ARAB ACADEMY FOR SCIENCE, TECHNOLOGY AND MARITIME TRANSPORT

COLLEGE OF ENGINEERING AND TECHNOLOGY

ALEXANDRIA - EGYPT

Master of Engineering

(M.Eng.) Program

COLLEGE RESOURCES AND REGULATIONS

VOLUME I

2025

Prof. Akram Soliman Elselmy
Dean, College of Engineering and Technology

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1 COLLEGE MESSAGE

Current Status and Future Prospectus

AASTMT has realized the importance of educational innovation and development, since the early days of its establishment in 1972.

The College of Engineering and Technology, at AASTMT, was established in 1990. Currently, the College of Engineering and Technology offers Bachelor's and Master's degrees in the areas of architectural engineering and environmental design, computer engineering, construction and buildings engineering, electrical and control engineering, electronics and communications engineering, industrial and management engineering, marine engineering, and mechanical engineering.

All programs offered by the College are acknowledged by the Supreme Council of Egyptian Universities (SCU) and fully accredited from the British Professional Institutes (IMechE), (IMarEST), (IET), (ICE), (IStructE), and (IHT), beside the accreditation from the Royal Institute of British Architects (RIBA) parts 1 and 2 for the architectural engineering program. Also, all college programs, except Architecture & Environmental Design, obtained the "ABET" accreditation since 2010 which was renewed in 2016 for more 6 years.

The core objective of the college is achieving excellency in all provided educational services, throughout the effective implementation of continuous improvement concept, as well as the success in obtaining and renewal of all local and international accreditations.

The number of qualified and competent faculty members has increased drastically during the last five years resulting in huge developments in research activities whether to obtain research funds from local and international entities or to publish in the highly ranked and prominent scientific journals. Also, higher admission requirements combined with a competitive system of scholarships have been applied to attract high quality students. Furthermore, continuous development of educational resources, lab facilities, and campus infrastructure has been a constant activity in the College to maintain delivery of its quality services to students and faculty members.

As a forward step towards the enhancement of the relationship between the industrial and academic communities, the Industrial Advisory Committee is holding meetings on a semi-annual basis. These meetings discuss the opportunities of students' practical training, market needs in the college's graduates and finally the industrial problems that may be treated in the research projects.

In the future, the College of Engineering and Technology is strategically targeting to efficiently integrate all of our facilities, and resources to prepare young generations for the requirements of the knowledge based societies and to proactively provide competitive, intellectual and market divan academic programs, research, and community services and pledges strong collaboration between our College, staff members, students, researchers, alumni and industrial and business leaders.

Prof. Akram Soliman Mohamed Soliman

Dean of College

2 COLLEGE MISSION AND VISION

2.1 Vision

Our Vision is to excel as one of the best engineering colleges locally and regionally and to maintain internationally recognized programs with an advanced academic rank. We also envision to provide the highest quality educational programs, research, and community services and to play a leading role in, all our engineering activities, as a foremost engineering school in the Arab world.

2.2 Mission

Our mission is to efficiently integrate all of our facilities, and resources to prepare young generations for the requirements of the knowledge based societies and to proactively provide competitive, intellectual, and market-driven academic programs, research, and community services and pledges strong collaboration between our faculty, staff members, students, researchers, alumni, and industrial and business leaders. Further to maintain and develop long term and lasting partnerships with Arab institutions, and internationally acknowledged bodies.

3 INTRODUCTION AND BACKGROUND

3.1 Accreditation

The Arab Academy for Science, Technology and Maritime Transport is a fully accredited member of both the Association of Arab Universities and the International Association Universities.

The Arab Academy for Science and Technology and Maritime Transport has been awarded the ISO 9001:2000 certificate for its educational processes in September 1999, after following formal quality assurance procedures to maintain the educational quality level received by students and renewed in 2002, and 2008.

Undergraduate Programs offered by the College of Engineering and Technology are accredited by the Supreme Council of Egyptian Universities (SCU) according to the decree number 135 dated on August 27, 1996, and renewed according to the decrees number 3 dated on February 5, 2002, number 118 dated on July 10, 2007, number 36 dated February 24, 2011, number 284 dated on December 10, 2012, and number 22 dated on January 22, 2017 and number 52 dated 6 March 2022.

Postgraduate Programs offered by the College of Engineering and Technology are accredited by the Supreme Council of Eg2001,an Universities (SCU) according to the decree number 30 dated on April 28, 2001 and renewed according to the decrees number 70 and 79 dated on June 19, 2006, number 97 dated on July 24, 2006, number 164 dated on September 8, 2009, number 224 dated October 17, 2010, number 84 dated December 26, 2013, and numbers 105, 106, and 107 dated April 22, 2014 and number 84 dated April 5, 2022

The Institute of Marine Engineering, Science and Technology (IMarEST) accredited the undergraduate program of Marine Engineering on March 13, 2007. The Institute of Mechanical Engineers (IMechE) accredited the undergraduate program of Mechanical Engineering and the undergraduate program of Industrial and Management Engineering on November 22, 2005. The Institution of Electrical Engineers (IEE) now named the Institution of Engineering and Technology (IET) accredited the undergraduate program of Computer Engineering, the undergraduate program of Electrical and Control Engineering, and the undergraduate program of Electronics and Communications Engineering on April 27, 2005. The Joint Board of Moderators JBM: The Institution of Civil Engineers ICE, the Institution of Structural Engineers (IStructE) accredited the undergraduate program of Construction and Building Engineering and recognized by the Institution of Highways and Transportation IHT on December 14, 2005.The Royal Institute of British Architects (RIBA) validated the program of undergraduate Architectural Engineering and Environmental Design effective from 2005/6 and renewed in October 2014 for 5 years.

The Accreditation Board for Engineering and Technology (ABET) accredited all engineering programs delivered on the AbuKir campus and leading to a B.Sc. degree (except for the program of Architectural Engineering and Environmental Design) on October 1, 2009, for six years, and renewed in 2015 to September 30, 2021, then renewed in 2021 to September 30, 2027.

National Authority for Quality Assurance and Accreditation of education (NAQAAE) accredited the undergraduate and postgraduate programs dated March 10, 2014, for 5 years then renewed on October 5, 2020, for five years.

3.2 Protocols

The College of Engineering and Technology has many international agreements and programs with highly noticeable universities that support our students and faculty members. These programs extend from Lincoln University, Northumbria University, and Staffordshire University in UK; UTM University in Malaysia; University of Central Florida, University of Missouri and Tennessee Tech University in USA; University of Waterloo, Carleton University, and Concordia University in Canada.

The College of Engineering and Technology also has protocols regarding Ph.D. studies with national universities including Alexandria University, Ain Shams University, Cairo University, and Helwan University.

