterm Exam Final Exam
		PHM 113 Calculus for Engineering (3)	25%	MEP221 Fluid Mechanics and Turbo-Machinery	40%	
30Credit	Engineering Design and Practice	MDP 162 Mechanical Engineering Drawing	50%	MDP111 Mechanical drawing	50%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments Lab data sheets (1st Module) 2 Quizzes 1 Midterm Exam Final Exam
		MEP 112 Thermodynamics	50%	MEP211 Thermodynamics	50%	
Design Engineering Program (UEL)Level 4 –(ASU) Level 2						
30Credit	Mechanical Systems and Design	MDP 254 Theory of Machines	35%	MEP231 Measurements & instrumentation	30%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments Lab data sheets (1st& 2nd Modules) 2 Quizzes 1 Midterm Exam Final Exam
		MDP 264 Mechanical Design (2)	40%	MDP211 Machine Elements Design	40%	
		MEP 213 Thermodynamics (2)	25%	MDP282 Non-Conventional Processing	30%	
30Credit	Design for Manufacture	MDP 265 Mechanical Design (3)	40%	MDP112 Machine Construction	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 253 Stress Analysis	40%	MDP251 Casting and Welding (1)	30%	
		HUM 211 Impact of Technology on Society	20%	MDP252 Casting and Welding (2)	30%	
30Credit	Automation and Manufacturing	MDP 273 Metal Removal Processes	40%	MDP281 Metal Cutting Theory and Technologies	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments Lab data sheets (1st Module) 2 Quizzes 1 Midterm Exam Final Exam
		ECE 234 Electronics and Instrumentation	40%	MCT211 Automatic Control	40%	
		EPM 214 Electrical Power Engineering	20%	ECE215 Introduction to Electronics	20%	
30Credit	Manufacturing management essentials	HUM 111 Engineering Economy	40%	PHM111 Probability and Statistics	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments
		PHM 210 Modelling and Numerical Solutions	40%	MDP231 Engineering Economy	40%	

		MDP 240 Metrology Lab (1)	20%	ASU112 Report Writing & Communication skills	20%	2 Quizzes 1 Midterm Exam Final Exam
Design Engineering Program (UEL)Level 5 –(ASU) Level 3						
30Credit	Computer and Automation in Manufacturing	MDP 373 Numerical Control Machines	30%	MDP386 Computer Aided Manufacturing	30%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 366 Automatic Control	35%	MCT313 Automation	35%	
		MDP 350 Industrial Robots	35%	MCT345 Industrial Mechanisms and Robotics	35%	
30Credit	Advanced Manufacturing Management	MDP 389 Selected Topics in Manufacturing Engineering	40%	MDP232 Industrial Project management	30%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 375 Production Facilities	30%	MDP334 Principles of Operation Management	40%	
		HUM 311 Engineering Management	30%	MDP439 Lean Manufacturing System	30%	
30Credit	Manufacturing Processes	MDP 340 Metrology Lab (2)	40%	MDP387 Metrology	30%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 367 Finite Element Applications	20%	MDP385 Manufacturing Processes	40%	
		MDP 374 Metal Forming Processes	40%	MDP462 Polymer Processing Techniques	30%	
30Credit	Manufacturing systems and technologies	MDP 483 Work Study	40%	MDP233 Work Study & Plant layout	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MEP 321 Heat Transfer	35%	MDP331 Maintenance planning & scheduling	25%	
		MDP 365 Mechanical Vibrations	25%	MDP441 Industrial technologies	35%	
Design Engineering Program (UEL)Level 6 –(ASU) Level 4						
30Credit	Design Future and Interactions	MDP 410 Properties and Processing of	35%	MDP414 Product Design and Development	40%	Portfolio of students' work includes a compilation of

		Composites & Ceramics				coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 465 Computer Aided Design (CAD)	40%	MDP490 Dies Design	30%	
		MDP 417 Processing Techniques of Polymer	25%	MDP491 Design of Jigs and Fixtures	30%	
30Credit	Trends in Modern Manufacturing Systems and Technologies	MDP 473 Computer Aided Manufacturing (CAM)	30%	MDP493 Additive Manufacturing	50%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 487 Computer Integrated Manufacturing (CIM)	30%	ASU114 Selected Topics in Contemporary Issues	30%	
		MDP 472 Non-Conventional Material Fabrication and Heat-Treatment Processes	40%	ASU111 Human Rights	20%	
30Credit	Quality Control and Production Planning	MDP 420 Quality Systems	40%	MDP433 Quality Control	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 481 Industrial Organization	40%	MDP335 Production Planning and Scheduling	40%	
		MDP 419 Manufacturing Technology (2)	20%	ASU113 Professional Ethics and Legislations	20%	
30Credit	Individual Research Project	MDP 493 Graduation Project (1)	50%	MDP401 Mechanical Design & Production Graduation Project (1)	50%	Portfolio of students' work includes a compilation of coursework of the 2 modules; each module includes samples of the following: Activities and progress 2 presentation 1 report Final defence
		MDP 494 Graduation Project (2)	50%	MDP402 Mechanical Design & Production Graduation Project (2)	50%	

3 KEY STAFF AND CONTACT DETAILS

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Programme Organisation

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

The Dean of Faculty of Engineering

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

The Programme Leader

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

The Programme Management Team

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

The Module Leaders

Your Module Leaders are responsible for delivery and academic management of the module, including all module assessment tasks. The module leader is responsible for the delivery of an individual module and is tasked with providing the students with the necessary lecture and tutorial material and assessing the work submitted. They will deliver all of the lectures for their module. As far as possible any problems or questions concerning individual modules should be addressed to the Module Leader. In most cases this can be done within seminars, workshops or practical sessions. General academic advice can also be obtained from them.

External Examiners

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

Circumstances in which student can access UEL directly

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

The UEL Academic Link Tutor is appointed to manage the relationship between the Programme Leader at ASU- FoE and UEL. Students may meet the UEL Link Person at Programme Committee Meetings.

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

4 PROGRAMME OPERATION AND STUDENT REGISTRATION

Study Timings and Registration

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

- New students' enrolment in the programme starts two weeks before the starting of the Fall semester, after fulfilling all the programmes requirements and paying the enrolment fees, as recommend by the Programs Administration Council and set by the Council of the Faculty of Engineering.
- Registration for any semester takes place within two weeks before the starting day of the semester. Registration is not final until the full tuition fees of the semester are paid.
- Registration in the Summer semester is optional.
- The student must register 60 credits per semester, after consulting the academic advisor, at the time of registration and according to the yearly rules issued by the Faculty and published in the student's guide. Registration is not final until the student pays the educational service fees for the semester.
- Late registration is not final unless there is a vacancy in the courses, and the student should pay late registration fees besides the prescribed academic service fees, in accordance with the recommendations of the Programmes Administration Council and approval of the Council of the Faculty of Engineering regarding this issue.
- The student may not register in any module without fulfilling all its prerequisites.

- The programme academic regulations are available at ***https://eng.asu.edu.eg/BylawsAndRegulations***
- The Local Attendance and Engagement policy is available at ***https://eng.asu.edu.eg/uploads/uploadcenter/asu_594_file.pdf***
- UEL University's academic regulations are available at: Academic Framework Regulations (see Manual of General Regulations, Part 3)
- ***https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations***

It is essential that you log in to UEL direct and enrol with UEL using the UEL student number that you have be given prior to attending any lectures.

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

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

5 TEACHING, LEARNING AND ASSESSMENT

Learning and Teaching

ASU strives to create an enabling environment conducive to meaningful learning in which students from all backgrounds are supported by committed and qualified staff. The FoE promotes an ethos of reciprocity, service and tolerance and is supportive of academically underprepared students, women, minorities, international students, disabled students, mature or working students and other underrepresented groups. The administration, communication, support services and curricula reflect and value diversity and staff capacity and administrative infrastructure are sufficient to cater for the number of enrolled students so as not to compromise the student's support and developmental needs.

Students have sufficient access to technology to make it possible for them to successfully complete the programme. Information concerning student support services is made accessible to all students. This is mostly facilitated through fully fledged IT laboratories, and free Wi-Fi facilities. Services such as Learning support, additional tutorial support etc. are made available at all phases of a students' journey: on first entering the institution; and to ease the transition from Higher Education into the world of work. Teaching and Learning support to all the learners are provided using all the physical resources available at ASU and also provided by UEL such as online access to journals and databases.

The following summarizes the Learning and Teaching Policy at ASU which will govern this double award collaboration:

- Student evaluation and assessment is based on final exams, midterm exams, quizzes, coursework assignments, course projects, presentations, papers, essays, in/out of class participation, portfolios and many other innovative activities.
- Course instructors in the programme are carefully selected from the distinct full-time world-class faculty members of the Faculty of Engineering at Ain Shams University.
- With the majority of modules being delivered over the whole year there is excellent scope for formative Assessment to stretch and extend the students. Thus, a key feature of the courses is the emphasis on formative feedback and guidance to enable students to develop full understanding of the topics of study, prior to assessment taking place.
- Assessment for these programmes takes the form of examinations, course works, presentations and time constrained assessments.
- Each course syllabus contain: course objectives, textbook, outline, material, assessments, grading policy and outcome. Outlines should contain sections covered every week with reference to chapters/sections in the textbook. The instructor will give the course syllabus to the students in the first class. The syllabus serves as a contract between the instructor and the students.

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

- The student should pass the ASU's requirements, which consist of humanities, social sciences, general culture courses. These courses represent 18 credit hours at ASU selected from a list of courses.
- The student should pass the ASU's College requirements, which consist of basic sciences and engineering courses. These courses must be studied by all students and they represent 46 credit hours.
- The student should perform summer training for 12 weeks during their study duration, and should be conducted during 3 summers. Training must be performed in an industrial/service facility related to the student's program or inside the faculty where it is delivered by staff members. The training must be under the full supervision of the faculty. The student submits their training portfolio to their Academic Advisor, who in turn assesses the outcomes and evaluates it.

ASU Attendance Policy

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

Assessment

The module specifications provide a detailed breakdown of the weighting and volume of assessment. For a formal description of the assessment process students should refer to the Academic Regulations on the UEL website or refer to details in the guide for students.

Assessment Arrangements

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

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

second marked and non-second marked) will be sent to UEL for forwarding to the External Examiner for review.

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

All summative assignments will be marked anonymously where possible and subject to second marking. ASU will conduct a pre-board where all modules and profiles of students will be considered, and this will be fed back to UEL who will consider these at the relevant UEL Assessment Board. The results will be considered at assessment boards, which will be held at UEL.Feedback will be given to all students especially on summative assessment tasks. Normally the module leader will choose how this is given, but generally it will be given individually (within 20 days).

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

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

ASU Assessments vs UEL/ASU Double Assessment Arrangements

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

Students will be asked and expected to retake a module with attendance if a resit opportunity was not successfully passed; however, this depends on the individual profile of the student – taking into consideration UEL policy/rules on retakes. Although reassessment on modules is not permitted on the Egyptian award, yet students are able to review the course work grades and discuss with the instructor the marking of the course work. As for the final exam students are permitted to submit an appeal for revising the marks registration and the completeness of grading the final exam paper. However, modules reassessment is possible on the UEL award according to UEL regulations.

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

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

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

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

Moderation of Assessment

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

Preparing the assessment brief / examination paper

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

Marking of assessments

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

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

Submission of Coursework

The module handbook/guidelines will explicitly detail how coursework should be submitted and these will (using student number, word count, word-processed). Submission dates will be available in the Module Guides and on the VLE.

