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

IN COLLABORATION WITH

SCHOOL OF ARCHITECTURE, COMPUTING AND ENGINEERING

BEng (Hons) Energy and Renewable Energy Engineering

Programme Handbook

Academic Year 2018-2019

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1 WELCOME AND INTRODUCTION

Congratulations on your enrolment into the BEng (Hons) Energy and Renewable Energy 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 onto the BEng (Hons) Energy and Renewable Energy 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 the Energy and Renewable Energy 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 planners, designers and consultant for private and governmental firms in the field of Energy generation and sustainable energy engineering, and as an operator or auditor for the energy management and efficiency in different buildings application.

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.

Assistant Prof. Dr.Walid El-Khattam
Programme Leader

2 INTRODUCTION TO THE PROGRAMME

Programme Philosophy

The BSc in Energy program was introduced at Ain Shams University's Faculty of Engineering in 2007.The mission of the Energy and Renewable Energy Engineering program is to provide education that is driven by a professional and technology-oriented focus and highly committed to sustainability. The program is devoted to educating and inspiring future generations of designers to be both technically skilled and ethically professional.

The BEng (Hons) Energy Engineering degree offers many career progression routes for Energy engineers. First, the degree will give students an advantage in the employment market where the content of the programme provides a broader range of skills to the students with a specialisation of energy generation and energy management. Furthermore, a validated degree via a UK HEI will provide students with a richer competency and skills-set. Finally, the skills which students will gain on the programme will enhance the energy engineering discipline in Egypt and build capacity for sustainable development of the built environment.

Programme duration and modes of study

The BEng (Hons) Energy Engineering programme has a 4-year full-time plan or 8-year part-time mode - students study the same modules in the first two years and select specialised modules in the final two years. In their third year (Level 5), students choose one of two tracks of specialisation, an Energy generation track or Energy management track. They study the specific specialisation courses corresponding to the chosen field and are then offered a wide range of technical electives to choose from according to their field of interest, and their ambition in their future career.

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

The main aims of the Energy and Renewable Energy Engineering program at the "Faculty of Engineering" in "Ain Shams University" are to equip the student with the proper scientific knowledge and develop their skills 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.
- Provide the students with opportunities for internships in industry to gain career enhancing experience of the application of engineering principles.
- Identify, formulate and solve fundamental engineering problems.
- Give the students a chance to gain knowledge and develop skills in a range of specialized selective courses covering electrical power or mechanical engineering.
- Work effectively within multi-disciplinary teams.
- Communicate effectively.
- Consider the impacts of engineering solutions on society & environment.
- Solve engineering problems practically encountered in the work-place.
- Design and supervise the construction of systems to generate, transmit, control and use electrical energy.
- Plan and manage engineering activity during the diverse phases of electric power generation, transmission and control.
- Develops low voltage power systems
- Carry out preliminary designs of fluid transmission and power systems, investigate their performance and solve their essential operational problems.
- Design, operate and maintain internal combustion and steam engines.
- Work with mechanical design and manufacturing systems.
- Use of mathematics and physical and engineering sciences and systems analysis tools in components and machines and produce design and manufacture.

Programme Intended learning outcomes (ILO's)

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

- Concepts and 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.

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.

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.

Skills for life and work (general skills)

- Collaborate effectively within multidisciplinary teams.
- Work in stressful environment and within constraints.
- Share ideas and communicate them with others effectively.
- Demonstrate efficient IT capabilities.
- Effectively manage tasks, time, and resources.
- Search for information and engage in life- long self-learning discipline.

Programme Structure & Content

The BEng (Hons) Energy and Renewable Energy Engineering degree is a four-year UEL/ASU double award program, i.e. levels 3–6. The program 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 program(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 Program Leader, who has overall responsibility for the day-to-day running of the program is Associate Prof. Dr. Walid El-Khattam. Students will pay all tuition/study/workshop/course field trip fees directly to ASU. Details of the program 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 a University Certificate students will need to obtain 40 credits at level three or higher.

Design of the Programme

The design and content of the BEng (Hons) Energy and Renewable Energy Engineering undergraduate programme has been determined by a number of considerations including:

- to meet the national Benchmark Standards for Electrical and Mechanical 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 are specialists in these 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.

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 Energy and Renewable Energy Engineering programme are registered on the 2013 Bylaw, while the students who will register at the academic year 2019-2020 will be enrolled on the 2018 Bylaw. For students who will be enrolled on the 2013 Bylaw and want to acquire a BEng (Hons) from UEL, an equivalency will be made for the courses achieved by student(s) to determine which level s/he will be enrolled at. As for students who will be enrolled on the 2018 Bylaw and want to acquire a BEng (Hons) from UEL, they will register the corresponding UEL level modules and follow either full time or part time study modes. It worth noting that, the different bylaws were revised and comply with each other just to regulate the study in the programe and how the engineering education in ASU which is in the form of credit hours equivalent to the engineering education in UEL which is a semester base education and bylaws work as a reference whenever needed and no effects on the students during their study of the programme.

Details of the programme structure:
"The listed modules' codes are temporary, and they will be updated latter according to the UEL partner Web Marks Entry (WME) system"

Level	Year	Code	Module title	credit	Core/ Pathway Related
3	1	EG9311	Applied Mathematics for Engineering problems	30	Core
3	1	EG9312	Electrical circuits, measurements and electro-magnetic fields	30	Core
3	1	EG9313	Energy resources and Thermodynamics	30	Core
3	1	EG9314	Materials and Mechanical manufacturing Engineering	30	Core
4	2	EG9421	Heat transfer and fluid mechanics	30	Core
4	2	EG9422	Electrical Machines and power engineering	30	Core
4	2	EG9423	Theory of machines and machine construction	30	Core
4	2	EG9424	Fundamentals of electronics and control	30	Core
5	3	EG9531	Solar energy	30	Core
5	3	EG9532	Power electronics and Automation systems	30	Core
5	3	EG9533	Combustion engines and flow machines	30	Core
5	3	EG9534	Machine Design and electromechanical industrial application	30	Core
Energy Generation Engineering Track					
6	4	EG9641	Economics of generation and Distribution network Protection	30	Core
6	4	EG9642	Renewable energy and Network interfacing	30	Core
6	4	EG9643	Graduation project	30	Core

6	4	EG9644	Energy Generation technical studies	30	Core
Energy management Engineering Track					
6	4	EG9641	Economics of generation and Distribution network Protection	30	Core
6	4	EG9642	Renewable energy and Network interfacing	30	Core
6	4	EG9643	Graduation project	30	Core
6	4	EG9645	Energy Management technical studies	30	Core
Please note: Optional modules might not run every year, the programme team will decide on an annual basis which options will be running, based on student demand and academic factors, in order to create the best learning experience.					
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.					

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

Module Code	Module Name	Bylaw 2013		Bylaw 2018		Assessment Method
		Component of Assessment	Percentage Weighting	Component of Assessment	Percentage Weighting	
Energy Eng. Program (UEL)Foundation-ASU Level 1						
30Credits	Applied Mathematics for Engineering Problems	**PHM 113** Calculus for Engineers (3) - (3 Credits)	30%	**PHM111** Probability and Statistics - (2 Credits)	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
		PHM 115 Differential Equations and Partial Differential Equations - (3 Credits)	35%	**PHM112** Differential Equations and Numerical Analysis - (4 Credits)	40%	
		PHM 114 Statistics and Probability for Engineering -(3 Credits)	35%	**HUM xxx** Engineering Economics - (2 Credits)	30%	
30Credits	Electrical circuits, measurements and Electromagnetic fields	**EPM 115** Electrical circuits - (3 Credits)	35%	**EPM 115** Electrical circuits - (3 Credits)	35%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (1st and 3rd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		EPM 116 Electromagnetic fields -(3 Credits)	35%	**EPM 116** Electromagnetic fields -(3 Credits)	35%	
		EPM 172 Electrical measurements and measuring instruments - (3 Credits)	30%	**EPM 172** Electrical measurements and measuring instruments - (3 Credits)	30%	