3.3 College Administrative History

Deans

No.	Name	Period
1.	Prof. YosryElgamal	1990 - 1997
2.	Prof. Omar AbdElaziz	1997 - 2006
3.	Prof. Ahmed Elkashlan	2006 - 2008
4.	Prof. Aziz Ezzat	2008 - 2011
5.	Prof. MoustafaHussein	2011 - 2014
6.	Prof. Amr Ali Hassan	2014 - 2022
7.	Prof. Akram Soliman Mohamed Soliman	2022 - present

Vice Deans for Educational Affairs

No.	Name	Period
1.	Dr. Mohamed Ragab	1990 – 1997
2.	Dr. Abdel Hamid Maghrabi	1997 – 2004
3.	Prof. Ahmed El Kashlan	2004 – 2006
4.	Prof. MoustafaHussin	2006 – 2011
5.	Prof. IhabBadran	2011 – 2013
6.	Prof. Mahmoud Abu Zied	2013 – 2014
7.	Prof. GehanMousad	2014 - 2018
8.	Prof. Yasser Ahmed Abdo Farghaly	2018 - 2020
9.	Prof. Ehab Farouk Badran	2020 - present

Vice Dean for Graduate Studies and Research

No.	Name	Period
1.	Prof. AlaaEldin Khalil	2012 - 2025
2.	Prof. Mostafa Abdelgeliel	2025- Presnt

Vice Deans for Student Affairs

No.	Name	Period
1.	Prof. Nagy Elsmalawy	1990 - 1996
2.	Prof. Mohamed Abbasi	1996 - 2002
3.	Prof. Ahmed El kashlan	2002 - 2004
4.	Prof. Mahmoud ZakiElFeky	2003 - 2005
5.	Prof. Mahmoud Abu Zied	2005- 2010
6.	Prof. MoustafaHussin	2010 - 2011
7.	Prof. Mahmoud Abu Zied	2011 - 2014
8.	Prof. HossamShawky	2014-2016
9.	Prof. Tarek Mostafa	2016 - 2025
10	Dr. Mazen Elagamy	2025 - present

Vice Dean for Training and Community Service

No.	Name	Period
1.	Prof. Mohamed Raslan	2002 - 2010
2.	Prof. Mahmoud Abu Zied	2010 - 2011
3.	Prof. HamdyAshour	2011 - 2012
4.	Prof. Abdel Baith Mohamed	2012 - 2013
5.	Prof. Eman Morsi	2013 -present

Chairmen of Architecture Eng. and Environmental Design Department

No.	Name	Period
1.	Prof. Abbas Yehia	1997 – 2013
2.	Prof. Adel Elmenshawy	2013 - 2015
3.	Prof. Alaa Sarhan	2015 - 2018
4.	Prof. Ahmed Bahaa El Seragy	2018 - present
5.	Prof. Yasser Ahmed Abdo Farghaly	2020 - 2023
6.	Prof. Adham Mohamed Aboulnour	2023 - present

Chairmen of Basic and Applied Science Departement

No.	Name	Period
1.	Dr. Hatem Elkerdany	1987 - 1991
2.	Dr. AbdElghanyTartosia	1991-1992
3.	Dr. Ahmed Farouk	1992-1994
4.	Dr. Hamdy Hassan	1994-1995
5.	Dr. Mohamed Bassiouny	1995-2005
6.	Prof. AllaAbdElBary	2005 - 2012
7.	Prof. Nasser Elmaghraby	2012 - present

Chairmen of Computer Engineering Department

No.	Name	Period
1.	Dr. Mohamed Taher El-sonni	1995 – 2000
2.	Dr. Yasser Hanafi	2000-2003
3.	Prof. Magdy Saab	2003-2007
4.	Prof. Mohamed Abu Elnasr	2007-2012
5.	Prof. Magdy Saab	2012-2013
6.	Prof. Sherin Youssef	2013 - present

Chairmen of Construction and Building Engineering Department

No.	Name	Period
1.	Prof. Nabil Ismail	1993 – 1998
2.	Prof. AbdElhalim Amr	1998-1999
3.	Prof. Mohamed Raslan	1999-2002
4.	Prof. Ali Eldarwish	2002 – 2008
5.	Prof. WaelKamel	2008 – 2012
6.	Prof. Nabil Elashkar	2012 – 2018
7.	Dr. Ahmed Ragheb	2018 – 2022
8.	Dr.Elbadr Mohamed Mohamed Osman Ahmed Elgendi	2022 - present

Chairmen of Electrical and Control Engineering Design Department

No.	Name	Period
1.	Dr. Mohamed El Faham	1990 - 1993
2.	Dr. Ibrahim El Mohr	1993 – 1997
3.	Dr. Mohamed Amer	1997 – 2001
4.	Prof. EzzEldinZakzouk	2001 – 2006
5.	Prof. Hussien El Desouky	2006 - 2011
6.	Prof. Yasser Gaber	2011 - 2012
7.	Prof. Hamdy Ashour	2012 – 2016
8.	Prof. Mostafa Abd Elgelil	2016 - 2022
9.	Prof. Walid Ahmed Maher	2022 - present

Chairmen of Electronics and Communication Engineering Department

No.	Name	Period
1.	Eng. NessimMorkous	1973 - 1984
2.	Dr. HossamGawish	1984 - 1987
3.	Prof. YossryElgamal	1988 - 1990
4.	Prof. M. Bashir Saleh	1990 - 1995
5.	Prof. Mohamed Abu El Dahab	1996 - 2002
6.	Prof. NadderHamdy	2002 – 2008
7.	Prof. DarwishAbdElaziz	2008-2012
8.	Prof. MahaSharkas	2012 -2023
7.	Prof. Ahmed Abdelaziz Youssef Shalaby	2023 - present

Chairmen of Industrial and Management Engineering Department

No.	Name	Period
1.	Prof. Ahmed Farouk	1994 – 1999
2.	Prof. EssamRoushdy	1999 – 2005
3.	Dr. Khaled ElKilany	2005-2006
4.	Prof. Aziz Ezzat	2006 – 2009
5.	Prof. Khaled Elkilany	2009 - 2022
6.	Prof. Mahmoud Ahmed Mahmoud Elsayed Mahmoud	2022 – present

Chairmen of Marine Engineering Department

No.	Name	Period
1.	Eng. Fouad Nasser	1972 – 1977
2.	Dr. Ahmed Mamoun	1977 – 1980
3.	Dr. Mohamed Ali Loutfy	1980 – 1981
4.	Dr. AbdElMomeimSalama	1981 – 1985
5.	Dr. AbdEl HalimBassiuny	1985 – 1988
6.	Dr. EzzEl DinMadany	1989 – 1991
7.	Dr. Mohamed Ali Loutfy	1991 – 1993
8.	Prof. Omar AbdEl Aziz	1994 – 1994
9.	Prof. HamdyHassaan	1995 – 1998
10.	Prof. Hassan Rasheed	1997 – 2002
11.	Prof. Mohamed El-Nour	2002 – 2008
12.	Prof. Amr Aly Hassan	2009 – 2015
13.	Dr. Ashraf Sharara	2015 - 2022
10.	Prof. Ahmed Samir Kamal El Den	2022 - present

Chairmen of Mechanical Engineering Department

No.	Name	Period
1.	Prof. HamdyHassaan	1994 – 1998
2.	Prof. Hassan Rasheed	1998 – 2002
3.	Prof. Mohamed El-Nour	2002 – 2008
4.	Prof. Ahmed ElSafty	2006 – 2011
5.	Prof. SohirRozika	2010 – 2012
6.	Prof. El Sayed Saber	2012-2021
7.	Dr. Aly Ismail Mohamed Shehata	2021 - present

Quality Assurance Unit

No.	Name	Period
1.	Dr. SherifElSharkawy	2010 -2018
2.	Prof. Wael Abdelatif Ali Mohamed	2018 -2024
3.	Prof. Noha M. Gala	2025 - present