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

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

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

Extenuating circumstances claims

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

Breaches of Academic Misconduct Regulations

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

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

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

Collusion: cooperation in order to gain an unpermitted advantage. This may occur where students have consciously collaborated on a piece of work, in part or whole,

and passed it off as their own individual efforts or where one student has authorised another to use their work, in part or whole, and to submit it as their own.

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

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

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

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

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

Feedback to Students

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

- timely (provided within 20 working days)
- given in relation to the learning outcomes and assessment criteria
- provided on both coursework and examinations
- clear, relevant, motivating, and constructive
- developmental, enabling you to consolidate learning and achievement
- word-processed where e-submission is not used (unless the nature of the work prevents this e.g. mathematical formula)

- offered in a range of formats appropriate to the module e.g. electronically via Turnitin Grade Mark or other e-Submission tools where used, Audio file, Video file, or Screen cast.

Assessment Boards

Assessment Boards control, consider and adjudicate upon all assessments undertaken by students. The Board comprises a Chair (usually a Head of Department), all those substantially involved such as lecturers/tutors/module leaders and the external examiner(s).

Mapping of assessment schedule to UEL Boards

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

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

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

Grades of the MANF Program modules

The points of each credit hour are computed as follows:

Ain Shams University			University of East London
Percentage of total mark at ASU	**Grade**	**Points for GPA**	**Percentage equivalent at UEL**
97% and higher	A+	4.0	95% and higher
93% to less than 97%	A	4.0	82% to less than 95%
89% to less than 93%	A-	3.7	70% to less than 82%
84% to less than 89%	B+	3.3	66% to less than 70%
80% to less than 84%	B	3.0	63% to less than 66%
76% to less than 80%	B-	2.7	60% to less than 63%
73% to less than 76%	C+	2.3	56% to less than 60%
70% to less than 73%	C	2.0	53% to less than 56%
67% to less than 70%	C-	1.7	50% to less than 53%
64% to less than 67%	D+	1.3	45% to less than 50%
60% to less than 64%	D	1.0	40% to less than 45%
Less than 60%	F	0.0	Less than 40%

Each module composed of two or three components (ASU Courses) and the weight of each component in the module evaluation is given in the module mapping table.

The marks of each module will be as specified on the module specification as in section 6.

Other general rules:

1. Late submission/breach of regulations will cause failure in the entire portfolio assessment.

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

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

Certificates/Awards

For the UEL/ASU double award programme, students will be issued a UEL certificate and a UEL Diploma Supplement. In addition, ASU will also issue their own certificate to students who have completed the programme. The calculation of the class of degree will be in accordance with UEL's degree classification calculations.

For students who have transferred to UEL (on campus in London): a UEL certificate will be issued together with a UEL Diploma Supplement. The calculation of the degree classification will be based on the proportion of the programme studied at UEL as per UEL's existing rules and regulations. b)ASU will determine at its discretion if credits can be brought back to ASU where the calculation of the class of degree will be determined by ASU.

References to student policies

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

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

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

Reference to Appendix E containing information on Academic Misconduct and Plagiarism. Assessment and Feedback Policy available at:

https://eng.asu.edu.eg/uploads/uploadcenter/asu_594_file.pdf

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

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

Every component of assessment that contributes to an award, at all levels, is subject to internal and External Examiner moderation. This ensures the maintenance of standards both internally and in comparison, with similar programmes delivered at other higher education institutions. The UEL Assessment and Feedback Policy outlines the process for the various stages of the marking process and is available at***https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Assessment-and-Feedback-Policy***

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

Further information is available at Appendix E and the weblinks below

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

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

Assessment Criteria

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

As your degree progresses, you will be assessed in a number of different ways. In addition to examinations, you will have a range of coursework assessments such as reports or presentations, for which you will be given clear guidance by the module leader including how you will be assessed for that piece of work.
The section below gives you a general guideline of what we are looking for at different levels of the programme:

Level 3

- Recall factual information.
- You can analyse and evaluate the information.
- You can follow guidelines in creating solutions to straightforward problems.

Work of a better standard usually reflects an approach where

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

Your work is presented with care and forethought.

Level 4

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

Work of a better standard usually reflects an approach where

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

Level 5

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

Work of a better standard usually reflects an approach where

- You have required minimal additional assistance

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

Level 6

- Your work displays a comprehensive and detailed knowledge of the topic with areas of specialisation showing depth of understanding.
- You are aware of current developments.
- You can analyse data and situations in a range of different contexts.
- You can develop creative and innovative solutions with little guidance.
- You can review evidence critically and use your findings to support conclusions and recommendations.

Work of a better standard usually reflects an approach where

- You have not required any additional assistance
- You have proved you can manage your own learning and make full use of a wide range of resources.
- You have been confident in your ability to solve problems.
- You have communicated your work in a thoroughly professional and coherent manner.

Research Integrity

The University of East London conducts high quality, innovative research and is guided by the principles and standards outlined in The Concordat to Support Research Integrity, 2012; the University's Code of Practice for Research; Code of Practice for Research Ethics and Procedures for the Investigation of Misconduct in Research, for staff and students. The Concordat seeks to provide a national framework for good research governance and its conduct and applies to all fields of research supporting a research environment that is underpinned by ethical values. The University adheres to its responsibility to support and promote the highest standards of rigour and integrity and embed a culture of honesty, transparency and care and respect for all participants and subjects of research. The University is committed to ensuring that research is conducted with integrity and good research practices are upheld.

Research Ethics

Research involving human participants, human material, personal or sensitive data or non-human animal should comply with all legal and ethical requirements and other applicable guidelines. The University has established various Research Ethics Committees' at University and School level to ensure appropriate ethical review of research projects involving human participation, human material or personal data. A proposed research study may require ethical approval from the main University

Research Ethics Committee (UREC), one of the School Research Ethics Committees' (SRECs) or where applicable, Collaborative Partner Research Ethics Committees' (SRECs and CRECs consider applications for ethical approval from taught master's and undergraduate students.

Research involving human participation or human material will require formal approval from UREC, SREC or CREC before the research commences. Students should submit research projects involving human participants, human material, personal or sensitive data or non-human animal for ethical review, to one of the University's Research Ethics Committees' listed above and abide by the outcome of the review. The Research Ethics Committees' ensure that appropriate procedures for obtaining informed consent are observed, having particular regard to the needs and capacity of the subjects involved. The dignity, rights, safety and well-being of participants must be the primary consideration in any research study. Appropriate care must be taken when research projects involve vulnerable groups, such as elderly people, children, people with mental ill-health and covert studies or other forms of research which do not involve full disclosure of the research to participants. The University's Research Ethics Committees' also ensure that research projects of this nature have been submitted for approval to all applicable external bodies; ethical, regulatory or otherwise.
https://uelac.sharepoint.com/ResearchInnovationandEnterprise/Pages/Ethics.aspx

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

No data collection or recruitment of human participants for the research study may commence until ethical approval from UREC; SREC; CREC; or a NHS or Social Care Research Ethics Committee is confirmed. Students may only use data where ethical approval has been obtained and in accordance with the conditions specified in the approval letter, throughout the length of the study. Amendments to an approved research study must be submitted to the relevant Research Ethics Committee for review and ethical approval obtained before any changes to the project may be implemented. Ethical approval for research projects cannot be granted retrospectively. Research conducted with human participants or human material, without ethical approval from the appropriate Research Ethics Committee, is considered misconduct in research and as such students may be subject to formal investigation, which may result in the termination of the research project.
https://uelac.sharepoint.com/ResearchInnovationandEnterprise/Pages/Ethics.aspx

Risk Assessment

The University has a duty of care to its researchers and a responsibility to safeguard the welfare of research participants. Risk management should be considered at the same time as planning a research project. A comprehensive risk assessment helps to identify and evaluate potential hazards associated with the research project. Students in consultation with their supervisors should put control measures in place to minimise the likelihood of an event occurring that will cause harm. A risk assessment must be completed for research taking place within and outside of the University, fieldwork and research conducted overseas, before the project commences. The risk assessment should be completed by the student in collaboration with the supervisor and authorised by the Dean of the School or Associate/Acting Dean. If students consider that human participants in their, or others,' research are subject to unreasonable risk or harm, they must report the concerns to their supervisor and, where necessary, to the appropriate regulatory authority. Similarly, concerns relating to the improper and/or unlicensed use or storage of human material or non-human animal or the improper use or storage of personal data, should also be reported.

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

6 MODULE SPECIFICATIONS

Module Specification

Module Title:	**Module Code:** EG11311	**Module Leader**:
Mechanical and Electrical Engineering Principles	**Level:** 3 **Credit:** 30 **ECTS credit:** 15	Dr. Mohammed M. El-Beheiry Dr. Ayman A. Abdel Wahab

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

Location of delivery: ASU, Egypt

Main aim(s) of the module:

This module aims at equipping students with the basic knowledge of Mechanics, electrical circuits and electrical machines needed by mechanical engineers. The module will provide students with the technique sufficient to analyse the Kinematics of single rigid bodies, Impact and impulsive motion, Dynamics of different mechanism, electrical circuits and DC and AC electrical machines.

Main topics of study:

Mechanical Engineering Principles:
Geometrical properties: Moment of area, mass moments of inertia for single and composite bodies, product of inertia and principal moments of inertia. Kinematics of single rigid body: Types of motions, Kinetics of single rigid body. Work and energy with application on conservative and non-conservative fields of forces, Impact and impulsive motion, Linear and angular Impulses and momentums, Impact of rigid bodies and introduction to Analytical mechanics.

Mechanisms: Definitions: open-chain systems, closed-chain systems constraints, degrees of freedom, reference frames. Kinematics: position analysis, velocity analysis, acceleration analysis, rotation representations, Euler angles, rotation matrix, homogeneous transformation matrix, direct and inverse kinematics. Dynamics: Equilibrium of machines, D'Alembert's principle, force analysis, power analysis, Friction and inertia-effects, centre of percussion, flywheel design. Kinetics of single degree of freedom mechanisms: Free body diagrams, Static equilibrium, Equation of motion. Cams: Types of cams, types of followers, kinematics and kinetics of cam. Gears: Concept of gear motion transmission, gear geometry and gear trains.

Electrical Engineering Principles:
Electrical Circuits: Constants and variables of electrical Circuits, elements of electrical circuits, DC circuits, Network theorems, Sinusoidal alternating current circuits at steady state, Phasor diagram representation of sinusoidal quantities, Applications of network theorems on alternating current circuits, Electric power in alternating current circuits, complex power calculations, power factor. Electrical machines: Three phase Circuits and systems, Magnetic circuits, Transformers, DC Machines, Synchronous machines, Induction machines.

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

Knowledge
1. Recognize the benefits and importance of studying power system components such as generating stations, Transformer substations, and three-phase systems.
2. Define the different characteristics governing dc machines.
3. Describe and define the fundamental concepts of: "Kinematic chain"," link, joints, open kinematics chain, closed kinematics chain"," Velocity, Acceleration, and Force Analysis".
4. Recognize the functions of different mechanisms.
5. Illustrate the different characteristics of 3 phase induction motors.

Thinking skills
6. Analyse a mechanism for a specific application.

Subject-based practical skills
7. Design and perform a mechanism for machine.
8. Develop innovative solutions for the problems of practical mechanisms in industrial applications

Skills for life and work (general skills)
9. Use the required knowledge to select the appropriate model to analyse and solve specific electrical loadings of a transformer, DC and AC. motors.
10. Express a range of ideas using appropriate spoken and written English, demonstrating understanding of academic writing conventions and styles as specific to the subject discipline

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	1,2,5,9
Portfolio 2: (42 hours) Portfolio of students' work includes samples of the following: Course Work Assignments	20%	3, 10

Quizzes Mid term Written Exam **Portfolio 3: (84 hours)** Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	4, 6-8

Reading and resources for the module:

Core

1. James W. Nilsson, Susan Riedel, 2014, *Electric Circuits,* 10th edn., Pearson.
2. Fathe Allythi, 2017, *Transformers & Electric Machinery Principles: Transformers & Traditional Rotating Machinery Basic Fundamentals*, LAP LAMBERT Academic Publishing.
3. Anil V. Rao, 2011 *Dynamics of Particles and Rigid Bodies: A Systematic Approach*, , Cambridge University Press.