30Credits	Energy resources and Thermodynamics	**EPM 122** Energy resources and regenerative energy resources - (3 Credits)	35%	**EPM 124** Energy resources and renewable energy r- (3 Credits)	35%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (3rd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		EPM 123 Energy conversion - (3 Credits)	30%	**MEP 111** Thermal physics -(3 Credits)	30%	
		MEP 112 Thermodynamics -(3 Credits)	35%	**MEP 211** Thermodynamics - (3 Credits)	35%	
30Credit	Materials and manufacturing Engineering	**MDP 132** Structures and properties of materials - (3 Credits)	35%	**MDP 151** Structures and properties of materials - (3 Credits)	35%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (2nd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 113 Production Engineering and manufacturing(1) - (3 Credits)	35%	**MDP 113** manufacturing Technology(1) - (3 Credits)	35%	
		HUM 014 Engineering Profession, Practice, and Responsibilities -(3 Credits)	30%	**MDP 111** Mechanical Engineering drawing - (3 Credits)	30%	
Energy Eng. Program (UEL)Level 4-ASU Level 2						
30Credit	Heat Transfer and fluid Mechanics	**MEP 223** Heat Transfer - (3 Credits)	35%	**MEP 212** Heat Transfer - (4 Credits)		Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (1st ,2nd and 3rd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MEP 233 Fluid Mechanics - (3 Credits)	35%	**MEP 221** Fluid Mechanics and turbo machinery - (4 Credits)		
		MEP 284 Measurements Lab -(3 Credits)	30%	**MEP 231** Measurements and instrumentation -(2 Credits)		
30Credit	Electrical Machines and Power engineering	**EPM 231** electrical Machines (1) - (3 Credits)	35%	**EPM 231** electrical Machines (1) - (3 Credits)	35%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (1st ,2nd and 3rd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		EPM 232 Electrical Machines (2) - (3 Credits)	35%	**EPM 232** Electrical Machines (2) - (3 Credits)	35%	
		EPM 233 Electrical Power Engineering - (3 Credits)	30%	**EPM 233** Electrical Power Engineering -(3 Credits)	30%	
30Credit	Theory of Machines and Machine construction	**MDP 266** Machine Construction - (3 Credits)	40%	**MDP 112** Machine Construction - (3 Credits)	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
		MDP 254 Theory of Machines - (3 Credits)	30%	**HUM 014** Engineering Profession, Practice, and Responsibilities -(3 Credits)	30%	

		HUM xxx Engineering Economics - (2 Credits)	30%	HUM 013 project management- (2 credits)	30%	Final Exam
30Credit	Fundamentals of Electronics and Control	**ECE 232** electronic Engineering - (3 Credits)	40%	**ECE 216** Industrial electronics - (3 Credits)	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
		EPM 281 Automatic control systems - (3 Credits)	30%	**EPM 281** Advanced control systems - (3 Credits)	30%	
		HUM xxx Engineering management - (3 Credits)	30%	**HUM xxx** Engineering management - (3 Credits)	30%	
Energy Eng. Program (UEL)Level 5-ASU Level 3						
30Credit	Solar Energy	**EPM 324** Fundamentals of photovoltaic - (3 Credits)	40%	**EPM 225** Fundamentals of photovoltaic - (3 Credits)	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 354 Solar Energy (1) - (3 Credits)	30%	**MEP 426** Solar Energy (1) - (3 Credits)	30%	
		HUM xxx Impact of technology - (3 Credits)	30%	**HUM xxx** Impact of technology - (3 Credits)	30%	
30Credit	Power electronics and automation systems	**EPM 324** Power electronics (1)- (3 Credits)	40%	**EPM 255** Power electronics (1)- (3 Credits)	50%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (1st and 2nd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		EPM 325 Power electronics (2)- (3 Credits)	30%	**EPM 354** Power electronics (2)- (3 Credits)	50%	
		EPM 336 Microprocessor based automated systems (2)- (3 Credits)	30%			
30Credit	Combustion Engines and flow machines	**MEP 363** Combustion and furnaces - (3 Credits)	40%	**MEP311** Combustion- (3 Credits)	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following:
		MEP 365 Thermal power Plants - (3 Credits)	30%	**MEP321** Incompressible Flow Machines- (3 Credits)	30%	

		MEP 364 Internal combustion Engines - (3 Credits)	30%	**MEP322** Compressible Flow Machines- (3 Credits)	30%	Lab data sheets (1st ,2nd and 3rd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
30Credit	Machine Design and electromechanical industrial applications	**MDP 364** Machine Design - (3 Credits)	40%	**MDP 211** Machine Element Design - (3 Credits)	40%	Portfolio of students' work includes a compilation of coursework of the 3 modules; each module includes samples of the following: Lab data sheets (1st and 2nd Module) Activities/Assignments 2 Quizzes 1 Midterm Exam Final Exam
		MDP 368 Vibration and dynamics - (3 Credits)	30%	**MDP 4xx** Technical Elective (1) - (3Credits) **MDP 212** Mechanics of Machines - (3 Credits)	30%	
		EPM 372 Industrial Field Training - (3 Credits)	30%	**EPM 4xx** Technical Elective (2) - (3Credits) **EPM 217**Electrical Installation and Utilization of Electrical Energy - (3 Credits)	30%	
Energy Eng. Program (UEL)Level 6-ASU Level 4						
30Credit	Economics of Generation, storage and distribution network Protection	**EPM 434** Economics of generation , transmission and operation - (3 Credits)	35%	**EPM 434** Economics of generation , transmission and operation - (3 Credits)	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
		EPM 425 Storage energy technologies - (3 Credits)	35%			
		EPM 491 Individual studies in electrical power Engineering – (3 Credits)	30%	**EPM 463** Power system Protection – (3 Credits)	50%	
30Credit	Renewable energy and network interfacing	**MEP 453** Wind energy - (3 Credits)	35%	**MEP 427** Wind energy - (3 Credits)	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
		MEP 452 Solar Energy (2) - (3 Credits)	35%			
		EPM 433 Network interfacing of Renewable resources - (3 Credits)	30%	**EPM 427** Renewable energy sources interfacing - (3 Credits)	50%	
30Credit	Graduation Project	**EPM 497** Graduation project (1)	50%	**EPM 497** Graduation project (1)	50%	Design portfolio, which is a compilation of students' coursework in the 2 modules. The first and second modules include samples of the
		EPM 498 Graduation project (2)	50%	**EPM 498** Graduation project (2)	50%	

						students' report progress, report presentation, posters of the report and the project, and capstone project progress (Energy generation and energy management tracks) . Each module includes Thesis of 5000-5500 word with topic selected by a student according to his/her area of interest upon advisors' approval
30Credit (Energy Management . Eng.)***	Energy management technical studies	**EPM 4xx** Technical Elective (1) - (3Credits) **EPM 484** Electric drives	25%	**EPM 4xx** Technical Elective (3) - (3Credits) **EPM 484** Electric drives	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
		EPM 4xx Technical Elective (2) - (3Credits) **EPM 486** Computer Applications in power Systems	25%			
		EPM 4xx Technical Elective (3) - (3Credits) **EPM 485** Advanced Control Systems	25%	**EPM 4xx** Technical Elective (4) - (3Credits) **EPM xx1** Energy management essentials	30%	
		MEP 4xx Technical Elective (4) - (3Credits) **MEP 472** Refrigeration and Air conditioning	25%	**MEP 4xx** Technical Elective (5) - (3Credits) **MEP 472** Refrigeration and Air conditioning	30%	
30Credit (Energy Generation. Eng.)***	Energy generation technical studies	**MEP 4xx** Technical Elective (1) - (3Credits) **MEP 433** Water Desalination	25%	**MEP 4xx** Technical Elective (3) - (3Credits) **MEP 434** Water Desalination and Distillation	35%	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 4xx Technical Elective (2) - (3Credits) **MEP 491** Individual studies in mechanical engineering	25%	**MEP 4xx** Technical Elective (4) - (3Credits) **MEP 491** Individual studies in mechanical engineering	35%	
		MDP 4xx Technical Elective (3) - (3Credits) **MDP 446** Quality control, Quality assurance and safety	25%	**MEP 4xx** Technical Elective (5) - (3Credits) **MEP 414** Biomass and waste conversion technology	30%	

		EPM 4xx Technical Elective (4) - (3Credits) **EPM 435** Advanced System integrity – (3 Credits)	25%			

Notes:
*** = Elective (optional) module. Students to take one optional module

3 KEY STAFF AND CONTACT DETAILS

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Programme Organisation

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

The Dean of Faculty of Engineering

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

The Programme Leader

Assoc.Prof Walid El-Khattamis the programme leader for the BEng (Hons) Energy 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, coursework, presentations and time constrained assessments.
- Each course syllabus contain: course objectives, textbook, outline, material, assessments, grading policy and outcome. Outlines 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 not 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 should 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). A marking criteria will be published to students using either a rubric or more detailed written explanation and will be provided to students at the same time as the assessment specification/task. This will form part of the assessment brief which will be agreed with the external examiner.

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

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

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

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

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

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

ASU Assessments vs UEL/ASU Double Assessment Arrangements

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

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

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

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

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

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

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

Moderation of Assessment

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

Preparing the assessment brief / examination paper

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

Marking of assessments

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

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

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 hour late period, then the second submission will be marked and 5% deducted.