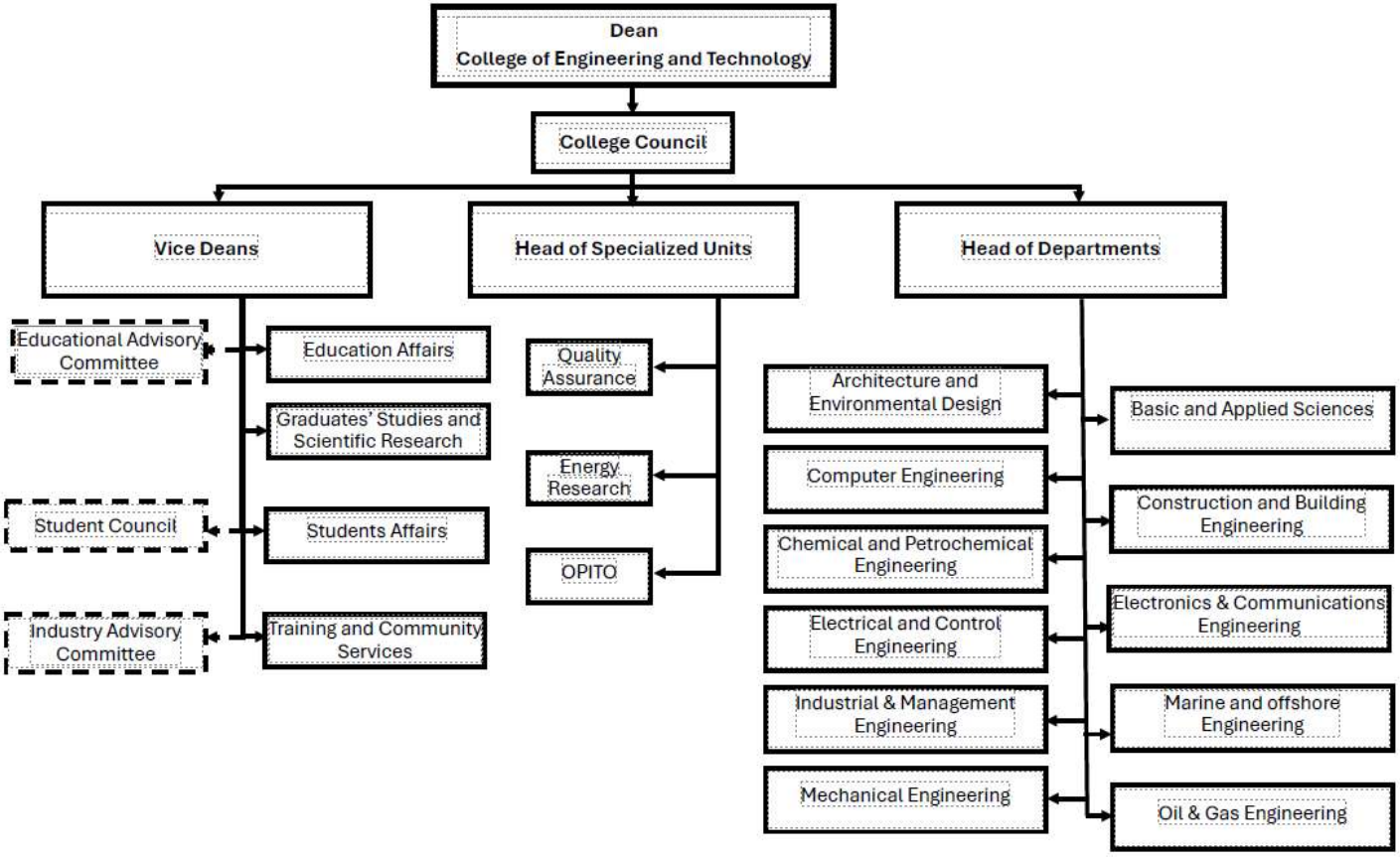
Energy Research Unit

No.	Name	Period
1.	Dr. MoustafaAbdElGalil	2014 -present

OPITO Unit

No.	Name	Period
1.	Dr. Rola S. Afify	2024 -present

3.4 Organizational Chart



4 RULES AND REGULATIONS

The Master of Engineering (MEng) degree is generally a professional degree offered as a coursework-based alternative to the traditional research-based Master of Science degree. The Master of Engineering degree is offered at many leading universities in the United States and is considered a terminal degree in the field of engineering. In other words, it should not be the degree to select if one's ultimate goal is to earn a Ph.D. All applicants to this program of study must sign a consent stating that clearly at admission.

4.1 Admission

The graduate admissions process of the College of Engineering and Technology seeks to select applicants whose credentials attest to their outstanding ability, preparation, and potential for successful completion of their graduate studies.

Applicants to the Master of Engineering program in Engineering must hold a university undergraduate Bachelor's degree from an accredited university or college. An overall Grade Point Average (GPA) of at least 2.40/4.00 (or Good) in the undergraduate degree is required. Otherwise, the applicant may be accepted if (s)he holds a post-Bachelor's Diploma in a relevant area with a minimum GPA of 3.00/4.00 (or Very Good).

The Deanery of Registration and Admissions at the AASTMT states whether the applicants are eligible for enrollment into the program or not. The academic department then interviews the applicants individually to select those who will be recommended for admission.

Applications of newly admitted applicants are valid for two semesters. If an admitted applicant does not enroll by the second semester, (s)he must reapply for admission.

4.1.1 Application Documents

Applicants must submit the following documents to the Vice Dean of Graduate Studies and Research office:

- Official Transcripts: An official transcript must be submitted for each of the colleges and/or universities attended. Transcripts should include an explanation of the grade scale used by the colleges and/or universities attended. All copies should be officially certified as identical to the original. Transcripts and/or copies cannot be returned.
- Copy of passport or identification card
- Financial Plan (if sponsored)
- Completed Application Form

4.1.2 Academic Calendar and Enrolment

- Fall Semester: starting on September for 16 weeks.
- Spring Semester: starting on February for 16 weeks.

4.1.3 Deadline

The application and all required documents must be received by the beginning of September for Fall semester admissions and the beginning of February for Spring semester admissions.

Individuals submitting applications later than the above dates are not guaranteed consideration for admission to the program in the semester applied for. Their applications will be only processed if time and resources permit.

4.2 Registration

Applicants may register after the College of Engineering and Technology has approved their application for admission. Registration must be accomplished according to schedules and procedures established by the College of Engineering and Technology.

The registration of a graduate candidate is the responsibility of the candidate. Candidates must register for each course. Registration for a course also includes registration for the examination for that course. Course registration takes place within the first week of classes.

4.2.1 Program Overview

The program consists of 33 credit hours spread over a minimum of four semesters through 3 stages as follows:

First Stage:

- 12 credit hours of Compulsory coursework equivalent to 4 courses (each 3 credit hours) representing the Professional Diploma of Fundamentals of Engineering Sciences.

  A student may opt to end his/her registration for the master's degree after this stage. In this case, the student is eligible to obtain a transcript showing the courses studied.

- If the student's GPA is not less than 2.7, the student is eligible for enrollment in stage 2 only (Advanced professional Diploma in Engineering Sciences)
- If the student's GPA is not less than 3.0, the student is eligible for enrollment in stages 2 and 3 (Case study), provided the student has obtained a minimum of B- in each course studied.

Second Stage:

- 12 credit hours of Elective coursework equivalent to 4 courses (each 3 credit hours) representing the Advanced Diploma in Engineering Sciences.
- A student may opt to end his/her registration for the master's degree after this stage. In this case, the student is eligible to obtain the Advanced Diploma in Engineering Sciences.
- Those who obtained an advanced professional diploma may re-apply to complete their studies to obtain a Master of Engineering within a maximum period of 3 years from obtaining it. In this case, courses studied within the Advanced Professional Diploma in Engineering Sciences are counted towards obtaining the Master of Engineering using what was previously studied. The department may update the list of supervisors if they were previously identified.

- The framework for the specific specialization is determined during this stage, and a main supervisor is also appointed. The main supervisor must be either an associate or full professor. The courses to be studied in this stage are chosen with the help of the supervisor. These courses consist of two elective courses (6 hours) from the program's specialization courses, in addition to two other courses (6 hours) that can be chosen from other specializations.
- If the student's GPA is not less than 3.0 in this stage, the student is eligible for enrollment in stage 3 (Research Work), provided the student has obtained a minimum of B- in each course studies.

Third Stage:

- 9 credit hours of Case study) during which the candidate submits the final report for evaluation.

4.2.2 Duration of Study

The minimum duration of study from the beginning of the first Master's course registered by the student until graduation is 18 months, and the maximum duration for the same period is four years.

4.2.3 Case Study Application

Candidates may register for the case study application in the area approved by the academic advisor for 9 credit hours and the corresponding academic department after completion of 24 credit hours.