Recommended

1. Khurmi, R. et al., 2005, *Theory of Machines*, 14th edn., S. Chand & Co. Ltd, New Dehli.
2. William Cleghorn, Nikolai Dechev, 2014, *Mechanics of Machines,* 2nd edn., Oxford University Press.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 75 hours 45 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 45 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11312	**Module Leader**:
Engineering Materials and Manufacturing Technology	**Level:** 3 **Credit:** 30 **ECTS credit:** 15	Prof. Dr. Ahmed M. El-Sabbagh Dr. Ayman A. Abdel Wahab

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

Location of delivery: ASU, Egypt

Main aim(s) of the module:

This module aims at providing students with the basic understanding of engineering materials and their structure, mechanical testing of materials and forming processes. Students will be able to perform various mechanical tests of materials and calculate the forming forces needed for different metal forming processes.

Main topics of study:

Engineering materials: metals, polymers, ceramics, and composites. **The internal structure of material:** atomic structure, atomic arrangement, microstructure, and macrostructure. Good exploitation of the material requirements for a set of properties suitable for this use. **Material properties:** physical, chemical, mechanical, electrical, thermal, and optical properties. Relationship between material properties and its internal structure, method of synthesizing, manufacturing, processing. The general treatment of the principles and problems of engineering materials and testing with specific reference to the mechanical properties. **Static and dynamic testing:** tension, compression, bending, shear, hardness, impact, creep and fatigue. Other topics are also included namely the types of fracture and the non-destructive testing of materials.

Deformation and recrystallization, Cold and hot working, Strain hardening, Analysis of stress and strain, Forging and its types, calculation of loads required to metal forming, Forging and dimensional changes, Calculation of load during friction and frictionless drawing and upsetting, Rolling and Calculation of load, Torque and rolling mill power, Extrusion and metal flow, Extrusion pressure diagram, Calculation of friction and frictionless extrusion pressure and parameters affecting extrusion, Wire and tube drawing and wire drawing die, Calculation of friction and frictionless wire drawing load, Stress strain curve and maximum reduction permissible, Deep drawing and dimensional changes in flange and wall thickness, Calculation of deep drawing load, Redrawing and parameters affecting deep drawing.

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Identify various types of crystal systems and crystal structures.
2. Classify various types of polymers.
3. Describe engineering and true stress-strain behaviour of any material;
4. Discuss the different type of applied loading, static or dynamic, and definitions of the mechanical properties related to different loading;

Thinking skills
5. Predict the failure section shape of ductile and brittle metals.
6. Evaluate some technological parameter for forming processes.

Subject-based practical skills

7. Design a logical procedure for microscopic examination.
8. Apply previous experience using the universal testing machine;
9. Perform forming process and use different forming tooling

Skills for life and work (general skills)
10. Suggest a suitable forming process to produce a certain product.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.
Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (63 hours) Portfolio of students' work includes samples of the following: Course Work Lab Data Sheet Quizzes Mid term Written Exam	30%	1-3
Portfolio 2: (63 hours) Portfolio of students' work includes samples of the following: Course Work Lab Data Sheet Quizzes Mid term Written Exam	30%	6, 9, 10
Portfolio 3: (84 hours) Portfolio of students' work includes samples of the following: Course Work Lab Data Sheet Quizzes Mid term	40%	**4,5,7,8**

Written Exam (210 hours)		

Reading and resources for the module:

Core

1. Norman E. Dowling, 2012, *Mechanical Behavior of Materials*, 3rd edn., Pearson Prentice Hall.
2. Vukota Boljanovic, 2004, *Sheet Metal Forming Processes and Die Design,* Industrial Press, Inc.
3. U C Jindal, 2012, *Material Science and Metallurgy,* 1st edn., Dorling Kindesley Pearson Education

Recommended

1. M.F. Ashby, 2010, *Materials Selection in Mechanical Design,* 4th edn,. Butterworth-Heinemann.
2. Kyriakos Komvopoulos, 2017, *Mechanical Testing of Engineering Materials*, 2nd edn., Cognella Academic Publishing

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 105 hours 45 hours 75 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 75 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11313	**Module Leader**:
Engineering Mathematics and Fluid Mechanics	**Level:** 3 **Credit:** 30 **ECTS credit:** 15	Dr. Mohammed M. El-Beheiry Dr. Ayman A. Abdel Wahab

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

Location of delivery: ASU, Egypt

Main aim(s) of the module:

In this module aims at enabling students to solve differential equations using exact and numerical methods, to understand and use Gas law, first law of thermodynamics and basics of fluid mechanics. Students will be introduced to the main turbo machinery understanding their working theories and able to select them.

Main topics of study:

First Order Differential Equations, Higher Order Differential Equations, Laplace Transform, Fourier Series, Partial Differential Equations, Numerical Methods for Solving Ordinary Differential Equations, Numerical Methods for Solving Partial Differential Equations.

Thermal System, Control Volume, States of the Working Medium, Processes and Cycles, Calculation of Work, Heat Exchange with the Surroundings, Ideal Gases, Specific Heat at Constant Volume, Specific Heat at Constant Pressure, Equation of State, Pure Substances, Phase Equilibrium, Tables of Thermodynamic Properties, Internal Energy, Enthalpy, First Law of Thermodynamics on Closed Systems, First Law of Thermodynamics on Steady State Steady Flow Open Systems, The Case of Uniform State Uniform Flow, Application on Reciprocating Compressors, Ideal Gas Mixtures.

Properties of Fluids, Density, Pressure, Pressure Measurement, Forces on Submerged Bodies, Viscosity, Viscous Boundary Layers, Continuum Hypothesis, Streamlines, Velocity and Acceleration, Continuity Equation, Classification of Flow Fields: Pipe Flow, Jet Flow, Wake Flow, Boundary Layer Flow, Flow in Closed Conduits, Bernoulli's Equation, Major and Minor Losses in Pipes, Laminar and Turbulent Flows, Similitude and Dimensional Analysis, Lagrangian and Eulerian Coordinates, Transport Theorem on a Control Volume, Navier Stokes Equation, Flow around Immersed Bodies, Drag and Lift Forces, Compressible Flow, Stagnation Properties, Mach Number and Sonic Velocity, Equations of Gas Dynamics, Flow through Nozzles, Shock Waves, Classification of Turbo-Machines, Operation of Pumps, Series and Parallel Operation, Selection of Pumps

Learning Outcomes for the module

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

Knowledge

1. Define different numerical integration methods, interpolation, the best estimate curve to represent data and system of linear equations
2. Define the methods used to obtain roots of nonlinear equations and techniques for solving ordinary differential equations.
3. Define the concept of the energy, and different basic concepts like properties, state, process, and equilibrium
4. Identify the difference between the ideal gases and the pure substances

Thinking skills

5. Identify the hydrostatic forces on submerged surfaces
6. Recognise the basic equations of fluid mechanics: continuity, momentum, energy and Bernoulli equations
7. Analyse the forces acting on immersed bodies

Subject-based practical skills

8. Apply numerical integration and numerical solution of differential equations to solve practical engineering problems.
9. Design and perform experiments in the lab and field within proper technical, safety and ethical framework.

Skills for life and work (general skills)

10. Use the required knowledge identify the dimensionless numbers using Dimensional analysis.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam	40%	1,2,8,10
Portfolio 2: (42 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	20%	3,4
Portfolio 3: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam (210 hours)	40%	**5,6,7,9**

Reading and resources for the module:

Core

1. Steven C. Chapra and Raymond P. Canale, 2010, *Numerical Methods for Engineering,* 6th edn, McGraw-Hill.
2. F. M. White, 2012, *Fluid Mechanics* 4th edn.., McGraw-Hill.

Recommended

1. Kreyszig E., 2006 *Advanced Engineering Mathematics,* 9th Edn, John Wiley & Sons.
2. Yunus A. Cengel & John Cimbala, 2009, *Fluid Mechanics Fundamentals and Applications" Edition in SI units*, McGraw Hill.

Indicative learning and teaching time	**Activity**

(10 hrs per credit):	
1. Student/tutor interaction: 105 hours 90 hours 15 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 90 hours	 Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Engineering Design and Practice	**Module Code:** EG11314 **Level:** 3 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof. Dr. Adel M. El-Sabbagh Dr. Ayman A. Abdel Wahab
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

In this module students will be acquainted to the machine elements and their design consideration, dimensional and geometrical tolerances performing some excises on mechanical equipment. It is intended in this module to educate students on the use of drafting software and equip them with the elementary knowledge of CAD software.

Main topics of study:

Introduction to Machine parts and assembly drawing, Types of threaded fasteners and washers, Internal and external Thread Standards, definitions and drawings, bearing drawings, types of fittings, Fits and Tolerances, Geometrical Tolerances, Surface Finish. Exercises on assembly drawings such as: crane hook, stuffing box, valves, grinding wheel drive, worm and worm gear, machine vice, hand press, transmission shaft,

Introduction to solid modelling on a CAD software such as Solid works, Inventor, or any other CAD, Sketcher workbench, Solid works features: applied features, pattern features, fillets, design tables. 3D Modelling techniques; 3D Part design, Parametric part design. 3D Assembly. 3D animation. Drafting and 2D drawings: basics, cross sections, dimensions, fits and tolerance. Sheet metal design; Weldment features.

Heat Engines, Refrigerator and Heat Pump, Second Law of Thermodynamics, Kelvin Plank Statement, Clausius Statement, Clausius Inequality, Entropy, Irreversibility, Reversible Process, Entropy Change of a Reversible Process, Entropy Change of Solids and Liquids, Entropy Change of Ideal Gases, Gibbs Relations, Isentropic Process, Entropy Increase Principle, Exergy and Availability, Reversible Work, Exergy Destruction Principle, The Second Law Efficiency, Air Standard Cycles, Vapor Cycles, Property Diagrams.

Learning Outcomes for the module

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

Knowledge

1. Identify basic machine element.
2. Define various types of geometrical and dimensional tolerances.
3. Recognize the of real gas and combustion characteristics in actual and practical engineering processes.
4. Recognize pressure and temperature values and measuring methodologies in real life industrial situations.
5. Identify components and elements of thermodynamic machines they shall encounter in industrial installations

Thinking skills

6. Develop construction and working drawing of assemblies.
7. Analyse problems, conclude solutions and demonstrate creative thinking.

Subject-based practical skills

8. Use CAD software in producing engineering drawings.
9. Produce 3D animation of assemblies.

Skills for life and work (general skills)
10. Use appropriate thermodynamic charts and tables

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (105 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	50%	1, 2, 6, 8, 9
Portfolio 2: (105 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam (210 hours)	50%	3, 4, 5, 7, 10

Reading and resources for the module:
Core

1. Thomas French, Jay Helsel, 2002, *Mechanical Drawing: Board and CAD Techniques, Student Edition* ,13th edn., McGraw-Hill Education.

2. Yunus Cengel and Michael Boles, 2014, *Thermodynamics: An Engineering Approach*, 8th edn., McGraw Hill Inc.

Recommended

1. Cengel Bole, 2017, *Thermodynamics,* 8th edn., McGraw Hall India
2. Y. V. C. Rao, 2004, *An Introduction to Thermodynamics*, Universities Press.
3. David A. Madsen and David P. Madsen, 2016, *Engineering Drawing and Design,* 6th edn., Cengage Learning

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 60 hours 75 hours 45 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 120 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Mechanical Systems and Design	**Module Code:** EG11421 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Ayman A. Abdel Wahab
Pre-requisite: EG11314 Engineering Design and Practice	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

In this module the measurement of various mechanical systems is introduced to students, in addition to the stress analysis of mechanical elements and systems to be able to design such systems and finally the non-conventional machining techniques will be introduced and how machine elements design may change on using such technologies.