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

Extenuating circumstances claims

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

Breaches of Academic Misconduct Regulations

Assessment tasks are designed to reduce, as far as is practicable, the possibility of plagiarism and collusion and other instances of academic misconduct. Where an instance of academic misconduct is suspected, procedures detailed in Part 8 of Manual of General Regulations (Academic Misconduct Regulations of UEL) will be invoked. This is to ensure compliance with UEL's academic misconduct policy. 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 students so that they can use the feedback to improve their future performance. The students are also provided with feedback on formative tasks – that is 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 students to develop their 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 students to both 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.

Details of local assessment arrangements

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

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

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

Grades of the ERGY 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

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.
- 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.
- 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.
- 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.
- 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 Masters 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: Applied Mathematics for Engineering Problems	**Module Code:** EG9311 **Level:** 3 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Dr. Makram Roshdy
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations:**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

The main aim of this module is to provide students with the opportunity to develop an understanding of trigonometric functions and the skills needed to apply advanced mathematical techniques such as algebra, calculus and statistics, to solve complex engineering problems. Additional techniques, including matrices and numerical methods, are introduced to enable students to solve linear and non-linear algebraic equations, partial differentiation, and differential equations.

Main topics of study:

Vectors, Lines and Planes. Vector-valued Functions. Partial Derivatives. Multiple Integrals. Calculus of Vector Fields: line and surface integrals, Green's theorem, Stokes' theorem, Divergence theorem.

Introduction to and classification of differential equations. First Order Equations. Second Order Equations. Laplace Transforms: definition and calculation of transforms, applications to differential equations with discontinuous forcing functions. Systems of First Order Linear Equations.

Descriptive and inferential statistics, variables and types of data, data collection and sampling techniques. Probability and counting rule. Frequency distributions and graphs. Data description. Continuous probability distributions.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Define three-dimensional coordinate systems, Functions of several variables, Green's theorems and Stokes' Theorem
2. Define Basic concepts of Probability.
3. Define descriptive and inferential statistics.

Thinking skills

4. Evaluate line and surface integrals.
5. Calculate Laplace, inverse Laplace transforms, and Calculate Fourier coefficient for odd and even functions and Solve partial differential equations

Subject-based practical skills

6. Recognize the mathematical expectation, variance, covariance and correlation coefficient.
7. Study discrete probability distributions: binomial, Poisson, and hypergeometric

distributions.

8. Understand continuous probability distributions: Normal distribution, standard normal distribution and exponential distribution

Skills for life and work (general skills)

9. Use the knowledge of mathematics to solve engineering problems.

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) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	1-3,9
Portfolio 2: (84 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	40%	4-9
Portfolio 3: (63 hours) Coursework: (Activities/assignments/lab datasheets) Exams (Quizzes/Midterm/Final)	30%	2,3,9

Reading and resources for the module:

Core

Stroud, K.A. & Booth, D.J. 2007 Engineering Mathematics, Palgrave Macmillan.

Bali, N.P. and Iyengar, N.C.N., 2004. *A Textbook of Engineering Mathematics: For B. Sc.(Engg.). BE, B. Tech., ME and Equivalent Professional Exams*. Laxmi publications.

Recommended

<table>
<tr><td colspan="2">Hobson, A.J (2002) Just the Maths. Available at http://www.e-booksdirectory.com/details.php?ebook=5095 [free e-book].
Randahl, M., 2012. First-year engineering students' use of their mathematics textbook-opportunities and constraints. Mathematics Education Research Journal, 24(3), pp.239-256.</td></tr>
<tr><td>Indicative learning and teaching time
(10 hrs per credit):</td><td>Activity</td></tr>
<tr><td>1. Student/tutor interaction:

135 hours
67.5 hours
0 hours</td><td>

Lectures
Tutorials
Laboratories/Practicals</td></tr>
<tr><td>2. Student learning time:

97.5 hours</td><td>

Background reading, preparation for examination, write-up time for laboratory exercises and coursework</td></tr>
<tr><td>Total hours (1 and 2):</td><td>300 hours</td></tr>
</table>

Module Specification

Module Title:	**Module Code:**	**Module Leader**:
Electrical circuits, measurements and Electromagnetic fields	**Level:** 3 **Credit:** 30 **ECTS credit:** 15	Assoc.Prof. Ahmed Taher
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

- Enrich and develop student ability to analyse and solve dc and ac circuits. As well as verifying experimentally.
- Enrich the student's basic background concept of electromagnetic fields with ability to solve related problems.
- Demonstrate knowledge and understanding of analog and digital electrical measurement systems

Electric circuits elements, Electrical Circuits Theorems, analysis of electric circuits for DC & AC voltage sources. Electric Field and magnetic fields theories. Electrical Measurement errors, analysis. Analog instruments, Current, voltage and power measurements, Measurement of nonelectrical parameters. Digital devices: Digital measuring instruments.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Recognize the voltage-current characteristics of different circuit elements (passive and active)
2. Define the different theories that can be applied to electric circuits.

Thinking skills

3. Categorize circuits in complex domain starting from the time domain.
4. Compare alternative methods of electrical circuits
5. Analyse the electrostatic and electrical measurement problems.
6. Model the different parameters of the electromagnetic fields.
7. Identify the magneto static problems.

Subject-based practical skills

8. Evaluate the effect of the electromagnetic fields on different materials.
9. Assess the theory of operation of different electrical measuring systems (analogue and digital)

Skills for life and work (general skills)

10. Collaborate effectively within multidisciplinary teams

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: (73.5 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	35%	1-4,10
Portfolio 2: (73.5 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	35%	5-8,10
Portfolio 3: (63 hours) Coursework: (Activities/assignments/lab datasheets) Exams (Quizzes/Midterm/Final)	30%	5,9,10

Reading and resources for the module:

Core

- David, J & Mark, R 2011, Basic engineering Circuit Analysis, 10th Edition, John Wiley & Sons.
- William, H 2011, Engineering Electromagnetic, 8th editions, McGraw Hill Pub.
- Gupta, JB 2009. Electronic and Electrical Measurements and Instrumentation, S K Kataria & Sons.
- Alan. SM 2001, Measurement and Instrumentation principle", Butterworth-Heinemann.

Recommended

- William, H, Jack, EK & Steven, MD 2011, Engineering Circuit Analysis, 8th Edition, Mc Graw Hill,
- David, MP 2011, Microwave Engineering", 4th editions: Wiley, New York.
- James, W 2008, Electric Circuits, 8th Edition, Pearso prentice Hall.
- Charles, K. & Matthew NO 2009, Fundamental of electrical circuits, 4th Edition, Mc Graw

Hill.
- John, D 2010, Electromagnetic with applications, 5th editions, McGraw Hill Pub.
- Sawhney, AK &Puneet S 2013, A Course in Electrical and Electronic Measurements and Instrumentation, by Dhanpat Rai & Co.
- Alan. SM 2001, Measurement and Instrumentation principle", Butterworth-Heinemann.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 120 hours 75 hours 30 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 75 hours	Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Energy resources and Thermodynamics	**Module Code:** **Level:** 3 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Assoc.Prof. Ahmed Taher
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

The module provides an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application. The class will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy,

The module also introduces the basic fundamentals of physical meaning of thermodynamics including properties of pure substances, reversible and irreversible processes, physical meaning and applications of first and second laws of thermodynamics.

Main topics of study:

Thermal System, Control Volume, States of the Working Medium, Processes and Cycles, Calculation of Work, Heat Exchange with the Surroundings, Ideal Gases, Equation of State, Pure Substances, First Law of Thermodynamics and its Applications. Second Law of Thermodynamics, Entropy, Irreversibility, Exergy and Availability, Air Standard Cycles, Vapor Cycles. Identifying all energy resources; Renewable and conventional. Conventional methods of energy conversion:

Electromechanical energy conversion, Faraday's law, Lorenz forces, The basic electric generator, The basic electric motor, Magnetically single excited systems, Magnetically multi-excited systems, Dynamic energy conversion equations, conservative fields, coupled magnetic fields, Torque and stored energy in magnetic fields, Co-energy and torque calculations, The reluctance machine, Multi-fed rotating systems, Electrostatic Systems

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Define basic properties of different renewable sources of energy and technologies for their utilisation.
2. Describe main elements of technical systems designed for utilisation of renewable sources of energy.
3. Interpret advantages and disadvantages of different renewable sources of energy.

Thinking skills

4. Undertake simple analysis of energy potential of renewable sources of energy.
5. Explain the correlation between different operational parameters.
6. Select engineering approach to problem solving when implementing the projects on renewable sources.

Subject-based practical skills

7. Identify key principles of thermodynamics such as: first and second law of thermodynamics, principle of increase of entropy and factors causing irreversibility.
8. Analyse basic thermal engineering systems, e.g. apply first and second law to analyse closed and open systems, reversible and irreversible processes, efficiencies of thermodynamic cycles;

Skills for life and work (general skills)

9. Conduct simple thermodynamic experiments using standard laboratory equipment and analyse findings and draw conclusions
10. Share ideas with others effectively.