4.3 Graduation Requirements

Students must complete a minimum of 33 credit hours in total; where, a minimum of 24 credit hours of course work is required in addition to a case study application in an area of interest equivalent to 9 credit hours.

Students receive a Master's degree in engineering after successfully fulfilling all the MEng study requirements and achieving an overall grade point average (GPA) of 3.00 or higher.

As mentioned before, the duration of study should be a minimum of 18 months.

4.4 Grades

The student shall be credited a total score and a corresponding letter grade by the end of each course. The College uses a system of letter grades and equivalent grade points for evaluating the course work, as shown in the following chart:

Grade Letter	Points	Percentage
A	12/3=4.00	93% to 100%
A–	11/3=3.66	89% to less than 93%
B+	10/3=3.33	84% to less than 89%
B	9/3=3.00	79% to less than 84%
B–	8/3=2.66	76% to less than 79%
C+	7/3=2.33	73% to less than 76%
C	6/3=2.00	70% to less than 73%
C-	5/3=1.66	67% to less than 70%
D+	4/3=1.33	64% to less than 67%
D	3/3=1.00	60% to less than 64%
F	0.00	less than 60%
W	--	Withdraw
I	--	Incomplete
Au	--	Auditing
Tr	--	Transferred

A student is not considered successful in any course unless he has at least a grade C+.

Grades are calculated as a Grade Point Average (GPA) by dividing the sum of weighted achieved points by the sum of credit hours attempted. An Incomplete (I) grade is not included until required work is completed and a grade is assigned. Withdrawal (W) is given no grade or points and courses with W do not contribute to the GPA. Only the highest grade of a course registered twice or more is calculated in the Grade Point Average (GPA).

4.4.1 Incomplete Coursework

If, after the instructor and candidate have conferred, the candidate presented an acceptable excuse for not completing the coursework on schedule, and the instructor has assigned a date by which time all course requirements must be completed, the candidate receives a grade (I). If the coursework remains incomplete on the assigned date the grade will be changed automatically to a grade (F).

4.4.2 Withdrawal of a Course

The candidate may withdraw a course(s) within 3 weeks from the beginning of the semester as a condition for partial refund.

4.5 Examinations

Course examinations are given at the instructor's discretion. Final examinations are given only during the scheduled examination period (16th week). If applicable, there will be exams during the 7th week and/or 12th week. If the candidate is absent with an acceptable excuse from a final exam and wants a credit for the course, after the instructor and candidate have conferred, the

candidate must complete a special exam before the end of the semester immediately following his/her absence.

4.6 Attendance

Candidates are expected to attend each class session unless they have a valid and acceptable excuse for being absent. Candidates may be required at any time to account for undue irregularity in attendance. Any student who has been excessively absent from a course may be forced to withdraw from that course without credit or refund.

4.7 The Case Study Application

The final step of the MEng program graduate is to apply the concepts, skills and techniques learned throughout the program in a case study, or report on an existing case study, to evaluate and learn from practical real-life application. This is conducted in a course of six credit hours delivered at the end of the student's registration, i.e. in his/her final term.

The course includes learning how to build up and report on a real-life case study. It also comprises a seminar that encourages participation and discussions among course colleagues to maximize practical learning. Finally, the student develops a case study report that is examined by an internal committee. One or more course lecturers guide and supervise the course and are committee members. The department can invite internal or external members to the case study examination committee.

4.8 Transfer of Credits

Credit gained in a previous graduate education may be transferred to the College of Engineering and Technology graduate program and would therefore sufficiently substitute a similar Master's course.

Only courses with grade B (Good) or higher are eligible for transfer. A maximum of 6 credit hours from an accredited Master's program may be transferred into the Master's program of the College of Engineering and Technology, given they had not been previously counted for another degree. No course that has been taken more than 3 years before the student's acceptance may be transferred into the program of study.

4.9 Academic Standards of Work

A student must maintain a cumulative GPA of 3.00/4.00 during his/her study at the College of Engineering and Technology in order to graduate. No unresolved (I) grades may be part of the program of study. At the beginning of the final semester the student should review the program of study as necessary and obtain approval to ensure that all graduation requirements are met.

4.10 Readmission

A regularly admitted graduate candidate who has not registered for two semesters must apply for readmission. A candidate is not guaranteed continuing graduate status if (s)he does not enroll for a period of two consecutive semesters.

4.10.1 Withdrawal

An applicant who is forced to withdraw from the program during the academic year or at the end of any semester may be granted the opportunity to return. However, the period of withdrawal should not be for more than two consecutive academic semesters.

4.10.2 Leave of absence

The College has adopted a leave of absence policy that permits the candidate to continue his/her education. The following principles govern the leave of absence policy:

- An applicant must make a written request for a leave of absence to the Dean. The request must include the reasons for the leave and the time the student plans to be away. Leave of absence will generally be granted for one or two academic semesters. A leave may be further extended upon written application and approval of the Dean.
- An applicant who is granted a leave of absence due to medical reasons may be requested to submit a clinical evaluation to the College before being reinstated to the Program.

4.11 Academic Integrity

Candidates with different academic and cultural backgrounds may have different perceptions of what constitutes acceptable academic behavior.

The following specific ethics should assist students in avoiding immoral practices when preparing a written assignment or reports:

- A candidate's paper (examination, essay, theme, etc) may not be prepared in whole or in part by someone else.
- Candidate should never attempt to present another person's work, statements, ideas, etc as their own, whether they use an author's actual words or paraphrase the author.
- Candidate may use the actual words of an author if they acknowledge that they are doing so. Quotations should usually be short and infrequent.
- Collaboration between candidates may be helpful and desirable. In these instances the instructor should clearly specify the nature and limits of collaboration in reports and other work. (S)He should be certain that the candidates understand what constitute unacceptable practice in their course.

Graduate candidates at the College of Engineering and Technology are expected to maintain generally accepted standards of academic honesty and professional integrity. Failure to do so will lead to dismissal from the College. Instructors who believe an unethical practice has occurred should take the following steps:

- The instructor will advise the student orally as soon as possible after the offense is noticed.
- If the instructor remains convinced that an offense has occurred, a written statement of the offense will be sent to the Dean.
- The candidate's academic Dean should advise the student of the appealing procedures which are available.

4.12 Dismissal from the Graduate Program

Candidates who fail to maintain satisfactory academic grades, academic performance in the major field or a satisfactory performance in the required examinations shall be dismissed from the graduate program.

The candidate's registration for the Master's degree shall be cancelled by the College after the Dean's approval. Cancellation shall be effected in the following cases:

- If the candidate fails to obtain the degree within five years starting from the date of registration, taking into consideration any leave of absence.
- If the candidate fails to meet the requirements of the study courses, if his final cumulative grade point average is less than 3.00/4.00, or if the number of the courses in which the candidate's grade is 2.00/4.00 exceeds two courses.
- The candidate shall be officially notified if the supervisor(s) submits a report requesting cancellation of registration for reasons accepted by the Dean.
- If the candidate's final technical report is unanimously rejected by the assessment or the examination committee.
- If the candidate requests cancellation of registration in writing or fails to pay the tuition fees.

4.13 Student Appeals

The candidate is entitled to an explanation of the details of the grade achieved in any examination. This explanation can be given either orally or in writing by one of the examiners. A request for such an explanation must be based on facts. A grade can be appealed against. Such an appeal must be submitted no later than one week after the explanation of the grade has been given. Oral presentations and examinations cannot be appealed.

Candidates may petition the College for an appeal relating to grades. A petition for an appeal must be submitted by the candidate with full justification for the request.

4.14 Tuition Fees

The tuition fees for every course shall be paid at the beginning of each semester. If the student, or his sponsor, fails to pay the tuition fees at the indicated time, the student's registration shall be cancelled and the student shall not attend any lectures. The Dean of Admissions and Registration shall determine the tuition fees at the beginning of each semester.