Main topics of study:

Characteristics of Sensors, Flow rate Measurement Principles, Orifice-Meter, Venturi-Meter, Coriolis Flow Meter, Turbine Flow Meter, Rotameter, Velocity Measurements, Pitot Tube, Vane Anemometer, Hot Wire Anemometer, Laser Doppler Anemometer, Particle Image Velocimetry, Pressure Measurement, Manometer, Bourdon Tube Gauge, Piezoelectric Sensor, Temperature Measurement, Thermometer, Thermocouple, Thermistor, Optical Pyrometer, Rotational Speed Meters, Tachometer, Torque Measurement, Strain Gauges, Gas Analysis, Electro-Chemical Gas Analyzer, Accuracy, Precision, Statistical Methods Error Analysis and Uncertainty.

Introduction to Design Concepts, General Concepts of (Deflection, Buckling and Thermal Stresses), Design for Fatigue, Design of Machine Elements (Bolts, Power Screws, Rivets, Keys, Welded Joints, Springs), Design of Power Transmission Elements (Shafts, Couplings, Gears, Belt Drives, Chain Drives), Selection of Bearings, Design of Pressure Cylinders. Use of interactive Finite Element computer programs for problem solving is illustrated and used.

Design Electro-chemical machining systems, Design of electric discharge machining system, Design of Laser Beam Machining (LBM) machines, Design of Water Jet Machining (WJM) and Abrasive Water Jet Machining (AWJM) machines, Rapid Prototype technique and additive manufacturing and its relation to design changes.

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Define various errors of measuring instruments
2. Define the mechanical design systems.
3. Explain the system performance characteristics.
4. Recognize the combination between different processes for hybridization.

Thinking skills
5. Choose methods for solving complicated design systems.
6. Design and analyse mechanical systems effectively.
7. Predict various aspects of design systems.
8. Determine the controlling factors affecting productivity

Subject-based practical skills
9. Use the measuring instruments safely and correctly.

Skills for life and work (general skills)
10. Use the required knowledge to select a suitable process for a specific object.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam	30%	1,9
Portfolio 2: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	2,3,5,6,7
Portfolio 3: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam (210 hours)	30%	**4,8,10**

Reading and resources for the module:

Core

1. Alan S Morris Reza Langari, 2015, *Measurement and Instrumentation*. 2nd edn, El Sevier publishing.
2. Shigley, J.E., 2008. *Mechanical Engineering Design*, 8th edn, McGraw Hill, Budynas−Nisbett.
3. G.S. Sawhney, 2015, *Manufacturing Science Volume- II,* I K International Publishing House

Recommended

1. Gupta, Kapil, Jain, Neelesh Kumar, Laubscher, R. F. 2016, *Hybrid Machining Processes Perspectives on Machining and Finishing*, Springer Verlag.
2. ASQ Measurement Quality Division and Editor Jay L. Bucher, 2015, The Metrology Handbook, 2nd edn., Pearson.

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

90 hours 30 hours 105 hours	Lectures Tutorials Laboratories/Practical
2. Student learning time: 75 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11422	**Module Leader**:
Design for Manufacture	**Level:** 4 **Credit:** 30 **ECTS credit:** 15	Dr. Mohammed M. El-Beheiry Dr. Ayman A. Abdel Wahab
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite: EG11421 Mechanical Systems and Design	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module aims at increasing the students ability in designing mechanical components and relate this designs to manufacturing techniques taking into consideration casting and welding requirements.

Main topics of study:

Loading Diagrams, General concepts of Stress and Strain, Types of Stresses (Normal Stresses and Shear Stresses), Combined Stresses, Theories of Elastic Failure, and Safety Factor. Constructional details as affected by manufacturing, assembly, and strength considerations, Connections (Cantering, Flanged, Riveted, Keyed, Splined, Screwed), Power Screw and its joints, Seals, Springs, Stress Concentrations, Reverse Engineering.

Metal casting technology: Introduction, Solidification processing, Liquid metals, Principles of solidification, Primary (wrought) and casting, Metals and alloys, Production of primary metals, Production of shaped casting, Patterns, Moulding techniques: Moulding techniques and dynamics, Melting procedures and equipment, Design considerations, Structure, Properties and defects of casting, Casting process selection, Casting techniques: die casting, continuous casting, centrifugal casting, ribbon casting, rheocasting, investment casting, casting defects and remedy, Codes of cast inspection., Design considerations, Computer applications in metal casting and flow patterns. Computer applications in metal casting, Quality control in casting, advanced casting processes.

Metal Welding Definition, Welding Joints, Welding Standards, Welding Symbols used in design drawings, Fusion Welding Processes, Solid State Welding Processes, High Energy Welding Processes Design for welding, Weldability & Cracking Susceptibility, Welding Defects, and Inspection of Welded Joints.

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Identify different types of stress
2. Recognize joining methods and mechanical connections.
3. Identify different types of metal casting.
4. Define castings defects.
5. Recognize castings design consideration.

Thinking skills
6. Design different mechanical elements.

Subject-based practical skills
7. Design various weld types.

8. Perform welding inspection procedures.
9. Use welding standard and symbols efficiently.

Skills for life and work (general skills)

10. Provide solutions for engineering problems in mechanical design, comprehensive analytical skills

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.
Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	1,2,6,10
Portfolio 2: (63 hours) Portfolio of students' work includes samples of the following: Course Work Lab data Sheet Quizzes Mid term Written Exam	30%	3,4, 7
Portfolio 3: (63 hours) Portfolio of students' work includes samples of the following: Course Work Lab Data Sheet Quizzes Mid term	30%	**5,8,9**

Written Exam (210 hours)		

Reading and resources for the module:

Core

1. Richard G. Budynas, J. Keith Nisbett, 2011, *Shigley's Mechanical Engineering Design*, 19th edn, Mc Graw Hill.
2. S. Kalpakjiam, 2006, *Manufacturing Engineering and Technology*, 5th edn, Pearson Prentice Hall.
3. John Campbell, Complete Casting Handbook: Metal Casting Processes, Metallurgy, Techniques and Design, *2nd edn.,* Butterworth-Heinemann

Recommended

1. Gitin M Maitra, L V Prasad, 2006, *Handbook of Mechanical Design*, 2nd edn, Tata Mc Graw-Hill Publishing Company Limited.
2. Jeffus Larry F. Et. Al, 2012, Welding and Metal Fabrication, Cengage India

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 90 hours 60 hours 45 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 105 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Automation for Manufacturing Processes	**Module Code:** EG11423 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Accos. Prof. Dr. Mohamed I. Awad Dr. Mohammed M. El-Beheiry

Pre-requisite: EG11311 Mechanical and Electrical Engineering Principles	**Pre-cursor:** None
Co-requisite:	**Excluded combinations:** None

Location of delivery: ASU, Egypt

Main aim(s) of the module:

The aim of this module is to enable students to understand and design automated systems for manufacturing processes. The module also aims at introducing the basics of electronics to students and components of automated machinery.

Main topics of study:

Principles of machining, Materials of cutting tools, Turning machines, forces and processes, Drilling machines, forces and processes, Shaping and planning machines, forces and processes, Milling machines, forces and processes, Grinding machines and processes, Methods of tools and work piece fixation, Machining time, Sequence of Technological processes and operations, process sheet, operation sheet. Screws manufacturing, Gear cutting.

Diode and Zener models, diode applications: clamping, voltage doupler, clipping, rectification. Opamp model, opamp applications: Inverting, non-inverting, buffer, summing, filters, Schmitt trigger, oscillators. Analog and Digital signals. A/D and D/A converters.

Introduction, Examples in: (Robotics, CNC Machines, Internal Combustion Engine (ICE), Industrial Furnaces, Process control, Servos, … etc.). Concepts and Fundamentals of open loop, closed loop, cascaded and feedforward control systems. The application of modelling techniques for control systems analysis. Determination of the plant and system responses in the time and frequency. The industrial control equipment components and the corresponding specifications. The control system analysis tools and performance evaluation. Design control system compensators using the methods of Root-Locus, Frequency response, and pole- placement. P, PI, and PID controller tuning.

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Comprehend the physical phenomena encountered in machining.
2. Explain the behaviour of workpiece and tool materials during cutting
3. Describe the technical specifications of machining tools
4. Define the fundamentals of low and high power electronic components, related manufacturing systems and their applications.
5. Define and explain of the importance robots in industrial.
6. Recognize the components utilized in conventional industrial robots.

Thinking skills
7. Solve electronic engineering problems and search for optimized solutions
8. Choose and design a robot for a given task.

Subject-based practical skills
9. Design electronic engineering components and systems for applications in manufacturing.

Skills for life and work (general skills)

10. Develop innovative solutions for the practical problems in industrial applications.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content, and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam	40%	1,2,3,10
Portfolio 2: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	5, 6, 8, 9
Portfolio 3: (42 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam (210 hours)	20%	**4, 7**

Reading and resources for the module:

Core

1. David A. Stephenson, John S. Agapiou, 2016, *Metal Cutting Theory and Practice*, 3rd edn, CRC Press, Francis and Taylor Group.
2. Farid Golnaraghi and Benjamin C. Kuo, 2010, *Automatic control systems*, John Wiley & Sons, Inc..
3. A. Sedra & K. Smith, 2004, *Microelectronic Circuits*, Holt, Rinehart and Winston.

Recommended

1. Milton Clayton Shaw, 2005, *Metal Cutting Principles*, Oxford series on advanced manufacturing, Oxford University Press.
2. Ogata, K., 2002, *Modern Control Engineering*, 4th edn., Prentice Hall Int.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 120 hours 45 hours 75 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 60 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Manufacturing management essentials	**Module Code:** EG11424 **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof. Dr. Nahid A. Afia Dr. Mohammed M. El-Beheiry
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module aims at helping students to understand the basic tools, techniques and concepts needed in managing manufacturing facilities

Main topics of study:

Review on Probability, Bayes' Theorem, Random Variables (Continuous and Discrete), Probability Distributions, Data Description, Descriptive and Inferential Statistics, Measures of Central Tendency and Dispersion.

Origins of engineering economy, Principles of engineering economy, Design and manufacturing processes and EE, Cost estimation and cost terminology, Accounting, Balance sheet, Profit loss statement, Concept of equivalence, Money time relationships, Simple and compound interest rates, Single amounts and uniform series, Increasing and decreasing gradient, Application of money, Time relationships, Present value, Internal rate of return, External rate of return, Payback period, Evaluation of alternatives for different useful life and study period, Depreciation methods, Replacement analysis, Determination of the economic life of challenger and defender, Engineering economy techniques for evaluation of public projects.

Typography and writing, Formal report components, types of engineering reports, content and appearance, communication types, nonverbal communication, memo, letter, email and social media, infographics in reports and presentations, types of graphs, how to evaluation written material and oral presentations.

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Recognize continuous probability distributions: Normal distribution, standard normal distribution and exponential distribution
2. Identify measures of central tendency and the measures of dispersion.
3. Identify the coefficient variation and coefficient of skewness.
4. State the basic elements of economic tools.
5. Describe the basics of problem solving of time value of money in case of uniform series.

Thinking skills
6. Select best economical alternative

Subject-based practical skills
7. Use the knowledge of engineering economy to take replacement decision.
8. Summarize the results of the modelling process to management and other non-specialist users of engineering analyses.