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: (73.5 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	35%	1-6,10
Portfolio 2: (63 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	30%	5,6,10
Portfolio 3: (73.5 hours) Coursework: (Activities/assignments/lab datasheets) Exams (Quizzes/Midterm/Final)	35%	7-10

Reading and resources for the module:

Core

- Thayer, M., 2016. Renewable Energy and Energy Efficiency: Assessment of Projects and Policies. Applied Economics Journal, 23(1), pp.92-100.
- Daily, J.W., 2018. Statistical Thermodynamics: An Engineering Approach. Cambridge University Press.

Recommended

- Stougie, L., Giustozzi, N., van der Kooi, H. and Stoppato, A., 2018. Environmental, economic and exergetic sustainability assessment of power generation from fossil and renewable energy sources. International Journal of Energy Research, 42(9), pp.2916-2926.
- "Bejan, A., 2016. Advanced engineering thermodynamics. John Wiley & Sons.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 120 hours 75 hours 22.5 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 82.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title:	**Module Code:**	**Module Leader**:
Materials and Mechanical manufacturing Engineering	**Level:** 3 **Credit:** 30 **ECTS credit:** 15	Assoc.Prof. Ahmed Taher
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite: None	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module provides an introduction to the type of materials, structure, properties, characteristics and applications, with special emphasis on the relationships between internal structure and properties. Also, this module introduces the theory and operation of manufacturing including manufacturing processes and equipment overview, manufacturing design, production process and flow, and machine operations. Furthermore, this module covers 2D & 3D graphical representation of a mechanical drawing or mechanical sketches which includes multiple views, symbols and other drawing details.

Main topics of study:

Engineering materials. The internal structure of material. Good exploitation of the material requirements for a set of properties suitable for this use. Material properties. Relationship between material properties and its internal structure, method of synthesizing, manufacturing, processing. Machining. Methods of tools and work piece fixation, Machining time, Introduction to Non-conventional machining processes. Forming. Types of forming processes. Introduction to Machine parts and assembly drawing, Exercises on assembly drawings. Introduction to solid modelling on a CAD software.

Learning Outcomes for the module

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

Knowledge and Understanding:
1. Understand the basic properties that characterize the behaviour of materials
2. Understand the type of loadings/environment that materials should withstand
3. Select appropriate type of material for specific application

Thinking skills
4. Use different approaches to modify structure/microstructure in order to get desired properties
5. Suggest testing methodologies for the characterization of different categories of materials.

6. Identify the common machines used in a manufacturing process according to different manufacturing stages.

Subject-based practical skills

7. Illustrate simple design concepts with hand drawings.
8. Apply basic theory to solve engineering problems.

Skills for life and work (general skills)

9. Use a Computer Aided Design system to construct part models and simple assembly models as well as engineering detail drawings.
10. Develop the skills which are related to creative thinking, problem solving, and teamwork in different fields.

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.

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Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated**
Portfolio 1: (73.5 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	35%	1-4,8,10
Portfolio 2: (73.5 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	35%	5-10
Portfolio 3: (63 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	30%	1,7-10

Reading and resources for the module:
Core

- Ashby, M.F., Shercliff, H. and Cebon, D., 2018. Materials: engineering, science, processing and design. Butterworth-Heinemann.
- Groover, M.P., 2016. Groover's Principles of Modern Manufacturing: Materials, Processes, and Systems. Wiley Global Education.
- Chapman, W., 2018. Engineering modeling and design. Routledge.

Recommended

- Ashby, M.F., Shercliff, H. and Cebon, D., 2018. Materials: engineering, science, processing and design. Butterworth-Heinemann.
- Singh, M., Ohji, T. and Asthana, R. eds., 2015. Green and sustainable manufacturing of advanced material. Elsevier.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Title: Heat transfer and fluid mechanics	**Module Code:** **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof.Dr.Nagar Hassan
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

The module will provide fundamentals of fluid statics and dynamics for the solution of practical Energy Engineering problems through experimentation and experimental data analysis related to Turbo-Machines. Also, the module introduces the fundamental principles of heat and mass transfer with reference to the Mechanisms of Heat Transfer: Conduction, Convection and Radiation in addition to basic heat exchange technologies and applications. Another focus of the module is the measurements and instrumentation and their applications, measurement terminologies and principles of different measurement techniques.

Main topics of study:

Properties of Fluids, Boundary Layers, Continuum Hypothesis, Streamlines, Velocity and Acceleration, Continuity Equation, Classification of Flow Fields. Bernoulli's Equation, Losses in Pipes, Navier Stokes Equation, Drag and Lift Forces, Compressible Flow, Mach Number, Equations of Gas Dynamics, Flow through Nozzles, Shock Waves, Classification of Turbo-Machines, Operation of Pumps, Selection of Pumps. Thermal Conduction, Fins, Conduction with Uniform Internal Heat Generation, Steady Two-Dimensional Conduction, Unsteady One Dimensional Conduction. Convection. Heat Exchangers. Thermal Radiation. Mass Transfer. Characteristics of Sensors, Accuracy, Precision, Statistical Methods Error Analysis and Uncertainty.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Define fluid properties, stresses in fluids at rest and in motion and types of fluid flows and identify the governing equations of fluid flow: continuity, energy and momentum equations from principles of mass, energy and momentum conservation.
2. Identify the terms of Bernoulli's equation, include major and minor losses and draw the energy and the hydraulic gradient lines for flow systems.
3. Identify and explain velocity and flow measuring devices, boundary layers, separation, friction and form drag, lift and circulation and occurrence of the problem of cavitation.

Thinking skills

4. Define basic concepts of heat and mass transfer, the terms of heat dissipation equation and mass transfer in steady and transient conduction.
5. Describe and explain different convection problems such as natural convection, forced convection, boiling and condensation.
6. Select the appropriate type of heat exchanger according to the application.

Subject-based practical skills

7. Explain the radiation mode of heat transfer.
8. Define the sources of various errors, perform calibration and explain the

performance characteristics of measuring instruments.

Skills for life and work (general skills)

9. Outline and describe different measuring instruments used to measure pressure, flow, velocity, temperature, forces, and stresses and strain and to analyse the products of combustion gases.
10. Analyse experimental data and apply critical thinking in engineering problems in order to prepare technical effective studying reports.

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: (73.5 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	35%	4-7
Portfolio 2: (73.5 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	35%	1-3,10
Portfolio 3: (63 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	7-10

Reading and resources for the module:

Core

- Nakayama, Y., 2018. Introduction to fluid mechanics. Butterworth-Heinemann.
- Ghiaasiaan, S.M., 2018. Convective heat and mass transfer. CRC Press.
- Sparrow, E.M., 2018. Radiation heat transfer. Routledge.
- Francis, S.T. and Morse, I.E., 2018. Measurement and instrumentation in engineering: principles and basic laboratory experiments (Vol. 67). CRC Press.

Recommended

- Penney, W.R. and Clausen, E.C. eds., 2018. Fluid Mechanics and Heat Transfer: Inexpensive Demonstrations and Laboratory Exercises. CRC Press.
- Ratha, S. and Samantara, A.K., 2018. Instrumentation and measurement. In Supercapacitor: Instrumentation, Measurement and Performance Evaluation Techniques (pp. 5-22). Springer, Singapore.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 105 hours 82.5 hours 30 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 82.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Electrical Machines and power Engineering	**Module Code:** **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof.Dr.Nagar Hassan
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

- Enrich the student knowledge about DC & AC electrical machines & transformers.
- Train the student to analyse transient performance of the DC & AC electrical machines.
- Understand the theory of high voltage generation ad corona phenomena

Main topics of study:

DC Machines: Generation of e.m.f., torque, construction, load characteristics of dc generators and motors, Testing of dc machines. Transformers: fundamental laws, construction, equivalent circuits, transformer efficiency, transformer testing. Synchronous machines: construction, fundamental laws, synchronous motors performance. Permanent magnet synchronous generators. Induction machines: construction, and performance and testing. Speed control of 3-ph induction motor, induction generator.

Introduction to electric power system, application of high voltage in electric power system, overhead transmission lines. Electric power distribution, underground cables, generation of high voltage, high voltage measurement, electric insulation types, corona, earthing and safety, protection in power system.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Select the suitable rating of DC electrical machines and transformers.
2. Describe controllers for the speed control of DC electrical machines.
3. Discus the solutions to improve the performance of DC electrical machines and transformers.

Thinking skills

4. Compute the performance parameters of the electrical transformers
5. Calculate the suitable rating of AC electrical machines.