The tuition fees of the programs using the credit hour system shall be determined on the basis of the credit hour and shall be paid either collectively for a full semester or according to the number of credit hours registered for.

5. LABORATORY FACILITIES

Laboratory experience is an indispensable part of the educational process and a key factor in preparing students for real engineering practical life; for this reason, the College of Engineering and Technology operates more than 40 laboratories within its premises.

All the laboratories are equipped with state of the art tools and facilities that provide hands-on practice for students; furthermore, the laboratories also provide a test bed for research to the faculty.

Professional personnel are always available to give help and support to students in projects and experiments; hence, a free access policy outside the regular lab hours in a safe and secure environment for experimentation and research is one of the privileges enjoyed by our students.

Advanced Manufacturing Laboratory

An up-to-date Laboratory with facilities that contain contemporary contains two advanced CNC machines made by DMG MORI: a turning machine (EcoTurn 310) and a vertical milling machine (Milltap 700) to support experimentation and research in industrial automation and solving problems arising in integrated and flexible manufacturing production systems. This laboratory also contains two Additive Manufacturing (AM) machines (3D printing) made by 3D Systems that produce parts layer upon layer directly from CAD design: The first one is a Fused Deposition Modelling (FDM) machine called CUBE and the second one is a Sterolithogrpahy machine called Forms1.

Antennas and Microwave

The purpose of this laboratory is teaching the students how to measure and test experimentally the different antenna specifications such as directivity, half power beam width, bandwidth, antenna pattern,…, etc. for many different antenna configurations to simulate those different antennas on computer using NEC and computer FORTRAN codes, to measure the standards and specifications of the different transmission lines and waveguides.

Electromagnetic Wave Propagation and Electromagnetic Transmitting Media courses are taught in this laboratory.

Analogue Control

The lab is equipped with different process control analogue systems simulators; pressure, temperature, flow and level trainers. Different types of related sensors and actuators are available for demonstrating their construction, characteristics and applications. Furthermore, control system for different types of DC and AC motors are available.

Architectural Computer Laboratories

The Architectural Computer Labs at the Architectural Engineering & Environmental Design Department, AASTMT, are useful aid to architectural students where they boast the latest technologies in desktop computers.

With computer technicians constantly at hand, the computers are always updated with the latest software and drivers. To encourage architectural students' artistic side, graphic design and animation programs are at their disposal as well as top of the line architectural rendering and

Computer Aided Design (CAD) programs that help the students deliver their creative ideas across to their professors.

In addition to direct access to the computer network that connects to the internet at all times, and the wireless network that can be accessed in from every class, the research process that is essential to the design process, is made a little easier, saving the architectural students time and allowing them to be more productive.

Automatic Control Laboratory

In this laboratory students are introduced into the basic principles of mastery of industrial applications .Using instrumentation and measurement equipment's; various areas of analogue automatic control are investigated such as pressure and flow, valve calibration and temperature control .The interfacing of analogue and digital circuit and control principles are also investigated such as computer control of motor speed and transient analysis of control systems using computer interface .

Automation Laboratory

The automation laboratory offers great opportunity to understand the industrial automation systems using high tech programmable logic controller kits of Siemens available in the market. The laboratory contains most of the equipment required in industrial applications such as pressure, temperature sensors, motors and controllers.

CAD/CAM Laboratory

A laboratory that contains up to date computers for use in computer aided design and computer aided manufacturing courses. There are CAD software like AutoCAD, Solid Edge and Solidworks that help students in designing and drawing parts and components. These software packages help students to understand the basic concepts of engineering drafting and design. Moreover, there is computer aided manufacturing (CAM) software NX developed by Siemens which is an integrated product design, engineering and manufacturing solution that helps students to deliver better products faster and more efficiently. In addition to the advanced solutions for conceptual design, 3D modelling and documentation, NX provide multi-discipline simulation for structural, motion, thermal, flow and multi-physics applications and also complete part manufacturing solutions for tooling, machining and quality inspection. Furthermore, this laboratory contains statistical software: Minitab to be used in courses like statistics, statistical analysis and design of experiments.

Chemistry Lab (1)

The lab contains devices used for chemical analysis of water and lubricating oils, The devices and apparatuses are found in this lab are pH meter to measure acidity and alkalinity for solution, conductivity and salinity meter measures the electrical conductivity and total dissolved solids in a solution, spectrophotometer DR-3900 determine the concentration for different elements and groups in waste water with very high accuracy, BOD (biological oxygen demand) to determine how fast biological organisms use up oxygen a body in water and oil kits for test different lubricating oil properties.

Chemistry Lab (2)

The lab contains devices used for chemical analysis of water and fuel oil, The devices and apparatuses are found in this lab are spectrophotometer DR-2000 for digital reading of the different elements and groups concentration in water, titration apparatus for quantitative analysis

of solution, distillatory to prepare a distilled water and flash point meter for determination of the lowest temperature at which the material can form ignitable mixture with air.

Chemistry Lab (3)

The lab contains devices used for chemical analysis of water, corrosion and corrosion protection, The devices and apparatuses are found in this lab are pH meter to measure acidity and alkalinity for solution, spectrophotometer DR-2010 determine the concentration for different elements and groups in water, COD (chemical oxygen demand) to use indirectly measure the amount of organic compounds in water and apparatus used to determine the corrosion rate, efficiency of cathodic protection and passivation.

Communications Engineering Labs

Electronics and communications engineering department has advanced communications engineering laboratory facilities which are totally accessible to all students and faculty members in AASTMT. The analogue and digital communication laboratories are designed and developed to provide students with hands-on experiences related to communications engineering courses. The two communications engineering laboratories support undergraduate and postgraduate courses and projects delivered in the electronics and communications engineering program.

Computer Labs

Computer labs are equipped with high technology Intel® 4th generation Core TM 7-4770, 3.40 GHz, Microsoft Operating System windows 7-64 bit and Ubuntu Linux, Java Development Kit(JDK6), C#, and Java . Courses taught are Data Structures, Structured Programming, Database systems, Operating Systems, Data Security, Introduction to Computers, Programming Applications, Object Oriented programming, Advanced Programming, Introduction to Software Engineering, Computer Graphics, Pattern Recognition, Modelling and simulation

Computer and Network Lab

The computer and network lab services the courses of computer networks, advanced networks, data & computer communication, database, data security, object oriented programming, and mobile applications. Computer and Network Lab is equipped with Workstation, dual core AMD 2.6GHz,Intel IXDP465 Development Platform, Serial to Ethernet Application Kit Rabbit Core RCM3000, Airborne 802.11 Wireless LAN Node Module Evaluation and Development Kit, 4 port USB KVM switch kit “Trendnet”, 8 port10/100 desktop switch “Netgear”, LINKSYS Ethernet DSL router with 4 port switch, 3 COM 8 port switch, LINKSYS by Cisco Wireless G Broadband Router, Tripp.lite Isobar, office home and student 2007, Java Development kit(JDK 6), Eclipse + ADT plugin, Android SDK Tools, Android Platform-tools, Oracle.

Construction Surveying and Geology Lab

The construction surveying and geology laboratory provides the students with the sufficient practical training to perform the essential surveying processes which include theodolite traversing, profile levelling, levelling applications and countering, and layout of construction projects. In addition, the objective of the construction surveying and geology laboratory extends also to serve both the courses of postgraduate studies and the research effort in the area of the construction surveying. Construction surveying and geology lab may also serve the construction industry through the ability for conducting different construction surveying processes and photogrammetric and remote sensing.