Skills for life and work (general skills)

9. Organize data in Frequency distributions and graphs.
10. Express a range of ideas using appropriate spoken and written English, demonstrating understanding of academic writing conventions and styles as specific to the subject discipline.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	1,2,3,9
Portfolio 2: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	4-7
Portfolio 3: (42 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	20%	**8, 10**

(210 hours)		

Reading and resources for the module:

Core

1. D. Montgomry and G. Runger, 2003, *Applied Statistics and Probability for Engineers*, 3rd edn, , John Wiley and Sons.
2. Blank and Tarquin, 2013 *Basics of Engineering Economy*, 2nd edn, McGraw-Hill Education,
3. David Beer, and David McMurrey, 2009, *A Guide to Writing as an Engineer*, 3rd edn, John Wiley & Sons, Inc.,

Recommended

1. Jim Morrison, 2009, *Statistics for Engineers: An Introduction,* John Wiely
2. John A. White, Kellie S. Grasman, Kenneth E. Case, Kim LaScola Needy, David B. Pratt, 2013, *Fundamentals of Engineering Economic Analysis,* John Wiley & Sons, Inc.,

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 90 hours 60 hours	 Lectures Tutorials
2. Student learning time: 150 hours	Essential and background reading, tutorial reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11531	**Module Leader**:
Computer and Automation in Manufacturing	**Level:** 5 **Credit:** 30 **ECTS credit:** 15	Accos. Prof. Dr. Mohamed A. Awad Dr. Mohammed El-Behiery &

Pre-requisite:EG11423 Automation for Manufacturing Processes	**Pre-cursor:** None
Co-requisite:	**Excluded combinations:** None

Location of delivery: ASU, Egypt

Main aim(s) of the module:

This module aims at equipping students with the importance of using computers in the manufacturing sector in general to control the whole manufacturing process including, planning, control, scheduling, designing, production etc**.**

Main topics of study:

Computer technology, The foundations of CAD/CAM/CIM. Computer aided design: Fundamentals of CAD, The design process, Applications of computers for design, Computer-aided design software, Wire frame models, Solid modelling. Computer aided manufacturing: Automation of manufacturing processes, numerically controlled machines, Computerized numerically controlled machines (CNC), G codes, Programming languages, Applications and performance of CAD/CAM systems. Computer integrated manufacturing: manufacturing planning, integration, implementation of automation, robotics and financial and cost accounting integration.

Learning Outcomes for the module

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

Knowledge

1. Outline CAD concepts.
2. Explain group technology and its applications.
3. Classify the components and processes of a flexible manufacturing system
4. Explain the fundamental concepts of solid modelling and different feature recognition techniques.

Thinking skills

5. Apply the concepts of part modelling for virtual prototyping.
6. Apply knowledge of computer aided process planning, feature and group technology, and data exchange in manufacturing processes.

Subject-based practical skills

7. Choose the appropriate CAD module for each design step.
8. Choose a suitable cad data representation schemes and best cad modelling techniques for different applications.
9. Construct a complete APT program and CAPP.

Skills for life and work (general skills)

10. Provide solutions for automation in manufacturing engineering problems, comprehensive analytical skills

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	30%	1,2,7
Portfolio 2: (73.5 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	35%	4, 5, 10
Portfolio 3: (73.5 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam (210 hours)	35%	**3, 6, 8, 9**

Reading and resources for the module:

Core:

1. Gupta J, Khurmi R. 2005, *A Textbook of machine design*. S Chand Publications, 14th Revised Edition.:1138-60.
2. James A. Rehg, 2005, *Computer integrated design and manufacturing*; Prentice Hall

3. Mikell P. Groover, 2014, *Automation, Production Systems, and Computer-Integrated Manufacturing*, Pearson.
Recommended:
1. Cornelius T. Leondes, 2003, *Intelligent Computer Aided and Integrated Manufacturing Systems: Intelligent Systems Technologies*, World Scientific Pub Co Inc

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 90 hours 60 hours 45 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 105 hours	 Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11532	**Module Leader**:
Advanced manufacturing management	**Level:** 5 **Credit:** 30 **ECTS credit:** 15	Prof. Dr. Nahid A. Afia & Dr. Mohammed El-Beheiry

Pre-requisite: EG11424 Manufacturing management essentials	**Pre-cursor:** None
Co-requisite:	**Excluded combinations:** None

Location of delivery: ASU, Egypt

Main aim(s) of the module:

This module aims at providing students with the knowledge and skills necessary to be able to manage manufacturing facilities and solve complex managerial problems within the manufacturing environment.

Main topics of study:

Competitiveness, Strategy and Productivity, Forecasting and time series analysis (qualitative techniques: Sales force polling, Customers' opinion, Delphi technique, Quantitative techniques: Smoothing methods, Averaging Methods, Linear regression), Product and service design, Capacity planning (defining capacity, rough-cut capacity planning, detailed capacity planning), Aggregate production planning. Project management: Project life cycle, WBS, LRC, project organization, project scheduling (CPM, PERT, Crashing, Resource levelling). Fundamentals of lean manufacturing principles. Toyota house, seven wastes, Push verse Pull systems and JIT, Kanban system, Kanban size and number, CONWIP. Value stream mapping: How to construct the current state map, improvement tools Kaizen, Poka-a-Yoke, 5S. Takt time calculations and production leveling.

Learning Outcomes for the module

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

Knowledge

1. Outline competitiveness and operations strategies within manufacturing environment.
2. Identify the role of entrepreneurs in manufacturing.
3. Classify the 7 wastes in manufacturing systems.
4. Explain Pull manufacturing systems.

Thinking skills

5. Implement appropriate forecasting techniques.
6. Determine the project schedule
7. Calculate Kanban size and quantity.
8. Determine resources needed for project, managing them effectively.

Subject-based practical skills

9. Prepare aggregate capacity Plans and production schedules

Skills for life and work (general skills)

10. Use the required knowledge to prepare manufacturing and industrial projects plans.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	30%	5, 7,10
Portfolio 2: (84 hours) Portfolio of students' work includes samples of the following:	40%	1,4,8,9

Course Work Assignments Quizzes Mid term Written Exam **Portfolio 3: (63 hours)** Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam (210 hours)	30%	**2,3,6**

Reading and resources for the module:

Core:

1. Sammy G. Shina, 2014, *Engineering Project Management for the Global High Technology Industry,* 1st edn., McGraw-Hill Education.
2. Jeffrey K. Liker, 2004, *The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer*, McGrow Hill.
3. William J. Stevenson, 2012, *Operations Management*, 11th ed, McGrow Hill,

Recommended:

1. James P. Womack, Daniel T. Jones, 2003, *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*, 2nd edn., Free Press.
2. Harold Kerzner, 2017, *Project Management Case Studies,* 5th edn., Wiley.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 90 hours 75 hours	 Lectures Tutorials
2. Student learning time: 135 hours	Essential and background reading, tutorial reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11533	**Module Leader**:
Manufacturing Processes	**Level:** 5 **Credit:** 30 **ECTS credit:** 15	Accos. Prof. Dr. Mohamed A. Awad Dr. Mohammed El-Beheiry

Pre-requisite:EG11422 Design for Manufacture & EG11423 Automation for Manufacturing Processes	**Pre-cursor:** None
Co-requisite:	**Excluded combinations:** None
Location of delivery: ASU, Egypt	
Main aim(s) of the module:	

This module aims at providing students with the knowledge and skills needed to design manufacturing processes planning and select the controlling parameters of different manufacturing processes. The course is intended to equip students with the ability to use various dimensional measurement equipment and when they should be used.

Main topics of study:

Sheet metal work (shearing, pressing, blanking, spinning, bending, coining, etc.), Brief explanation to forming machines and equipment. Rolling lines: Coil-pass design, High-energy-rate terming (explosive, electro-hydraulic, electro-magnetic forming), Powder metallurgy (powder production, compaction, sintering and sizing), Super finishing and metal coating. An introduction: basics of polymers characteristics and the basic principles of polymer processing. Polymer extrusion (single and twin-screw extruders), foils, plates, profiles, blow moulding, films, fibres and reactive processing. Injection moulding, injection moulding dies, injection technique- plastics pressing, blow moulding foams.

International system of units, Theory of measurements, Instrument classification, Types of magnification (mechanical, electrical, optical, pneumatic), Fits, Tolerances and limit gauges, Simple measuring Instruments (Vernier, micrometres, dial gauges, angle gauges, protractors, sine bar, sensitive level), Comparators, Measuring machines, Errors and calibration of measuring equipment, Indirect measurements, Screw thread and gear measurements, Surface roughness measurements (2D and 3D measurement), Static tests for machine tools, Advanced measuring techniques (laser measurement, computer- aided measurement, machine vision).

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Explain sheet metal processes and high energy forming processes.
2. Outline powder metallurgy processes and usage.
3. Explain super finishing processes.
4. Outline polymer processing machines.
5. Classify different types of Magnifications used in measuring devices.

Thinking skills
6. Design various parameter for sheet metal and forming processes.
7. Evaluate the injection parameters.
8. Evaluate measurement errors and workpieces out of tolerances.

Subject-based practical skills
9. Measure workpieces using different measuring devices and advanced measurement techniques.

Skills for life and work (general skills)
10. Provide solutions for engineering problems, comprehensive analytical skills

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam	30%	5, 8, 9
Portfolio 2: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	1, 2, 3, 6
Portfolio 3: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam (210 hours)	30%	**4, 7, 10**

Reading and resources for the module:

Core:

1. ASQ Measurement Quality Division and Editor Jay L. Bucher, 2015, *The Metrology Handbook*, 2nd edn., Pearson.
2. S. Kalpakjiam and Steven R. Schmid, 2013, *Manufacturing Engineering and Technology*, 7th edn, Pearson Prentice Hall.
3. Jean-François Agassant, Pierre Avenas, Pierre J. Carreau, Bruno Vergnes, Michel Vincent, 2017, *Polymer Processing: Principles and Modeling*, Carl Hanser Verlag GmbH & Company KG,.

Recommended:

1. Jerzy A. Sładek, 2016, *Coordinate Metrology: Accuracy of Systems and Measurements*, Springer Verlag.

Indicative learning and teaching time	**Activity**

(10 hrs per credit):	
1. Student/tutor interaction: 90 hours 15 hours 90 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 105 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11534	**Module Leader**:
Manufacturing Systems and Technologies	**Level:** 5 **Credit:** 30 **ECTS credit:** 15	Dr. Mohammed El-Beheiry
Pre-requisite:EG11424 Manufacturing management essentials	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module aims at providing with broad understanding of various manufacturing technologies and industrial systems with focus on the concept of productivity improvement and the tools used in improving manufacturing methodologies. A special emphasis will be made on the human element in the manufacturing environment and the issues related to maintain the manufacturing equipment and early fault detection.

Main topics of study:

Productivity: Factors affecting productivity and role of management, Introduction to work study: Objectives, Techniques applied, Method study techniques: Charts and diagrams, Critical examination and analysis, developing new methods, Measures and controls, Work measurements, Learning curves: Concept, Application in work study and determination of standard time, workers incentives. Plant layout objectives and requirement, Work station layout, SLP, Setting the Layout.
In this course students will be introduced to different technologies used in various industries such as food industries, apparel industries, building materials industries, petrochemical industries. Introduction and concepts in maintenance management, Maintenance organization, Types of maintenances: preventive, predictive, programmed, emergency, repair, etc. Maintenance planning and scheduling, spare parts management and control. Total Productive Maintenance (TPM), maintenance information system, maintenance cost, maintenance safety. Different approaches to evaluate Overall Equipment Effectiveness (OEE) and understanding Six Major Equipment Losses.