Subject-based practical skills

6. Design controllers for the speed control of AC electrical machines and transmission lines/distribution systems
7. Model the different methods of generation of high voltage
8. Predict the techniques of protections.
9. Examine the different circuits of generation of high voltage

Skills for life and work (general skills)

10. Collaborate effectively within multidisciplinary teams

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.

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Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (73.5 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	35%	1-3,10
Portfolio 2: (73.5 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	35%	4-6,10
Portfolio 3: (63 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	7-10

Reading and resources for the module:

Core

- Fitzgerald, AE & Kingsley, C 2014, Electric Machinery" McGraw- Hill Publishers, 7th edition.
- Sen, P 2014, Principles of Electric Machines and Power Electronics" 3rd editions J. Wiley Publishers.
- Saadat, H 2011, Power System Analysis, 3rd edition, PSA Publishing.

Recommended

- -Chapman, SJ 2011, Electric Machinery Fundamentals, 5th edition, McGraw-Hill Publishers,
- SALAM, M 2000, High Voltage Engineering Theory and Practice, 2nd CRC Press.
- Naidu, MS & Kamaraju , V 2013, High Voltage Engineering, 5th edition, Tata McGraw Hill Education Private Limited.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 105 hours 82.5 hours 30 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 82.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title:	**Module Code:**	**Module Leader**:
Theory of machines and machine construction	**Level:** 4 **Credit:** 30 **ECTS credit:** 15	Prof.Dr.Nagar Hassan
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

The module will provide introduction and Basic Concepts of Position Analysis of Mechanisms, Velocity and Acceleration Analysis of Mechanisms and Vectorial Force Analysis. Also, the module will provide fundamental principles in machine construction based on the strain and calculation of the strength of the material. Estimated life analysis and operational reliability based on material defects in production, with the use of fracture mechanics. Introduction in strength- and deformation calculation based on stress and permitted deformations regarding to clearance in the machine.

project management objectives are the successful development of the project's procedures of initiation, planning, execution, regulation and closure as well as the guidance of the project team's operations towards achieving all the agreed upon goals within the set scope, time, quality and budget standards

Main topics of study:

Mechanisms, Equilibrium of machines and force analysis, power analysis, Friction and inertia-effect, Center of percussion. 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 (Centering, Flanged, Riveted, Keyed, Splined, Screwed), Power Screw and its joints, Seals, Springs, Stress Concentrations, Reverse Engineering.

Definitions used in project management, the project life cycle, project stages, relationship and responsibilities of the different project parties, execution phase responsibilities, productivity, quality management, time management, material delivery management, sequencing and scheduling

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Describe and identify the main Machine parts and their subcategories.
2. Design and develop the appropriate element for each application.
3. Analyse the stress-strain state of each element under loading.

Thinking skills

4. Calculate the strength of each case study.
5. Define project life cycle and project stages.
6. Identify the responsibilities of the different project parties

Subject-based practical skills

7. Solve ethical issues of real case studies
8. Specify maintenance program of every element
9. Make damage assessment

Skills for life and work (general skills)

10. Prepare technical effective studying reports.

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) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	40%	1-3,8-10
Portfolio 2: (63 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	30%	4,7,10
Portfolio 3: (63 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	30%	4-6,10

Reading and resources for the module:

Core

- Haik, Y., Sivaloganathan, S. and Shahin, T.M., 2018. Engineering design process. Nelson Education.
- Chang, K.H., 2018. Motion Simulation and Mechanism Design with SOLIDWORKS Motion 2018. SDC publications.
- Larson, E., and Gray, C. (2014) *Project Management*. McGraw-Hill.

Recommended • Yang, T.L., Liu, A., Shen, H., Hang, L., Luo, Y. and Jin, Q., 2018. Topology Design of Robot Mechanisms. Singapore: Springer. • Robert, L.N., 2019. Design of machinery. McGraw-Hill Education. Craver, C. and Tabery, J., 2015. Mechanisms in science.	
Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Fundamentals of electronics and control	**Module Code:** **Level:** 4 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof.Dr.Nagar Hassan
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

- Enhance the students' knowledge of the physics of Bohr Model, the properties of Fermi – Dirac distribution function and the physics of PN junction & BJT, FET transistor for AC & DC circuits.
- Introduce the student to automatic control systems modelling, analysis and design.
- Apply the MATLAB control toolbox to design PID controllers.

Main topics of study:

Bohr Model, Energy Bands, Types of Materials, Intrinsic S.C., Extrinsic S.C., Methods of current Flow & Continuity eqn., Physics of PN junction, Thermal equ., Forward & reverse bias, PN junctions circuits, App. In AC and DC circuits, Different types of capacitance, BJT transistor physics and modes Of operations, BJT transistor circuits, FET transistor physics and modes Of operations, FET transistor circuits.

Introduction to Control Systems, Modelling and block diagram representation, Time domain Analysis
Disturbance and sensitivity Analysis, Steady state error and Stability Analysis, State Space representation
Root locus Analysis, Tuning of PID, Frequency domain Analysis, Lead and Lag compensator design

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Discus the physics of PN junction.
2. Explain the efficiency BJT transistor.
3. Describe the output function of the diode circuits.

Thinking skills

4. Analyse the principle of operations of BJT and FET transistors and identify the benefits of using diodes in AC and DC circuits
5. Identify quality and time management .
6. Outline the process of material delivery management .

Subject-based practical skills

7. Design PID Controllers and choose their parameters and Categorize Control systems
8. Interpret control system performance index
9. Design a real case project problem using MATLAB.

Skills for life and work (general skills)

10. Prepare technical effective studying reports.

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) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	40%	1-4
Portfolio 2: (63 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	30%	7-9,10
Portfolio 3: (63 hours) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	30%	5,6,10

Reading and resources for the module:

Core

- Boylested, R & Nashelsky, L, 2012, Electronic Devices & Circuit Theory, 11th edition, Pearson.
- Ogata, K 2010, Modern Control Engineering, Prentice Hall.

Recommended

- Thomas, LF &David MB, 2013, Electronics Fundamentals: A Systems Approach, first edition, Pearson.

- Cavallo, A 1996, Practical Guide to MATLAB, Simulink and Control Toolbox. Prentice Hall.	
Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Title: Solar energy	**Module Code:** **Level:** 5 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof.Dr.Gamal Hashem
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module covers, the theoretical, numerical, and approximate techniques to solve photovoltaic analysis and design problems for both stand alone and grid connected types.

This module will give students a thorough background in photovoltaic, its history, equations, and system integration.

This module also covers; solar radiation – theory and measurements and solar thermal collector systems – materials selection, component testing and systems analysis. This Module focuses on the terminology, principles and methods used in solar thermal engineering.

Main topics of study:

Principles of solar cell operation, structure, electrical and optical characteristics, equivalent circuit, Crystalline silicon solar cells, Thin film technologies for PV, Energy production by a PV array, Energy balance in stand-alone PV systems, Standards, calibration and testing of PV modules and solar cells, PV system monitoring.

Intensity of Solar Radiation within the Outer Space, Calculation of the Solar Intensity on the Earth, Availability and Usability of Solar Energy, Measurement of the Solar Intensity, Direct and Diffuse Radiation, Reflection from the Ground, Solar Angles, Shades, the Equation of Time, Incidence Angle on Horizontal and Inclined Surfaces, Theory of the Flat Plate Collector, Transmission through Glass, Heat Loss Calculations, Collector Performance, Solar Energy Concentrators, Point and Line Concentrators, Cylindrical Trough, Parabolic Trough, Parabolic Dish, Central Receiver, Heliostat, Heliostat Optimum Placement, Sun Beam Tracking, Shadowing and Blocking, Concentration Ratios, Fresnel Lens, Thermal performance, Heat Transfer Coefficients, Receiver Efficiency.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Analyse different problems about equivalent circuit model.