Construction Materials Lab

The construction materials laboratory was established with the objective to provide an appropriate environment for students to examine some basic properties of different construction material such as aggregates, cements, concrete, masonry, wood and wood products and steel reinforcement. Through various experiments, the properties of both physical and mechanical properties of different construction materials are examined thoroughly. Students will also get hand-on experience with the way concrete is mixed, transported, placed and compacted. The tests are conducted to determine the engineering properties in terms of strength, strain, elasticity, stiffness durability, and workability. This lab is also used for the designing, proportioning, mixing, casting, curing, and tooling of concrete batches. All tests are performed based on ASTM, ACI, and AASHTO testing specifications. The objective of the construction materials laboratory extends also to serve both the courses of postgraduate studies and the research effort in the area of the properties and testing of advanced materials in construction. Moreover, the construction materials laboratory is capable of serving the community and the construction industry through conducting different quality control tests for various raw building materials and final products needed in the construction industry.

Diesel Engines Lab

The Lab contains diesel engines covering hands-on training purposes for marine, mechanical engineering and maritime transport students in addition to vocational tutoring; including the SULZER® diesel engine of 4 stroke type, having 6 cylinders of trunk type piston producing 1100 hp at 750 rpm.

Another engine of 2 stroke type having 3 cylinders producing 750 hp at 320 rpm is also available and can be operated either locally or remotely from the engine control room, similar to that normally found on board ships. Two FIAT® diesel engines driving two alternators are available. Beside the previously mentioned engines, another two engines are dedicated to dismantling and assembly purposes. A small workshop equipped with a lathe, a drill, and welding tools is allocated for maintenance operations.

Digital Circuits Lab

The Digital circuits Labs is completely equipped laboratory that contains precision measurement equipment and tools for use in digital logical experiments, design and simulation. The lab houses a collection of equipment used for generating signals and visualizing it. It is also equipped with Programmable Logic Digilent D2FT, Accessory Board Memory, Accessory Board Network (NET1), Accessory Board Digilent Analog I/O (ALO), logic Pulsar, Oscilloscopes, function Generator, digital Multimeter, Power supplies. It serves the courses Digital Logic design and digital and microprocessor systems.

Digital Control Lab

This laboratory attempts to clarify some of the concepts of digital control and digital circuit applications. Using advanced digital design computer software, students gain the knowledge of the various methods of digital circuit integration, circuit analysis and also power system analysis. Practical digital applications are investigated using microcontroller kits, circuit kits, programmable logic controllers and robotic equipment.

Electronics Laboratories

The Electronic labs, electronics Lab 1 (232) and 2 (230) are required to serve the Electronic group courses. Lab 1 (232) serves the courses taught in other departments (ex. The

Fundamentals of electricity and electronics) and the devices courses, while lab 2 (230) serves the electronic circuits courses. The students, in both labs, are required to design and construct the different experiments with the help of different simulation programs the most important of which is the PSPICE program. Fundamentals of Electricity and Electronics, Electronic Amplifiers, Microelectronic Circuits, Analogue Signal Processing and Electronic Devices 2 courses among other electronics courses sessions are held in these laboratories.

Electrical Engineering Workshop

The workshop is equipped with different – easy to assemble- component panels that help the students to build electrical protection systems. In addition, several demo relays are available to demonstrate their internal structure. Furthermore, sets for demonstrating electric machines testing and construction are available. The workshop also serves the analogue measurement experiments.

Electrical Circuits Lab

It provides the essential knowledge for the student to understand and validate the AC and DC electric circuits' concepts. The laboratory also familiarize the student with measurements devices, power supplies and different circuit elements.

Electric Drives Laboratory

The electrical drives laboratory offers a great chance for undergraduate as well as postgraduate students to experience and be familiar with conventional electrical drives systems as well as modern advanced drives systems by experimenting AC and DC machine drive systems. Moreover the renewable energies trainers provide the student with the essential knowledge for PV, wind and fuel cell systems.

Field-Programmable Gate Array Lab

The Field-Programmable Gate Array (FPGA) Lab is devoted to the application of FPGA technology to information processing and general computing using VHDL synthesis methods for hardware development. Lab is equipped with commercial CAD software for VHDL simulation, synthesis, and implementation of systems in programmable XILINX XUP 100,000 gates FPGA devices. The courses taught in this lab are Digital System Design, Computer Architecture, and Computer Performance.

Fluid Mechanics and Hydraulics

The lab provides facilities for undergraduate teaching, final year projects and for research work leading to postgraduate degrees.

This lab consists of several experimental setups for verifying the basic laws of fluid mechanics and some flow measuring devices. It can also be used for fundamental studies into the structure of wake-flows and turbulent boundary layers. Throughout the laboratory there is access to fresh and salt water (which can be chilled and filtered), drainage trenches, and compressed air. Also available are oil hydraulic power supplies. The laboratory equipment areventuri meter, orifice meter, smoke tunnel, pumping station, wind tunnel, fluid circuit demonstrator, hydraulic flow channel, fluid power trainer, hydraulic bench, Pipe friction and Flow in closed channel.

The laboratory provides supports to both undergraduate and graduate teaching so that students have the opportunity to see by themselves the essential fluid mechanics principles, and to verify the applicability of various assumptions, models and analysis methods. It also provides facilities

for researches in hydraulics, fluid mechanics and related fields to support graduate studies. Thus much of the fundamental research in the laboratory is comprised of thesis investigations.

Global Maritime Distress and Safety System

The purpose of the Global Maritime Distress and Safety System (GMDSS) laboratory is teaching the students how to acquire skills using some computer programs such as:

The NEC and computer FORTRAN codes for measuring the different antenna specifications such as directivity, half power beam width, bandwidth, antenna pattern,…,etc.; and simulating those different antenna configurations.

The computer MATLAB codes for simulating the different communication systems to teach students the principles of those systems; and teaching students how to deal with the program for quantitative measurement of the phenomena of the communication systems and signals processing without the use of expensive instruments.

Heavy Structures Laboratory

The laboratory experiments conducted in heavy structures laboratory are a part of the construction and building engineering program. The laboratory serves both undergraduate projects and post-graduate research. For undergraduate students, the laboratory provides the necessary skills for performing appropriate experiments on R.C., steel member, and composite members to determine their behaviour such as; load capacity, failure modes, load-deflection and stress versus strain, using the sufficient equipment for measuring these variables when subjected to static loading. The objective of the heavy structures laboratory covers also the courses of post-graduate studies and the research effort concerning with the engineering properties and behaviour of R.C. and steel heavy structures. Moreover it can also serve the building and construction industry by conducting the required researches on reinforced concrete and metallic structures elements e.g. (columns, beams, slabs and joints), as well as structural types e.g. (frames, trusses, arches).

Human Factors and Ergonomics

The Human Factors and Ergonomics Laboratory is actively involved with the Industrial and Management Engineering department, offering training services, and consultation to the local and regional industrial community. In addition, it facilitates the education and research development of both undergraduate and graduate students. The lab conducts work in theoretical and applied ergonomics, work physiology, primarily relating to worksite, workstation, and equipment evaluation and design.

It specifically focusing on: biomechanics of the human body (modelling, strength, motions, and working postures); human engineering of systems, equipment, tools, workstations, and work tasks; and ergonomic design for safety, comfort, and performance.

This Laboratory is particularly well equipped to do research in a variety of areas including: Dexterity and Coordination, involving the use of hands, development over time and activities that involve precise hand-eye coordination. Strength measurement includes equipment for measuring the muscle fatigue when performing different tasks. Physiological measures, testing the human limitations and abilities of individuals to perform a specific task such as: testing the lifting abilities of humans, recommending the right posture for lifting. Anthropometrics, the lab comprises a wide range of anthropometric equipment for different human body measurements, to gather the characteristic measurements of a population.

Light Structures Laboratory

The objective of the experimental tests taking place in the light structures laboratory is to provide students with the necessary information to understand the theory of structures basics using modern tools that are available in the lab. The laboratory includes various devices for applying the required experimental tests such as bending of beams, torsion of circular rods, buckling of columns, and deflection of beams. Students are supplied with booklets showing the different experiments steps and the procedure for obtaining results. Students are required to submit a final report showing in engineering curves the outputs of the experiments and their comments. The light structures laboratory can serve the courses of post-graduate studies and researches in the scope of the structural behaviour of light structures. Moreover, the laboratory may help the building and construction industry through performing the needed researches concerning the light structures.