Learning Outcomes for the module

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

Knowledge
1. Explain concepts of productivity and productivity improvement.
2. Outline the working concepts of equipment used in different industries such as: food, apparel … etc.
3. Recognize various equipment used in different manufacturing environment.
4. Classify various types of maintenance.

Thinking skills
5. Design workstation layout taking into consideration layout objectives.
6. Design factory layout considering human, machine and materials requirement.
7. Analyse the process flow of different manufacturing industries.

Subject-based practical skills
8. Use various tools used to improve the productivity of manufacturing situation.
9. Use equipment monitoring techniques to define faults.

Skills for life and work (general skills)
10. Express a range of ideas using appropriate spoken and written English, demonstrating understanding of academic writing conventions and styles as specific to the subject discipline

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.
Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	1,5,6,8
Portfolio 2: (42 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	20%	4, 9
Portfolio 3: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam (210 hours)	40%	**2,3,7,10**

Reading and resources for the module:
Core:

1. Lakhwinder Pal Singh, 2016, *Work Study and Ergonomics*, Cambridge University Press,.

2. Richard (Doc) Palmer, 2019, *Maintenance Planning and Scheduling*, 4th edn, McGrow Hill.
3. H. L. M. Lelieveld, John Holah, et al, 2015, *Handbook of Hygiene Control in the Food Industry* 2nd edn., Woodhead Publishing Series in Food Science, Technology and Nutrition

Recommended:

1. http://www.fao.org/fao-who-codexalimentarius/en/
2. http://ietd.iipnetwork.org/
3. Rajkishore Nayak and Rajiv Padhye, 2015, *Garment Manufacturing Technology*, 1st edn., Woodhead Publishing Series in Textiles

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 105 hours 60 hours	 Lectures Tutorials
2. Student learning time: 135 hours	Essential and background reading, tutorial reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code: EG**11641	**Module Leader**:
Design Future & Interactions	**Level:** 6 **Credit:** 30 **ECTS credit:** 15	Dr. Mohammed El-Behiery & Dr. Ayman Abd El-Wahab
Pre-requisite: EG11422 Design for Manufacture	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module aims at equipping students with the advanced manufacturing aspects including material, design, facilities, processes and control which are essential to make the end product well designed and continuously developed based on end users requirement to improve their quality of life and their interaction with the environment.

Main topics of study:

Design methodologies, Generic design process, Design for X, Product design and development, Properties of different types materials and composite materials, Mechanisms of fracture, Different manufacturing techniques, Production facilities design & manufacturing including dies, jigs and fixtures, Phase diagrams for different alloys, Heat treatments processes for ferrous and non-ferrous alloys, Integration with computer and electronics, Programming of PLCs using practical demonstrations, Case Studies.

Learning Outcomes for the module

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

Knowledge

1. Outline the concept of design for X
2. Classify various types of dies and their components
3. Classify various of jigs and fixtures and their components.
4. Explain the differences between various heat treatment processes and their applications.
5. Outline the product design process.

Thinking skills

6. Choose appropriate components for mechatronics product design.
7. Develop innovative solutions for the practical industrial problems.
8. Design heat treatment for dies parts as needed.

Subject-based practical skills

9. Apply empirical formulas to design production facilities parts.

Skills for life and work (general skills)

10. Express a range of ideas using appropriate spoken and written English, demonstrating understanding of academic writing conventions and styles as specific to the subject discipline

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam	40%	1,5, 6, 7
Portfolio 2: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	30%	2,4,8
Portfolio 3: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam (210 hours)	30%	**3,9,10**

Reading and resources for the module:

Core:

1. W. Bolton, 2015, *Mechatronics, electronic control systems in mechanical and electrical engineering*, 4th edn. Pearson,
2. Donald R. Askeland, Pradeep P. Phule, 2015, *The Science and engineering of materials*, 7th edn., Cengage Learning
3. R. K. Jain, 2006, *Production Technology*, 6th edn, Khanna Publishers,.

Recommended:
1. Gregory S.R.,2001, *Structure and Bonding in Crystalline Materials*, Cambridge University Press,

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 90 hours 105 hours 30 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 75 hours	Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Trends in Modern Manufacturing Systems and Technologies	**Module Code:** EG11642 **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Mohammed El-Beheiry & Dr. Ayman Abd El-Wahab
Pre-requisite: EG11533 Manufacturing Processes	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module aims at equipping students with necessary knowledge and practices of the new trends in manufacturing, the development of the technological aspects and the effect of such development on the quality of life of humanity and its socioeconomic effect on the industry practitioners.

Main topics of study:

Design changes on using Additive Manufacturing (AM), AM physics and materials chemistry. New degree of freedom in product design on enabling AM.
Topics include fundamentals of polymer, metal and composite AM processes; process capabilities such as rate and resolution; material properties and their dependence on material characteristics, process parameters and machine designs; existing and new applications of AM; and a perspective on current and future technical challenges in AM. Industry 4.0 topics will be addressed such as IoT (Internet of Things), Cybernetics and Supply Chains, Block Chains, the effect of automation in manufacturing on workforce, future manufacturing workforce skills and knowledge and data analytics. The human basic needs and human rights in manufacturing economies.

Learning Outcomes for the module

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

Knowledge

1. Outline additive manufacturing process and materials.
2. Explain the changes that may occur in manufacturing environment due to the introduction of additive manufacturing.
3. Explain the effect of advanced IT on supply chains.
4. Outline the needed skills and knowledges for future manufacturing workforce.
5. Outline labour rights in different economies with focus on manufacturing economy
6. Explain the concept of industry 4.0 and IoT.

Thinking skills

7. Use appropriate materials for additive manufacturing.

Subject-based practical skills

8. Design products for additive manufacturing.
9. Create CAD file for 3D printers.

Skills for life and work (general skills)

10. Demonstrate the effect of new technologies on workforce.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (105 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term	50%	1,2, 7, 8, 9
Written Exam	30%	3,4,6

Portfolio 2: (63 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam **Portfolio 3: (42 hours)** Portfolio of students' work includes samples of the following: Course Work Assignments Lab Data Sheet Quizzes Mid term Written Exam (210 hours)	20%	**5,10**

Reading and resources for the module:
Core:
Jing Zhang, Yeon-Gil Jung, 2018, Additive *Manufacturing: Materials, Processes, Quantifications and Applications*, Elsevier.
Alasdair Gilchrist, 2016, *Industry 4.0: The Industrial Internet of Things*, Apress.
Stephen P. Robbins and Timothy A. Judge, 2014, *Organizational Behavior,* 16th edn., Pearson

Recommended:
Nick Vyas, Aljosja Beije, Bhaskar Krishnamachari, "Blockchain and the Supply Chain: Concepts, Strategies and Practical Applications", Kogan Page, 2019

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 120 hours 45 hours 0 hours	 Lectures Tutorials Laboratories/Practical
2. Student learning time: 135 hours	Essential and background reading, tutorial reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title:	**Module Code:** EG11643	**Module Leader**:
Quality Control and Production Planning	**Level:** 6 **Credit:** 30 **ECTS credit:** 15	Dr. Mohammed El-Behiery & Dr. Nessren Zamzam

Pre-requisite: EG11532 Advanced Manufacturing Management	**Pre-cursor:** None

Co-requisite:	**Excluded combinations:** None
Location of delivery: ASU, Egypt	

Main aim(s) of the module:

This module aims at equipping students with the tools and procedures used in quality control in manufacturing. Students will be able determine the cost of quality and how to set KPIs for the quality control functions. The course also aims to enable students to master manufacturing planning at different managerial levels.

Main topics of study:

Quality definitions and concepts, Process capability analysis, Theory of control charts, Statistical control charts for attributes, Statistical control charts for variables, Acceptance sampling: Principles and concepts, Acceptance sampling by attributes, Acceptance sampling by variables. Quality assurance and quality management systems, Different accreditation bodies for quality assurance certifications, ISO, CE Mark, BS, EN … etc.

Inventory management and control (determining optimal order quantity, optimal production quantity, safety stock), Materials requirement planning, Enterprise resources planning, Production scheduling and sequencing, Assembly line balancing.

Introduce the professional engineers code of ethics, and different legislations related to manufacturing such as: labour law, environmental law … etc. Egyptian laws in compliance with international regulation and standards.

Learning Outcomes for the module

At the end of this module, students will be able to:
Knowledge
1. Explain quality definition and concepts.
2. Explain various concepts and regulations addressed by the code of ethics.
3. Classify various quality assurance standards and their requirements.

Thinking skills
4. Design sample size and sampling plans.
5. Calculate the economic order quantity, safety stock and reorder point.
6. Design appropriate inventory control policy.

Subject-based practical skills
7. Prepare Control charts for variables and attributes, materials requirement plans and production schedules for different manufacturing situations.
8. Propose assembly line design minimizing the balance delay or number of stations.

Skills for life and work (general skills)
9. Work in compliance with laws regulating manufacturing facilities.

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	1,3, 4, 7
Portfolio 2: (84 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam	40%	5,6,8
Portfolio 3: (42 hours) Portfolio of students' work includes samples of the following: Course Work Assignments Quizzes Mid term Written Exam (210 hours)	20%	2,9

Reading and resources for the module:

Core:

1. Doughlas C. Montgomory, 2012, *Statistical Quality Control* 7th edn., Wiley.
2. William J. Stevenson, 2012, *Operations Management*, 11th Ed, McGrow Hill.
3. Jr. Charles E. Harris, Michael S. Pritchard, et al, 2018, *Engineering Ethics: Concepts and Cases,* 6th edn., Cengage Learning

Recommended:

1. http://www.egypt.gov.eg/english/laws/

Indicative learning and teaching time	**Activity**

(10 hrs per credit):	
1. Student/tutor interaction: 90 hours 90 hours	 Lectures Tutorials
2. Student learning time: 120 hours	Essential and background reading, tutorial reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

Module Title: Individual Research Project	**Module Code:** **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Mohammed El-Behiery & Dr. Ayman Abd El-Wahab
Pre-requisite: EG11532 Advanced Manufacturing Management,EG11534 Manufacturing Systems and Technologies	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

The module represents the graduation project, where the students work under the supervision of faculty members. The graduation project should be linked real industrial problem or theoretical research related to manufacturing engineering. Throughout this module students will practice the analysis and design of a complete engineering system using the fundamentals, principles, and skills gained during their study. The research project also aims at increasing students' capability in technical report writing and presentation in engineering problems.

Main topics of study:

Identification of a real-life problem related to the program in general Setting the overall objectives of the project and specific objectives of Project, Collecting data from the field, market and/or literature, Proposing engineering solutions, Developing conceptual ideas/designs, Conducting preliminary analyses, Comparing different ideas based on technical aspects, Selection of the solution approach. Implementation of the solution proposed, conducting necessary analyses, Developing necessary drawings, calculations, and models, Selecting appropriate materials, Using contemporary software tools, manufacturing of physical prototypes or physical models if necessary, testing and validation of the developed systems, Estimation of costs and necessary resources, Technical reporting of the project, Presenting the project activities and outcomes.

Learning Outcomes for the module

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

Knowledge

1. List methodologies of solving engineering problems, data collection and interpretation;
2. Conduct a literature review related to project domain.

Thinking skills

3. Select appropriate analytical methods, tools, and software to solve the research problem;
4. Model the real-life industrial problem analytically.
5. Design an engineering system/solution(s) to solve the project research problem.

Subject-based practical skills

6. Design a system and formulation of the real-life problem(s) available in industry.
7. Solve engineering problems and implement solutions based on what has already studied in the program.

Skills for life and work (general skills)

8. Formulate a range of ideas using appropriate spoken and written English
9. Collaborate with other students, industrial partners, and project supervisor

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

Lectures are the key method for introducing new material. They are presented to the whole group and are formal in delivery.