Thinking skills

2. Solve the design problems for standalone photovoltaic systems for water pumping purposes.
3. Design a specific system of photovoltaic for different purposes.
4. Explain the technical and physical principles of solar collectors,

Subject-based practical skills

5. Measure and evaluate different solar energy technologies through knowledge of the physical function of the devices,
6. Calculate the required size of solar collectors from a given demand need by using appropriate software,

Skills for life and work (general skills)

7. Make critical comparisons of different solar energy systems,
8. Communicate technological and socio-economic issues in a concise and accessible way to a target group with basic technical 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) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	40%	1-4
Portfolio 2: (63 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	4-8
Portfolio 3: (63 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	8

Reading and resources for the module:
Core

- A. Luque and S. Hegedus 2010 “Handbook of Photovoltaic Science and Engineering”,
- A. Goetzberger and V.U. Hoffmann, , 2008 “Photovoltaic Solar Energy Generation”
- S.R. Wenham, M.A. Green, M.E. Watt and R. Corkish, 2010 , “Applied Photovoltaics, 2nd Edition

Recommended

- G. N. Tiwari and S. Dubey, 2012 “Fundamentals of Photovoltaic Modules and Their Applications”
- T. Markvart and L. Castafier,2007 “Practical Handbook of Photovoltaics: Fundamentals and Applications”
- Myers, D.R., 2016. Solar radiation: practical modeling for renewable energy applications. CRC press.
- Tyagi, H., Agarwal, A.K., Chakraborty, P.R. and Powar, S. eds., 2018. Applications of Solar Energy. Springer
- Kakaç, S., Yener, Y. and Naveira-Cotta, C.P., 2018. Heat conduction. CRC Press.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Power Electronics and automation system	**Module Code:** **Level:** 5 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Prof.Dr.Gamal Hashem
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

Enrich the student background and knowledge of the importance of power electronic devices in industrial electronics systems and applications.
Analysehe characteristics, operation and application of different power electronics converters.
Gain the practical skills for connected and tested converter circuits.

Enrich the student knowledge with the basic concepts of microcontroller peripherals and applications.

Main topics of study:

Power electronics devices: power diodes, thyristors, power transistors, Characteristics, Firing circuits and gate requirements, rectifier circuits, Line frequency converters: single-phase and thee-phase circuits. Static switches. AC voltage controllers: The single phase ac thyristor controller, Three phase controller, Phase control of ac controllers, Integral cycle control.
DC choppers: buck, boost, buck-boost, Cuk dc/dc converters. DC/AC converters (Inverters): Single phase circuits, three-phase inverter, modulation techniques. PWM rectifiers (Active rectifiers), Inverter and rectifier mode of operations of converters. Cycloconverters and Matrix converters. Measurement and signal conditioning, automation components.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Select the connection requirements of power electronics switches for power conversion and control applications.
2. Analyse phase controlled power converters for different kinds of loads.
3. Analyse the inverter circuits for different types of load.

Thinking skills

4. Design an AC/DC and AC/AC converters for certain industrial application.
5. Formulate the method for calculating the associate harmonics in power electronics circuits.
6. Experiment and test AC/DC and AC/AC converter by conducting laboratory experiments
7. Evaluate the characteristics and performance of different power converters

Subject-based practical skills

8. Formulate the method for calculating average and rms voltage and current output from each power electronics circuits.
9. Apply the power electronics for different industrial applications.
10. Choose the proper interface circuit for a given application as used in some experiments in the laboratory.

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) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	50%	1-6
Portfolio 2: (105 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	50%	6-10

Reading and resources for the module:

Core

- M. H. Rashid, “Power electronics: circuits, devices, and applications,” Pearson - Prentice Hall, 3rd edition, 2003. 4th edition 2014.
- B.K Bose, “Modern Power Electronics and AC Drives,” Prentice Hall, 2002.

Recommended

- D. W. Hart, “Power Electronics,” McGraw-Hill International Edition, 2011.
- N. Mohan, T. M. Undeland, and W.P. Robbins “Power Electronics: Converters, Applications and Design,” John Wiley, 2nd edition, 2003.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title:	**Module Code:**	**Module Leader**: Prof.Dr.Gamal Hashem

Combustion Engines and flow machines	**Level:** 5 **Credit:** 30 **ECTS credit:** 15	

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

Location of delivery: ASU, Egypt

Main aim(s) of the module:

This module covers the fundamental of combustion and its application with reference to gas turbines, internal combustion engines, and thermal power plant.

Also, this modules focuses on both Incompressible and compressible Flow Machines; pumps, turbines, compressors, blowers, and fans in terms of Theory, Application, Construction, Components, Performance Curves, Efficiencies, Operation, and Selection.

Main topics of study:

Combustion, , Premixed Flames, Diffusion Flame characterization, Concentrations of Combustion Products under Chemical Equilibrium Conditions, Rates of Chemical Reactions. Combustion applications; with reference to their classifications, and performance. Proximate and Ultimate Analysis, Detonation.

Fans, Blowers, Compressors, Pumps and Turbines: Theory, Classification, Applications, Construction, Components, Performance, and Selection. Airfoil Theory. Steam Turbines and Gas Turbines: Theory, Types, Components, Application and Energy Calculation.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Apply the principles of combustion to internal combustion engines, gas turbines, thermal power plant, and boilers.
2. Explain the complexities of industrial combustion processes;
3. Evaluate the mechanisms of combustion generated air pollution and the techniques that can be used to control them;

Thinking skills

4. Demonstrate the safety and handling issues associated with combustion;
5. Outline the impact of different fuel properties on industrial combustion systems;
6. Understand Basic design of Centrifugal pumps, Pelton-, Francis-, Kaplan- and gas-turbines and the main components in a Hydro Power Plant and Gas Power Plant.

Subject-based practical skills

7. Analyse flow conditions and geometrical description of the main components in Centrifugal pumps, Pelton-, Francis-, Kaplan- and gas-turbines.
8. Identify Cavitation in turbomachinery.
9. Identify the conditions at Surge and chocking in compressors and gas-turbines

Skills for life and work (general skills)

10. Prepare technical effective studying reports.

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.

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Assessment methods which enable students to demonstrate the learning outcomes for the module:	**Weighting:**	**Learning Outcomes demonstrated:**
Portfolio 1: (84 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	40%	1-3,10
Portfolio 2: (63 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	4-8
Portfolio 3: (63 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	6-10

Reading and resources for the module:

Core

- Williams, F.A., 2018. Combustion theory. CRC Press.
- Schobeiri, M.T., 2017. Gas Turbine Design, Components and System Design Integration. Springer.
- Allison, T., Wilkes, J., Brun, K. and Moore, J., 2017. Turbomachinery Overview for Supercritical CO2 Power Cycles. In Proceedings of the 46th Turbomachinery Symposium. Turbomachinery Laboratory, Texas A&M Engineering Experiment Station.

Recommended

- Li, K., 2018. Applied thermodynamics: availability method and energy conversion. Routledge.
- Kumar, V. and Sengolerayan, A., 2018. A Modified Version of Reciprocating Engine with Fuel Free Electromagnetic in Conventional Internal Combustion Engines.

• Sultanian, B., 2019. Logan's Turbomachinery: Flowpath Design and Performance Fundamentals. CRC Press.	
Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title:	**Module Code:** **Level:** 5	**Module Leader**: Prof Dr. Gamal Hashem

Machine Design and electromechanical industrial application	**Credit:** 30 **ECTS credit:** 15	
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module covers the Concepts of Machine Elements Design, with reference to Power Transmission Elements, Selection of Bearings, Design of Pressure Cylinders, considering Fatigue, and vibration.

Understand the MV utility distribution network, Select the appropriate protection device for each application, Perform a Co-ordination study for a LV network, Design a practical distribution LV switchboard, Understand and implement different earthing schemes.

Main topics of study:

Design Concepts, General Concepts of, Design for Fatigue, Design of Machine Elements, Design of Power Transmission Elements, Selection of Bearings, Design of Pressure Cylinders. Use of interactive Finite Element computer programs for problem solving is illustrated and used.

Study and analysis of single and multi-degree of freedom systems, Perform vibration and Dynamic stresses, Vibration of two degree of freedom systems, Vibration of multi-degree of freedom systems.

The MV Utility distribution Network, Basic function of electrical switchgear, recognize the role of isolation in electrical networks and integrate the operation of switching devices in basic automation systems

Design of Low Voltage switchboards, study the international standards for switchboard design and perform routine tests and identify type tests, LV Neutral Earthing systems, safe touch voltages and currents for human body

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Analyse static and dynamic Stress.
2. Perform Fatigue Stress.
3. Select Rolling Element Bearings.

Thinking skills

4. Design Shafts for Transmission of Power.
5. Select and size threaded fasteners.
6. Select components based on performance, resistance to failure, cost, compatibility with other components in an assembly, and other factors.

Subject-based practical skills

7. Develop mathematical model of dynamic systems with multiple degrees of freedom.
8. Recognize characteristics of residential and industrial applications for protective devices.
9. Examine of LV switchboards.

10. Perform the thermal management for switch boards.

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) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	40%	1-3
Portfolio 2: (63 hours) Coursework: (Activities/assignments/Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	4-6
Portfolio 3: (63 hours) Coursework: (Activities/assignments/ Lab datasheets) Exams (Quizzes/Midterm/Final)	30%	7-10

Reading and resources for the module:

Core

- Vukobratovich, D. and Yoder, P., 2018. Fundamentals of Optomechanics. CRC Press.
- Rao, S.S., 2019. Vibration of continuous systems. Wiley.
- The electrical installation guide according to IEC standard,2016

Recommended

- Fahy, F. and Walker, J. eds., 2018. Advanced applications in acoustics, noise and vibration. CRC Press.
- Kececi, E.F., 2018. Mechatronic Components: Roadmap to Design. Butterworth-Heinemann.