Marine Engineering Lab (1)

This lab is used for educational and training purposes of marine engineering and maritime transportation students and graduates. The lab incorporates some of the equipment a trainee would face in marine engine rooms, such as; Valves and main thrust bearings. This lab covers areas related to the different types of valves, their purposes of use, how to maintain valves e.g. packing a gland, preparing gaskets, and lapping of valves to their respective seats using proper tools and materials. A main thrust bearing is available for the purpose of dismantling, inspection, measuring the clearances, re–conditioning of thrust pads, and assembly.

Marine Engineering Lab (2)

This lab is assigned to pumps, compressors, and steering gear training for marine engineering and maritime transport students. The lab covers areas related to the different types of pumps and compressors, their applications in use, their constructional details, probable defects and faults and their remedial actions. Trainees from different disciplines, related to those areas, practice the importance of steering gear, its vital role in a ship, and its operational procedure at sea, especially in emergency situations.

Materials Testing and Characterization Laboratory

The materials testing and characterization laboratory focuses on the mechanical behaviour of a variety of materials, from polymers to super alloys. The laboratory could be involved in a research concerning the investigation of material structure and mechanical properties such as yield strength, ultimate tensile strength, ductility resilience, toughness, hardness, elastic modulus, Poisson's ratio, and strain-hardening properties. The laboratory contains the following testing equipment and associated capabilities:

- A Universal Testing Machine (UTM) with varying load capabilities and specialized gripping for brittle and straight-side samples which is characterized with the following features:
    - Test methods include tensile, compression and bending tests
    - Testing is conducted under computer control
    - A Post-test characterization via optical microscopy
- An Optical microscope equipped with an image analysis system. The microscope allows obtaining and interpreting microscope images of high quality, to perform quantitative optical measurements, and to produce high quality digital images for documentation and analysis.

- A Universal Hardness Testing Machine which is a high precision, easy operation, high sensitivity metal hardness instrument which combines the Rockwell, Brinell, and Vickers hardness principles widely used in factory workshops, laboratories, universities and research institutions. The machine is equipped with a large LCD and Microchip control system, makes hardness testing be automatically operated. Also, a built-in printer is attached to record the main technical data of the entire testing process.

Materials Testing Lab

The Materials Testing Lab is one of the first labs established in the College of Engineering, AASTMT. The Materials Testing Lab currently serves different educational and scientific activities. The lab plays a pioneering role in the QC/QA of construction work using its up-to-date facilities.

The material testing laboratory includes Tensile Testing, Impact Testing, Crack Tip Opening Displacement (CTOD), Fracture Toughness Test (FTT), Fatigue Test (FT), Bend and Hardness Test, Stress Rupture Test, Oscilloscope machine, Pressure vessel machines and many other destructive tests on metals.

The lab services the mechanical, marine and the industrial departments. The lab service subjects like material science, mechanics of materials and stress analysis. It provides facilities for undergraduate teaching, final year projects, and for researchers work leading to postgraduate degree.

Mechanical Vibration Lab

The Mechanical Vibrations Lab is a modern facility for performing advanced vibration analysis. The Vibrations Lab is used for undergraduate education, graduate education, senior design projects, and advanced research. Equipment in the lab includes accelerometers, miniature accelerometers, load sensors, impact hammers, miniature impact hammers, shakers, and piezo-ceramic patch actuator/sensors, Velocity Sensor (Screw Mounting) ,Seismic Vibration Transmitter (Screw Mounting), Seismic Accelerometer Sensor, Seismic Indicator Transmitter, Signal Conditioner for Remote Sensor, Strain Gauges (Precision Strain), Proximity Sensor with cable Proximity Probe Driver, Proximity Signal Conditioner, Proximity Sensor Calibrator, Extension Cable with Insulator, Trend Setter, Miniature Vibration Meter Device, Hydro Scout Toil Cartridges, Portable Shaker System, Velocity Transducer, Vibration Switch, Audio Amplifier, Digital Vibration Controller, Triaxial Accelerometer, Blower (Compressed Air),Flow meters for Liquid Low Frequency Accelerometer, Industrial Accelerometer, Noise Level Meter, Linear Strain Gauge, Differential Pressure Transducer, Absolute Pressure Transducer, Tachometer Speed Range, Signal Generator and Handy Oscilloscope Fluke. Data is analysed using oscilloscopes Basic experiments performed in the lab for undergraduate education include time and frequency domain vibration analysis of simple structures including MDOF modal analysis.

Mechatronics Lab

Mechatronics is the synergistic integration of mechanical engineering, electrical engineering, electronics, computer science, and control theory for the design of intelligent systems. Mechatronic systems are used in automotive systems, aerospace systems, consumer electronics, and robotics. The Lab Equipment include ProLight 3000 Turning Centre, versatile 2-axis CNC lathe for training, engineering and light-duty industrial turning applications, The SCORBOT-ER 9Pro, Robot with 6 degree of freedom, Intelitek, Robot with 4 degree of freedom, Automatic Storage and Retrieval System (ASRS), Conveyor. One PC per station and CAD/CAM software. The Mechatronics Laboratory was established to support embedded control systems in Mechanical Applications. Mechatronics Lab objective is to expect the student to understand

the real pleasure of research through finding research themes, establishing theories, developing systems, conducting experiments, and presenting results. The lab supports courses like introduction to Mechatronics, Mechatronics systems, Robotics and Applications and Final year Graduation projects as well as graduate studies.

Microprocessor Labs

The Microprocessor labs are equipped with all the necessary lab equipment, Micro Controller Kits, and all types of tools, accessories and a variety of Digital / Analogue components. These labs characterize the computer engineering department. Continuous upgrades are conducted on it to assure that it is compatible with the latest technological advances. The lab work aims to develop and enhance the students' capabilities in several relevant aspects. Practical skills are developed through experiencing real life scenarios. Present in the labs practical facilities for all Micro Processor Basics, Interfacing, Programming, Controlling and Monitoring and it is further being enhanced with the addition of many new Micro Controllers, Micro Controller Kits, Micro Processors / Controller Training stations and Interfacing Units. Courses taught in these labs are Digital Electronics, Introduction to Microprocessor, Data Acquisition Systems, Intelligent Robotics and Microcomputer Based Design.

Mobile and Web Engineering Lab

Mobile and Web lab have high technology computers and printers. It is equipped with technology Intel® 4th generation Core TM 7-4770, 3.40 GHz, Microsoft Operating System windows 7-64 bit and Ubuntu Linux, Java Development Kit(JDK6), Oracle, SQL server. This lab services the courses operating systems, web engineering, Java/OOP and Mobile applications.

Non-Destructive Testing Laboratory

The NDT Lab provides tools for the non-destructive testing of welding, detecting flaws and discontinuities in materials as well as tools for measuring the thickness of coating layers and materials. The lab also contains equipment that is used in detecting the macroscopic structure of materials. It contains the following instrumentation:

A group of approved welding defects specimens, dye penetration test, magnetic particle test for surface defects of welds, X-ray test demo kit, Ultrasonic devices for (Paint layer thickness measurement, material thickness measurements and flaw detection of welding), Eddy current devices for flaw and crack detection of materials, grinding machine with water cooling for metal surface preparation before microscopic examination, dry polishing machine for final preparation of surfaces, endoscope for micro internal examinations, optical microscopes with different magnifications and one with image analysis system and a heat treatment oven up to 1200° C. The lab services the undergraduate and graduate students and has a good connection with the industry. It is used in the practical training for welding courses and diplomas and its instrumentation is used for the external inspection services and consultations activities carried out by its professional staff.