Tutorial sessions allow students to meet with their peers in small groups and focus on the practical application of their studies through problem-based classes and project work.

Practical and laboratory work will usually be on a one to small group basis which provides the opportunity for discussion and contextualising of study issues in a flexible manner.

Formative feedback will be provided for all activities. This may take the form of question and answer sessions within lectures; through worked examples, design exercises and discussion groups in small group tutorials; through submitting tutorial questions and formative reports for feedback; comments on the tutorial/practical work during the session, response to emails, the use of the Forum facility on the VLE (for generic feedback) and Turnitin Gradebook for the assessments.

Learning will be supported through information on the VLE and an accompanying core textbook. The information on the VLE adds extra content and integrates additional resources (such as journal articles and case studies) to support those topics not covered by the core textbook. The VLE encourages deep learning through the use of activities, self-assessment questions and other formative assessments.

Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (105 hours) Portfolio of students' work includes samples of the following: Course Work Final defence	50%	1-4, 8,9
Portfolio 2: (105 hours) Portfolio of students' work includes samples of the following: Course Work Final defence	50%	5-9

Reading and resources for the module:

Core

1. For core resources related to thesis topic will be recommended by the supervisor(s)

2. Kate L. Turabian, 2018, *A Manual for Writers of Research Papers, Theses, and Dissertations*, 9th edition, University press of Chicago.

Recommended

1. Jason Teteak, 2014, *Rule The Room: A Unique, Practical and Comprehensive Guide to Making a Successful Presentation*, Morgan James Publishing
2. **David V. Thiel, 2014, *Research Methods for Engineers,* 1st Edition, Cambridge University Press.**

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 60 hours 150 hours	 Lectures Laboratories/Practical
2. Student learning time: 90 hours	 Essential and background reading, tutorial and lab reports preparation, assignment planning and preparation, examination revision.
Total hours (1 and 2):	300 hours

7 PLACEMENT REQUIREMENTS

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

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

Scholarships

The student who achieves an accumulative GPA of 3.6 or higher after any semester and did not fail any course throughout his course of study is included in the Dean's List and receives partial exemption from charges on the next semester. This exemption is dependent on the student's GPA as recommended by the Programmes Administration Council in this regard and after approval of the Council of the Faculty of Engineering. The student who keeps an accumulative GPA of 3.3 or higher in every semester all through his course of study and does not fail any course, graduates with an Honor Degree, which is documented in his graduation certificate. Additionally, the top 30 students in Thanaweya Amma, mathematics section, who enrolled in the credit hours programmes, are fully exempted from paying any tuition fees in their first semester. To maintain this exemption in the following semesters, the student should maintain an accumulative GPA of 3.6 or higher in every semester. This exemption is declined once the student fails to achieve this accumulative GPA in any semester. The faculty sets a system for encouraging distinguished students through reducing their tuition fees in accordance with their accumulative GPAs. At the beginning of each semester, the distinguished students' list is announced together with the associated tuition fees reductions.

8 PROGRAMME MANAGEMENT

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

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

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

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

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

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

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

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

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

Students Involvement

There are different facilities that ensure students involvement that include:

a) Students' Affairs Administration

The students' affairs administration is chaired by the Vice-Dean for education and students' affairs and is located in the main building. This administration has representatives at the programmes' administration offices (Ground Floor of the New Educational Building). The secretariat of each programme (at the programmes

secretariat office – Ground Floor of the New Educational Building) also collaborates with the previous representatives in accomplishing the following tasks:

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

b) Students' Union

The students' union is also under the general supervision of the Vice-Dean for education and students' affairs. As part of the Faculty of Engineering, the programmes' students are members in the union and have similar rights and benefits as the mainstream students, including entering the union's yearly elections.

c) Financial Affairs Administration

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

d) Library

The Faculty library provides a service specially designed to fulfil the requirements of all academic programmes. It is open for all Faculty members for reference use and borrowing. The main library has a shelf space for over 46,000 books on all subjects forming part of the Faculty curriculum. It has 353 technical periodicals (the Faculty receives 23 periodicals yearly on a regular basis). Additionally, it has more than 3,340 Ph.D. and M.Sc. theses resulting from all Faculty departments' activities. The students' library has multiple copies of textbooks, amounting to over 13,000, available for short-term borrowing to students. According to the Engineering Faculties libraries development project, annexed to the Ministry of Higher Education, the library is interconnected through the Internet with all the libraries of engineering faculties nationwide. VTLS library software system has been installed which contains all the modules to provide library services to the Faculty community.

e) ASU-FoE Information Systems

ASU-FoE have a solid understanding of the importance of information systems in each aspect in the CHEP academic environment. Hence, a comprehensive web portal has been created for CHEP that has all information and services needed for the student, parents, and staff members. Learning Management System (LMS) is one of the

available services at the ASU-FoE portal for all students mainly to have their course materials posted regularly on it with a dedicated protected access to the courses he enrolled in them. More importantly, a comprehensive Student Information System (SIS) is another service that is available on the portal to all parties involved in the system. The student can use SIS to access academic records, undertake module registration, request to open module that are not offered, or even request advising appointment with academic advisors.

9 STUDENT SUPPORT

9.1 Local arrangements for academic and pastoral care for students

Induction

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

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

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

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

English language Support

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

Student mentorship

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

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

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

Academic Advisor

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

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

Academic Support Systems

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

Teaching

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

Student Affairs

At ASU there are Student Affairs Officers who offer friendly and caring support and mentorship to students, not just for academic matters but also for personal problems. Throughout the programme, the Students' Affairs Officer organizes weekly meetings, business trips and outings to places of interest in and around Cairo, as well as international trips during the summer holiday.

Safe Environment: FoE ASU provides a safe, caring and nurturing learning environment with friendly, supportive mentors and teachers who have many years of experience in teaching and mentoring.
Advising instruction assures that each advisor should discuss with student their progress in study, their performance at various evaluations and any complaints about the physical facilities either educational or recreational. In addition to study related topics, academic advisors are encouraged to support the mental health of students through discussing any external environment topics and assess the study stress the students are subjected to. ASU has agreements with NOGs that help students to face study stress in addition to ASU 13 hospitals which may help students in such issues.

Technical support for learners and staff

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

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

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

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

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

- Step free access to laboratories/classes
- Larger fonts sizes for presentation materials
- The use of scribes
- Voice recorders will be allowed (with the permission of the presenting lecturer)

- Extra time for examinations
- Use of word processor (PC) without Internet access for examinations.
- Separate room for special needs students (if requested)

Equality and Diversity

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

Access to UEL Academic Link Tutor (ALT)

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

UEL Resources

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

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

The role of the UEL Academic Partnership Office (APO)

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

Student Feedback Mechanisms

Student representatives will be either elected or nominated for each programme. These representatives are the means of formal communication to the various

committees at FoE - ASU Campus and UEL. There will be two formal meetings per year with the student representatives, module leaders and the programme coordinator at FoE - ASU Campus. The External Examiner report will also be made available for students to access. The issues raised at these meetings will be communicated to the Academic Link Tutor or APO at UEL. Actions resulting from these issues will be monitored and taken in the next committee meeting, where the representative will get an update, if not solved then and there.

We ask that student representatives discuss all matters informally with their Module Tutor at FoE - ASU before raising them at committee level. It should be possible to solve most problems by an informal approach. The earlier the programme team are made aware of any problems, the earlier FoE - ASU will attempt to correct problems. Student support is appreciated and acknowledged consistently in the student End-of-Module Evaluation Questionnaires and verbal feedback. The information collected from the Questionnaires is delivered to the Senior Management of FoE - ASU for analysis and taking any remedial actions.

Academic Progress

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

Students with learning challenges

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

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

- Students who speak a different language at home than the one they speak at College

Online information and support:

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

- Induction information
- Academic support for students available both at FoE - ASU and UEL
- FoE - ASU Student Enquiries Desk opening hours
- FoE - ASU Library opening hours
- Link to UEL Library online resources
- Copy of Programme Handbook

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

10 RESOURCES

a) Local library and IT resources

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

- The student library hall contains (16,461) books.
- The teaching staff hall contains (29,607) books.
- Digital Library Hall

The Digital Library serves to provide an online Service for users. It gives online access to the contents of the library, including books and theses. The digital library website: ***http://srv2.eulc.edu.eg/eulc_v5/libraries/start.aspx***

Other learning resources are the Egyptian Bank of Knowledge (EBK) through the website: ***http://www.ekb.eg/*** "Egyptian Knowledge Bank", is an presidential initiative started at 2016 and is one of the largest national projects that is concerned with education in Egypt, it aims to provide huge and diversified sources for knowledge and culture for free. It comes after contracting with several international publishing houses to give access to their contents in all scientific and cultural disciplines. Generally, 25 global publishing house and specialised companies, have their content at the Egyptian Knowledge Bank such as Emerald, John Wiley Elsevier .. etc.. E-Mail Services involved a developed Cooperation of the University with Microsoft Corporation to Serve Undergraduate and Postgraduate Students offering new features for the official e-mail users.

b) Other local resources relevant to supporting the programme

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

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

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

laboratories and offices in different sections. The number of computers available to employees is 250 devices. Computer labs are run centrally for students. The method of using these labs has been adopted by setting a nominal fee of not less than two pounds per hour to use the central labs which are open to access the network, while the student does not bear any burdens to enter the laboratories associated with the ministry while the Income is suitable for the maintenance and modernization of computers in college. The databases and information systems of faculty staff members, their assistants, students, graduate students, expatriates, administrators and libraries have been developed and updated. The databases are continuously updated.

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

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

11 INFORMATION ABOUT QUALITY AND STANDARDS

Assuring the quality and standards of the award

You are enrolled on a programme of study leading to the award of a degree of the University of East London (UEL). As such, you are regarded as a student of the University of East London as well as ASU- FoE and both institutions work together to ensure the quality and standards of the programme on which you are registered. The final responsibility for all quality assurance, validation and standards' matters rests with UEL.

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

Approval of the programme and institution at which you are studying

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

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

Appointment of external examiners

- The standard of this programme is monitored by at least one external examiner external to UEL, appointed by UEL. External examiners have two primary responsibilities:
- To ensure the standard of the programme;
- To ensure that justice is done to all students.
- External examiners fulfill these responsibilities in a variety of ways including:
- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating standards;
- Ensuring that regulations are followed;
- Providing feedback to the University through an annual report that enables us to make improvements for the future.

Review and Enhancement Process

- This annual review includes the evaluation of and the development of an action plan based on:
- external examiner reports and accreditation reports (considering quality and standards);

- statistical information (considering issues such as the pass rate);
- student feedback obtained via programme committee and module evaluation questionnaires.
- Periodic reviews of the partnership and programme
- This is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to students and speaks to staff before drawing its conclusions.

Award certificates

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

The student who achieves an accumulative GPA of 3.6 or higher after any semester and did not fail any course throughout his course of study is included in the Dean's List and receives partial exemption from charges on the next semester. This exemption is dependent on the student's GPA as recommended by the Programme Administration Council in this regard and after approval of the Council of the Faculty of Engineering.

Students who complete 480 credits, graduate with an Honours Degree, which is documented in their graduation certificate. The faculty sets a system for encouraging distinguished students through reducing their tuition fees in accordance with their academic performance. At the beginning of each semester, the distinguished students' list is announced together with the associated tuition fees reductions.
Students who manage to fulfil all graduation requirements will be awarded a double Honours degree from ASU and UEL in Manufacturing Engineering.