Indicative learning and teaching time (10 hrs per credit):	**Activity**

1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Economics of generation and distribution network protection	**Module Code:** **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Assisstant Prof.Walid Elkhattam Dr Amr Magdy
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module covers the load curves and characteristics, the power plant layout and economics, the Tariffs and power factor economics, the economic operation of thermal power plants, the main and renewable energy sources.

This module also covers the protection of different network elements , Single incomer and double incomer networks, the magnitude and directional protection concepts,

Main topics of study:

Load curves, Variation in demand, Load diversity. Power plant layout, Main equipment, Auxiliaries, Bus-bar arrangements. Power plant economics: Capital cost, Operating cost, Fixed charge rate, Selection of plant and size and unit size, Operation and economics of spinning reserve, economic analysis of a transmission system, tariffs, power factor, all-thermal generation allocation problem, hydro-thermal coordination, new energy resources. Transmission access fees assessment and calculations.

Protection Engineering: Introduction, Effects of Short-circuits on power systems. Basic elements of protection gear, Current and potential transformers, Protective relays, Electromechanical and static relays. Switchgear engineering: Circuit breakers, Types, Construction, Performance and ratings. Different types of electromechanical relays, Types of protection in electrical power systems, Protection of ring main systems, Protection of parallel feeders. Protection relaying philosophy and fundamental considerations. Transmission line protection, Compensating distance relaying. Rotating machinery protection: Relay protection for AC generators, Power transformer protection.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Differentiate types of load curves and their characteristics.
2. Analyse power plant economic operation.
3. Implement energy Tariffs.

Thinking skills

4. Apply simple power systems with different generating plants.
5. Analyse the directional protection concept.

Subject-based practical skills

6. Explain and differentiate load characteristics.
7. Test and commission digital relays.
8. Apply techniques for power systems protection.
9. Selection of suitable protection schemes for rotating machines.

Skills for life and work (general skills)

10. Prepare technical effective studying reports.

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) Coursework: (Activities/assignments) Exams (Quizzes/Midterm/Final)	50%	1-3,6,10
Portfolio 2: (105 hours) Coursework: (Activities/assignments/Fieldwork reports) Exams (Quizzes/Midterm/Final)	50%	4,5,7-10

Reading and resources for the module:

Core

- Wood& Wollenberg, 2008 “Power generation, operation and control of power systems", New York, John Wiley& Sons – 5th edition.
- Nowotny, J., Dodson, J., Fiechter, S., Gür, T.M., Kennedy, B., Macyk, W., Bak, T., Sigmund, W., Yamawaki, M. and Rahman, K.A., 2018. Towards global sustainability: Education on environmentally clean energy technologies. *Renewable and Sustainable Energy Reviews*, *81*, pp.2541-2551.

Recommended

- Saadat, 2011, "Power system analysis", MacGraw Hill, 3rd edition

Indicative learning and teaching time (10 hrs per credit):	**Activity**

1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Renewable energy and network interfacing	**Module Code:** **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Assisstant Prof.Walid Elkhattam Dr Amr Magdy
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module provides an overview of society's energy needs, current energy sources, the developing and emerging renewable energy sources, and their economic, environmental, and societal implications.

The student will understand the concept of distributed generation, distributed storage, and micro-grid. Evaluate the wind and PV interface with the grid and investigate the control strategies of the power electronic devices.

Main topics of study:

Analyse renewable energy sources such as solar, biomass (conversions), wind power, geothermal, and hydro. Energy conservation methods will be emphasized. More focus will be on Wind Energy In Comparison with solar energy. Statistical Analysis of Wind Data, Types of Wind Turbines, Instrumentations Used for Operating Wind Data, Construction Details of a Wind Turbine, Wind Turbine Control Schemes, Estimation of Wind Power, Betz' Theorem, Blade Element Theory, Translating Wind Power Machines.

Concept of Distributed Generation, Interconnection standards, Type of interface, static synchronous generators, Power quality issues, control of active power and voltage regulation, current control mode vs. voltage control mode, Wind power interface: direct connection, back to back converters, matrix converters, Fuel cell and photo voltaic interface topologies.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Appraise energy use, trends, and impacts.
2. Evaluate how differing societal perspectives impact individual and community choices regarding renewable energy technologies.
3. Compare between the diverse renewable energy technologies that are available to individuals and communities.

Thinking skills

4. Analyse the potential challenges and opportunities with various renewable energies.
5. Assess the environmental, technical, policy, and economic implications of each of the renewable energy opportunities.
6. Calculate approximately the aerodynamics of wind turbines and their power, energy production and the effect of the blade design.

Subject-based practical skills

7. Assess the sitting of turbines in relation to their output and their environmental impact.
8. Choose the interface of wind turbines and PV with the grid.
9. Justify the PV model and wind interface with the grid.

Skills for life and work (general skills)

10. Collaborate effectively within multidisciplinary teams

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) Coursework: (Case Studies/assignments) Exams (Quizzes/Midterm/Final)	50%	1-5,10
Portfolio 2: (105 hours)	50%	6-10

Coursework: (Case studies/assignments) Exams (Quizzes/Midterm/Final)		

Reading and resources for the module:

Core

- Freris, Leon, and David Infield, 2008. *Renewable energy in power systems*. John Wiley & Sons
- Nelson, Vaughn C., 2013, *Wind energy: renewable energy and the environment*. CRC press.

Recommended

- Foster, Robert, Majid Ghassemi, and Alma Cota, 2009. *Solar energy: renewable energy and the environment*. CRC Press.
- Da Rosa, Aldo Vieira, 2012. *Fundamentals of renewable energy processes*. Academic Press.
- Twidell, John, and Tony Weir, 2015. *Renewable energy resources*. Routledge.
- Thomas Ackermann, 2012, Wind Power in Power Systems, 2nd Edition, CRC Press Taylor & Francis Group.
- Roland Wengenmayr and Thomas Bührke, 2008., Renewable Energy: Sustainable Energy Concepts for the Future, Wiley-VCH,

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 80 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 25 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Graduation Project	**Module Code:** **Level:** 6 **Credit:** 30 **ECTS credit:**15	**Module Leader**: Assisstant Prof.Walid Elkhattam Dr Amr Magdy
Pre-requisite: None	**Pre-cursor: None**	
Co-requisite:	**Excluded combinations:** None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

To enable students to define the problem statement and the motivation behind the project; plan and manage various aspect of computer engineering and software systems projects and present the final product of the project and promote it. improve their professional skills in establishing business models and write a small business plan and effectively manage tasks, time, and resources

Main topics of study:

The project will encompass the integrated design of at least three sub-systems of an electromechanical system to achieve high performance and efficiency at a reasonable cost, sustainable design issues and environmental impact will be addressed in all projects. In the process, students will learn, through brain storming sessions, the information gathering and decision/design process, problem-resolution as well as aspects related to management, teamwork and communication.

The student will select a topic of his/her choice, perform a literature search, read and critique technical papers, write a technical report, implement a research study related to the selected concentration, apply a practical case study including the implementation of a proto type project whenever applicable and make a presentation.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. State the problem and motivation of the graduation project
2. Formalize the problem domain and its relation to the industrial market needs .
3. Manage all relevant aspects of an engineering project.

Thinking skills

4. Analyse sound design methodology throughout the project.
5. Master the tools needed for the project design and implementation.
6. Compare different design methodologies.

Subject-based practical skills

7. Design and build systems to solve some engineering problems
8. Test and verify the implemented system and write a business plan

Skills for life and work (general skills)

9. Develop problem solving, team work and communication skills and technical writing and presentation 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: (105 hours) Coursework: (Activities/assignments/presentation/project/posters)	50%	1-9
Portfolio 2: (105 hours) Coursework: (Activities/assignments/presentation/project/posters)	50%	1-9

Reading and resources for the module:
Core
Egyptian Code of Practise for the design of electrical installations.1992 fifth edition
Egyptian Code of Practise for plumbing. 1996
Egyptian Code of Practise for refrigeration and air conditioning. 2009 eleventh edition
Egyptian Code of Practise for fire fighting. 1996
Egyptian Code of Practise for renewable energy..2005

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 90 hours 0 hours 90 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 120 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework

Total hours (1 and 2):	300 hours

Module Specification

Module Title: Energy Management technical studies	**Module Code:** **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Assisstant Prof.Walid Elkhattam Dr Amr Magdy
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module covers an overview of sustainable energy management. The core of this concentration also includes the transmission of energy, desalinated water for industrial activities and human needs local production of energy in remote areas, economical aspects of energy generation. Evaluate the control and operation of both AC and DC drives

Main topics of study:

Criteria for selecting drive components, DC motor drives, regenerative braking and four quadrant operation, Induction motor drives, slip power recovery, Doubly Fed Induction motor drive (DFIM), synchronous motor drives, Permanent magnet synchronous machine drive (PMSM): motor and generator applications, Stepper motor drives. Energy Efficiency standards and practical considerations. Diagnostics, Energy saving opportunities, Lighting, Introduction to building management systems, Evaluating energy savings, Achieving sustainable performance. Refrigeration Cycles, Cooling Load. Performance and Selection of Refrigerating Equipment. Air Conditioning Filed of Application, Psychrometric Processes and software. Energy audits for different refrigeration cycle and Air Conditioning systems.