Equality and Diversity

ASU Equality and Diversity Strategy

- ASU commits to ensuring equality and diversity in its campus. Equality is ensured for everyone regardless any grounds of discrimination such as gender, age, color, disability and religion.
- The university supports a safe environment for both working and studying. The university environment must be free of bullying, harassment, and any form of discrimination. Any act of the aforementioned will not be tolerated and any complaints will be taken seriously. Anyone who feels being subjected to these acts is encouraged to raise complaints.
- All academic staff members, students and employees are supposed to treat each other with mutual respect and fairness. Everyone should respect the presence of individual differences, diversity in culture, personal opinions and beliefs.
- Equal opportunities and access to facilities are allowed for all staff and students. Each staff member or student is given full support to develop their skills and talents. Selection for employment, promotion, training, or any other benefits will be based on aptitude and ability.

UEL Equality and Diversity Strategy

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

12 ACADEMIC APPEALS

12.1 Students who wish to appeal against decisions of an Assessment Board, should notify the Credit Hours Engineering programs at Ain Shams University in writing, via official appeal forms downloadable via
https://eng.asu.edu.eg/uploads/uploadcenter/asu_337_file.pdf

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

12.2 Disagreement with the academic judgement of a Board of Examiners' decision cannot, in itself constitute a reason to Appeal. Academic judgement is a judgement that is made about a matter where only the opinion of an academic expert will suffice. For example, a judgement about assessment or degree classification or a judgement about a decision where a student is required to repeat or take further assessment will usually be academic judgement, and a student cannot appeal simply because they believe they ought to have received a higher grade or mark. For further information on the scope of this procedure, please refer to section 4 of Part 7 of the Manual of General Regulations.

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

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

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

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

13 COMPLAINTS

If you feel that you have not received the standard of service which it would be reasonable to expect, you may be entitled to lodge a complaint, in accordance with

section 14 of the *Manual of General Regulations*. The Complaints Procedure should be used for serious matters, and not for minor things such as occasional lapses of good manners or disputes of a private nature between staff and students. A complaint may be submitted collectively by a group of students who should nominate a spokesperson who will be the channel of communication for the group, however, a complaint may not be lodged by a third party on behalf of the complainant. The complaints procedure is an internal process.

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

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

13.3 Students wishing to submit a complaint must, in the first instance, follow the complaints policy of ASU - FoE which aligns to the Office of the Independent Adjudicator's good practice framework (https://www.oiahe.org.uk/media/96361/oia-good-practice-framework.pdf). The ADU - FoE complaints policy is available at:
https://eng.asu.edu.eg/front/bylaws/show/appeals
https://eng.asu.edu.eg/uploads/uploadcenter/asu_337_file.pdf

13.4 ASU - FoE will administer all stages of its complaints policy and, upon exhaustion of this policy, will issue a formal letter to the complainant notifying them that its complaints policy has been exhausted. If the complainant is still not satisfied with the outcome they will be entitled to request that the University of East London undertake a review of their complaint.

13.5 The University of East London will conduct a review of the complaint in accordance with Stage 3 of its own Complaints Procedure. The University of East London Complaints Procedure is available at:

https://www.uel.ac.uk/discover/governance/policies-regulations-corporate-documents/student-policies/manual-of-general-regulations

13.6 The University of East London will administer the Stage 3 review in accordance with its Complaints Procedure and, upon completion of the review, will issue a Completion of Procedures Letter. If the complainant is still not satisfied with the outcome they will be entitled to make a complaint to the Office of the Independent Adjudicator.

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

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

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

14 EXTENUATION

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

Module Improvement and Resit
Within the Ain Shams regulations the student can repeat a module for improvement if their grade satisfies the minimum passing requirement, according to the following rules: The student gets the grade of the module after improvement, and this grade is the one that will be accounted for in the accumulative GPA, on condition that the improvement should be shown in the student's transcript. The student can improve up to five modules during his study duration, except for improving courses with the purpose of getting out of the academic warning or satisfying the graduation requirements. The student should pay the fees for the failed module.

If the student fails a course (less than 40%) after resit, he should repeat the course (full attendance and performing all activities including examinations), according to the following rules: The maximum mark of the repeated course is 40%. The student gets the grade of the module after repetition, and this grade is the one that will be accounted for in the accumulative GPA, on condition that the repetition should be shown in the student's transcript. The student should pay the fees for the failed module.

Ain Shams University will only report the original mark to UEL.

Seeking Advice: Academic Advisor

Every student is assigned an Academic Advisor who is one of the faculty members and may continue with the student for the whole study duration.

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

Extenuation procedures (Manual of General Regulations) for ASU – FoE is available at: ***https://eng.asu.edu.eg/uploads/uploadcenter/asu_1768_file.pdf***

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

The BEng Manufacturing Engineering programme will be subject to equivalent procedures, with the process being administered by, and the panel being held within Ain Shams University – Faculty of Engineering

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

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

or

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

Extenuation doesn't

(i) Give students more attempts to pass a module
(ii) Reschedule exams
(iii) Uncap a capped module
(iv) Give students a higher mark.
(v) Allow students to hand in work over 7 days late.

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

UEL decided that its procedures would be

- Evidentially based
- Handled centrally by an panel of senior staff (not devolved to various parts of the organisation)
- Retain student anonymity where possible

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

The procedures govern circumstances which

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

Such circumstances would normally be

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

Examples of circumstances which would normally be regarded as serious are:

- *A serious personal illness* (which is not a permanent medical condition – this is governed by disability procedures)
- *The death of a close relative immediately prior to the date of assessment*

Examples of circumstances which would *not* normally be regarded as extenuating circumstances are:

- Failure of computer equipment / USB stick
- Transport problems, traffic jams, train delays
- Misreading the exam timetables / assessment dates
- Minor illnesses

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

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

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

Appendix A

Academic Calendar 2019/2020

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

USEFUL WEB PAGES **APPENDIX B**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX C

Student Attendance and Engagement Policy – Guidance for Students

Teaching Policy

Language: English language should be used for lectures, discussions, exams, and all verbal and electronic communications.

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

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

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

Assignments: Assignments are given every week (detailed are spelled out in the module), preferably from the textbook. Assignments should constitute 20% of the total grade. Instructors are allowed to drop the least assignment from the grade. The assignment is collected at the end of the tutorial period of the next week. Instructors may grade only selected problems from the assignment. The graded assignment should be returned and discussed with the class.

Quizzes: Unannounced quizzes are given in the tutorials to force the students to study and be ready all time. These quizzes should constitute 10% of the total grade. The quiz is given at the end of the session for 15 minutes max. Up to 6 quizzes can be given and the least one can be dropped from the grade. The graded quiz and the model answer should be returned the following tutorial and discussed with the class.

Exams: One midterm exam should be given. Time should be indicated in the module guide. This exam will be held during lectures/tutorials based on course progress and will constitute 25% of the grade. The instructor can arrange for a bigger or more suitable room for the midterm exam. The final exam constitutes 40% of the grade. It should be a comprehensive exam covering all material. The student fails the course if he gets less than 30% of the final exam total grade. Instructors may select to have all exams open-book or closed-book.

APPENDIX D
UNIVERSITY OF EAST LONDON

TITLE: PROGRAMME COMMITTEE (COLLABORATIVE)

TERMS OF REFERENCE

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

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

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

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

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

- Reviewing progress on REP action plans at each meeting.

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

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

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

MEMBERSHIP

Programme Leader (Chair)
Administrator/Servicing Officer (ex-officio)
Programme staff making a significant teaching contribution to the programme
Learning Support Services representative
Technician representative (for laboratory based programmes)
Dean of School/department or equivalent (ex officio)
UEL Dean of School/Associate Dean of School, or equivalent (ex officio)

UEL link person (ex officio)
Two student representatives for each level and at least one part-time student (where appropriate)

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

APPENDIX E

ACADEMIC MISCONDUCT

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

Coursework Submitted for Assessment

For coursework submissions, academic misconduct means:

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

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

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

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

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

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

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

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

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

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

(k) For work not intended to be submitted as a collaborative assignment: producing work with one or more other students, using study practices that

mean the submitted work is nearly identical, overall or in part, to that of other students.

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

Examinations

For examinations, academic misconduct means:

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

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

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

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

(e) Copying the work of another candidate.

(f) Disruptive behaviour during examination or assessment.

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

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

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

Where academic misconduct is suspected, the matter will be dealt with under the *Procedure to be followed in the event of a suspected case of academic misconduct, Part 8, paragraph 4 (or, for postgraduate research students, Appendix I)* of the Manual of General Regulations (available for view at ***https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations***). If it is determined that academic misconduct has taken place, a range of penalties may be prescribed which includes expulsion from the programme.

PLAGIARISM - A GUIDANCE NOTE FOR STUDENTS

1. Definition of Plagiarism

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

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

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

2. Plagiarism in Greater Detail

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

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

When an assignment or report uses information from other sources, the student must carefully acknowledge exactly what, where and how s/he

has used them. If someone else's words are used, they must be within quotation marks and a reference must follow the quotation. (See section 6 for further guidance on referencing.)

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

3. Collusion

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

4. When to Reference

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

You need to provide a reference:

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

You do not need to reference:

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

- when you are using what is judged to be common knowledge (common sense observations, shared information within your subject area, generally accepted facts etc.) As a test of this, material is probably common knowledge if
  - you find the same information undocumented in other sources;
  - it is information you expect your readers to be familiar with;
  - the information could be easily found in general reference sources.

5. How to Reference

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

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

6. Plagiarism, or Unacceptable Academic Practice?

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

- use your own words;
- provide a critical commentary on existing literature;
- aim for novelty and originality;
- demonstrate your understanding of the subject area by paraphrasing.
  Work that does not meet those criteria will fail.

APPENDIX F

COLLABORATIVE STUDENT ENTITLEMENTS AT UEL

[Please append the student entitlement letter provided by UEL]

APPENDIX G

HEALTH AND SAFETY

- One of the principle roles of Ain Shams University administration is controlling dangers and risks. The University is aware that failures in health and safety administration can possibly prompt loss of life, injury, and damage to the University properties.
- According to the University, a fundamental standard of the Health and Safety policy is that it is in the hands of the individuals who cause the dangers and risks to manage and control them.
- The University appoints persons “capable to advice” to help with identifying, recognizing and controlling health and security dangers and risks. They may work in any sector of the University.
- Each College of the University holds a responsibility regarding the management and use of its own health and security policies and strategies. Despite that, the University and Colleges are still obliged to coordinate on the mutual matters of health and security which affect the more extensive University community.
- Heads of the different Departments must set out their own organizational courses of action for the safety measures. In addition, they abide by the general University Health and Safety Policies and are responsible for their implementation and management in their own departments and domains of responsibility.
- Each Head of Department might set up a Departmental Safety Policy, which works hand in hand with this University Health and Safety Policy to satisfy the prerequisite Health and Safety at Work measures.
- Each Head of Department must guarantee that everybody who might be influenced by the activities of the Department, knows about the health and security policies and arrangements, and has sufficient knowledge, information, time, preparation and supervision authority to allow for the identification, recognition and control of the dangers and risks to health and security.
- The supervisor of any departmental activity (field trip, practical work, office work or teaching activities) must have a comprehensive understanding of the related dangers and risks and conduct the risk assessment suitable for the circumstances of the activity. This is to fulfil the requirements of the Health and Safety at Work Regulations and different measures which state that no work might be attempted unless reasonable and adequate risk assessment has been done to define a safe and secure system of work.
- All University staff members are expected to be fully aware of both the University and Department policies and know that they hold the responsibility of this aspect for all those under their supervision or management. This implies ensuring and promoting good working practices and environment. It also includes ensuring that practical and office work is

done in safe spaces, equipment being maintained and checked in safe procedures, that the policies and strategies are being implemented and disseminated and that immediate reporting of any accidents or dangers takes place in order to take the necessary measures.

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