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Implement systems for comprehensive energy audits.
2. Evaluate sustainable energy management practices
3. Evaluate cleaner energy sources, technologies and management practices

Thinking skills

4. Analyse sources of cooling/heating loads analytically and /or using software
5. Apply the suitable Air Conditioning system as well as refrigeration cycle
6. Use software to evaluate the performance of different refrigeration cycle and Air Conditioning systems

Subject-based practical skills

7. Evaluate energy saving opportunities.
8. Applying energy audits for different HVAC systems and motor related operations
9. Recognize the control strategies of the ac and dc drives.

Skills for life and work (general skills)

10. Prepare technical effective studying reports.

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) Coursework: (Activities/assignments/practical presentation) Exams (Quizzes/Midterm/Final)	40%	7,9,10
Portfolio 2: (63 hours) Coursework: (Activities/assignments/practical presentation) Exams (Quizzes/Midterm/Final)	30%	1-3,10
Portfolio 3: (63 hours) Coursework: (Activities/assignments/practical presentation) Exams (Quizzes/Midterm/Final)	30%	4-6,8,10

Reading and resources for the module:

Core

- Levermore, Geoff. , 2013 “Building energy management systems: An application to heating, natural ventilation, lighting and occupant satisfaction”. Routledge.
- Petrecca, Giovanni. , 2012 “Industrial Energy Management: Principles and Applications: Principles and Applications”. Springer Science & Business Media.
- Arora, R. C., 2012 . “Refrigeration and air conditioning”. PHI Learning Pvt. Ltd.

Recommended

- Krarti, M., 2016. Energy audit of building systems: an engineering approach. CRC press.
- Chiras, Daniel D., and John P. Reganold. , 2014.Natural resource conservation: management for a sustainable future. Pearson/Prentice Hall
- Muhammed Rashid, 2012, Power Electronics, Circuits and Applications, 2nd Edition, CRC Press Taylor & Francis Group.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
Total hours (1 and 2):	300 hours

Module Specification

Module Title: Energy generation technical studies	**Module Code:** **Level:** 6 **Credit:** 30 **ECTS credit:** 15	**Module Leader**: Assisstant Prof.Walid Elkhattam Dr Amr Magdy
Pre-requisite: None	**Pre-cursor:** None	
Co-requisite:	**Excluded combinations :**None	
Location of delivery: ASU, Egypt		

Main aim(s) of the module:

This module covers Water Resources Management, different techniques of water desalination, focusing on solar energy and biomass energy in water desalination with reference to Cost Considerations and quality control and Process capability analysis.

Main topics of study:

Water Resources Management, Composition of Saline Water, Salinity Levels, Primitive Treatment of Saline Water, Thermal and Membrane Separation of Salts, Post Treatment of Water, different methods of water desalination. More focus on Water desalination using renewable energies such as solar energy and biomass energy with reference to Cost Considerations and quality control and Process capability analysis. Types of Biomass, Biomass Thermo-Chemical Processes, Types of Biomass Reactors, Bio-Chemical Conversion, Operation of Biomass Boilers for water desalination, with consideration to Emissions. Introduction to nuclear Energy generation and types of reactors

Learning Outcomes for the module

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

Knowledge and Understanding:

1. Apply the optimum conditions for distillation/ condensation

2. Perform an economic analysis of desalination processes
3. Evaluate various forms of chemical treatments in the desalination process

Thinking skills

4. Implement the thermal and flash desalination, single and multiple effect of evaporation, fouling, scaling and the recent trends desalination.
5. Explain the nature and principle of different biomass energy extraction systems and know how to choose the suitable biomass fuels for different bio-energy applications;

Subject-based practical skills

6. Study techno-economic analysis of various biomass conversion technologies and their environmental attributes;
7. Explain different nuclear reactors methodologies.

Skills for life and work (general skills)

8. Apply quality management techniques to reduce variation and improve quality, processes, systems, products and services.
9. Recognize the principles, practices and applications of quality management for product or service design and performance monitoring.

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: (73.5 hours) Coursework: (Activities/assignments/practical presentation) Exams (Quizzes/Midterm/Final)	35%	1-4
Portfolio 2: (73.5 hours) Coursework: (Activities/assignments/practical presentation)	35%	7-9

Exams (Quizzes/Midterm/Final) **Portfolio 3:** (63 hours) Coursework: (Activities/assignments/practical presentation) Exams (Quizzes/Midterm/Final)	30%	5,6,8

Reading and resources for the module:

Core

- Purkait, M.K. and Singh, R., 2018. Membrane Technology in Separation Science. CRC Press.
- Mahmoudi, Hacene, et al., 2017. Renewable Energy Technologies for Water Desalination. CRC Press.
- Brown, Robert C., and Mark M. Wright. , 2017. "Biomass Properties and Resources." Energy Conversion, Second Edition. CRC Press. 75-86.

Recommended

- Abdalla, Osman, et al., 2017.Water resources in arid areas: the way forward. Springer
- Cheng, Jay, 2017. Biomass to renewable energy processes. CRC press
- Keviczky, L., Bars, R., Hetthéssy, J. and Bányász, C., 2019. Control engineering. Springer Nature Singapore.

Indicative learning and teaching time (10 hrs per credit):	**Activity**
1. Student/tutor interaction: 135 hours 82.5 hours 60 hours	 Lectures Tutorials Laboratories/Practicals
2. Student learning time: 22.5 hours	 Background reading, preparation for examination, write-up time for laboratory exercises and coursework
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 during the 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.

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.

Teaching

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

Student Affairs

At ASU there are Student Affairs Officers who offer friendly and caring support and mentorship to students, not just for academic matters but also for personal problems. Throughout the programme, the Students' Affairs Officer organizes weekly meetings, business trips and outings to places of interest in and around Cairo, as well as international trips during the summer holiday.
Safe Environment: FoE ASU provides a safe, caring and nurturing learning environment with friendly, supportive mentors and teachers who have many years of experience in teaching and mentoring.
Mental health support is provided by FoE- ASU Advising system. Advisors support students who are experiencing mental health problems that are affecting their ability to study. ASU has agreements with NOGs that help students to face study stress in addition to ASU 13 hospitals which may help students with 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)

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

Mental Health and Support Services
The advisors provide students with the support and resources in order to help them achieve their personal and academic goals. Counselling services are provided by the clinic. In order to help students thrive, ASU provides a variety of programs and services that promote wellness and help to prevent emotional and mental distress. Although the ASU provides counselling and other supportive services, it does not have the resources to either provide for or guarantee the safety of those students with more acute mental health issues.

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 one of the largest national projects that is concerned with education in Egypt, it aims to provide huge and diversified sources for knowledge and culture for free. It comes after contracting with several international publishing houses to publish their contents in all scientific and cultural disciplines, to have the system for the new Egyptian Cultural Revolution completed. , the Egyptian Knowledge Bank managed to contract around 25 global publishers to provide their contents & technologies. E-Mail Services involved a developed Cooperation of the University with Microsoft Corporation to Serve Undergraduate and Postgraduate Students offering new features for the official e-mail users.

b) Other local resources relevant to 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 Energy and Renewable Energy 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, colour, disability and religion.
- The university supports a safe environment for both working and studying. The university environment must be free of bullying, harassment, and any form of discrimination. Any act of the aforementioned will not be tolerated and any complaints will be taken seriously. Anyone who feels being subjected to these acts is encouraged to raise complaints.
- All academic staff members, students and employees are supposed to treat each other with mutual respect and fairness. Everyone should respect the presence of individual differences, diversity in culture, personal opinions and beliefs.
- Equal opportunities and access to facilities are allowed for all staff and students. Each staff member or student is given full support to develop their skills and talents. Selection for employment, promotion, training, or any other benefits will be based on aptitude and ability.

UEL Equality and Diversity Strategy

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

12 ACADEMIC APPEALS

12.1 Students who wish to appeal against 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/uploads/uploadcenter/asu_1833_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

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

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.

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 (Hons) Energy and Renewable Energy 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.