Physics Lab (1)

The lab is equipped to help engineering students to carry out Physics experiments covering several topics in current electricity, magnetism and optics.

Electricity, Magnetism, and Light is an engaging introductory treatment of electromagnetism and optics for first semester physics and engineering majors. Lab experiments focus on conceptual understanding, with an emphasis on relevance and historical development. Mathematics is specific and avoids unnecessary technical development. They emphasize on physical concepts,

analysing the electromagnetic aspects of many everyday phenomena, and guiding readers carefully through mathematical derivations. They Provides a wealth of interesting information, from the history of the science of electricity and magnetism, to connections with real world phenomena in science and engineering to common sense advice and insight on the intuitive understanding of electrical and magnetic phenomena.

Physics Lab (2)

The lab is equipped to help engineering students to carry out Physics experiments covering several topics in thermodynamics, heat transfer, waves and sound.

Engineering curricula are notoriously demanding. One way to make the material easier to grasp and more fun to learn is to emphasize the experimental or "hands-on" aspects of engineering problems. This unique laboratory is about learning through active participation in experiments, and it specifically aims to dispel some of the mystery so many students associate with the study of thermodynamics and heat transfer. A collection of experiments are performed in heat transfer and thermodynamics contributed by leading engineering educators. Each experiment follows the same step-by-step format, which includes the objective of the experiment, apparatus needed, procedure, suggested headings, and references. The experiments use apparatus that is easily built or attainable. Among the topics covered are heat conduction, convection, boiling, mixing, diffusion, radiation, heat pipes and exchangers, and thermodynamics.

Physics Lab (3)

The lab is equipped to help nautical students to carry out various physics experiments covering several topics in mechanics, wave, sound, magnetism and optics. Laboratory sessions will usually be preceded with class discussion or demonstration explaining specific procedures to be followed. Laboratory exercises are designed to complement the theory presented in class and, as such, are often a compromise between the abstract world of point masses, frictionless tables, and mass-fewer strings usually assumed and the real world. We are trying to reinforce the abstract concepts of force, velocity, vectors, etc. with some real everyday phenomena in order to make the physics meaningful. Often the student will discover enough disagreement that you can make some intelligent observations as to the cause of the discrepancy.

Radar Laboratory

Several skills are added to the students through the study in this laboratory such as how to measure and test experimentally the principles of radar system using the lab-Radar trainer, also how to measure the different phenomena of the radar without the use of expensive instruments and to upkeep and repair the instruments such as TV and Radar (Trouble shooters). GMDSS and Applied Telecommunication System use the laboratory facilities.

Refrigeration and Air Conditioning Lab

Refrigeration and air conditioning industry is considerably growing all over the world. It covers a wide range of activities in industry, science and research applications for the comfort and benefit of mankind and his living environment. The focus of the refrigeration and Air conditioning lab is to aid the refrigeration and air-conditioning industry in the transition from CFC-11, CFC-12 and HCFC-22 to new, environmentally acceptable refrigerants.

Equipment in the lab includes advanced Commercial Refrigeration Trainer, building Management Trainer, Commercial Refrigeration Trainer, Recalculating Air Conditioning Demonstrator, Thermoelectric Pump, vapour Compression Cycle Demonstrator, Refrigerant Recovery Units, Container Reefer, Cooling Tower and Air conditioning cycle.

Practical training on refrigeration and air conditioning systems is conducted within this lab, where the trainees could improve their experience and technical knowledge concerning various related equipment. The lab current capabilities permit a variety of technical courses for engineers working in the field of that industry.

Renewable Energy

The lab provides facilities for undergraduate teaching, final year projects and for research work leading to postgraduate degrees. The laboratory equipment are Mobile Solar Systems trainer and Solar Photovoltaic trainer.

Sculpture Lab

Sculpture Lab introduce students to varieties of topics and media to enhance their artistic capabilities. The lab is set up for using different materials in making artistic models such as clay, brass and copper. The lab is equipped with metal rotational stands for holding models. Small-Scale Metal works and Casting is offered in addition to advanced finishing techniques such as soldering, forming, colouring, and various finishing processes.

Soil Mechanics and Transportation Engineering Laboratory

The experimental tests of soil mechanics is a part of the Construction and Building Engineering program. The educational objective of experimental work is to provide the undergraduate students with the necessary skills for performing appropriate laboratory experiments on the soil samples to determine the physical and engineering properties of the samples using modern tools available in the lab. Students also get hand-on experience with the way of analysing the tests results and using the results in preparing a technical soil report. All tests are performed based on ASTM testing specifications. The soil mechanics lab may also serve the practical research activities in geotechnical engineering for post-graduate students. The laboratory can also take a place in the building and construction industry by conducting the required experimental tests on soil samples used for preparing soil technical reports, analysis of pile-load tests results, proposing soil improvement techniques for external projects.

The laboratory experiments conducted in transportation engineering lab is a part of the highway design and construction course. The laboratory serves both of undergraduate and post-graduate students. For undergraduate students, the lab provides the necessary skills for conducting the different experimental tests on asphalt samples and pavement materials such as: California bearing ratio (CBR), M California bearing ratio (CBR), Marshal Test for asphalt samples, Marshal Test, and flow and stability for asphalt samples.The post-graduate students can also use the laboratory equipment in the experimental work necessary for researches. Moreover the transportation engineering lab can also serve the building and construction industry by conducting the required tests of construction asphalt materials as well as developing new materials through the use of recycled and waste materials.

Steam Power Engineering Lab

This lab is used for operations related to Boiler and purifiers training of mechanical, marine, and maritime transport students.

The lab includes two models of fire tube boilers, enabling the trainees to analyse the operation of boilers and their safety devices, how to raise steam in a boiler, the operational faults and how to rectify them. Purification of oil, getting rid of sediments and impurities are very important on board ship to protect the main engine and auxiliary systems of lubrication.

A steam turbine model is available for the purpose of examining the internal parts such as nozzles, fixed blades, and bearings …etc.

Thermodynamics Lab

The Thermodynamics Lab covers a wide range of interests in the areas of Mechanical Engineering associated with energy use and efficiency. The Lab helps in developing practical solutions to problems in thermodynamics and heat transfer. The Lab houses undergraduate experiments in heat transfer and internal combustion engines as well as research equipment used by postgraduates and research staff. Equipment in the lab includes Vortex Tube Refrigerator, Modular Heat Exchanger, Forced Convection Demonstrator, Gas Turbine Trainer, Steam Turbine Trainer, Cross Flow Heat Exchanger, Air Compressor System and Concentric tube heat exchanger. During the final year of the undergraduate degree, students can specialize in courses associated with the Thermodynamics Lab and undertake final year projects in the laboratory.

Workshop & Architectural Models Lab

The Workshop and Architectural Models Lab at the Architectural Engineering & Environmental Design Department, AASTMT, is a useful aid for the exclusive use of architecture students. The Lab facilitates the bond between designing and making models. The lab contains tools and machinery for working with wood, foam, cardboard and plastics. Students build prototypes, models and mock-ups of famous buildings and take classes on how to use different materials and different models to express their ideas. The Lab also offers support in the following fields:

- Expressing architectural drawings into 3D Models.
- Using different materials for expressing models.
- Working as a team-work for making a model for a famous building.

Physical Chemistry and Reactor Design Lab

Physical Chemistry and Reactor Design lab is a useful lab for the chemical engineering students. The Lab facilitates the bond between reactor design and making bench-scale plant reactors and pilot plant reactors. The lab contains tools and equipment to deal with the chemical and physical properties of the chemical substance, and the reaction mechanism takes place between different chemical reactants and how to control the reaction to maximize the Chemical Product in safe environment so the students design and perform computing models in order to build their designed reactors. To be able to deal with Mass Production of Industrial Chemical and Petrochemical Plants.

Petroleum Engineering Lab

The Petroleum Engineering Lab covers a wide range of interests in the areas of Petroleum Engineering, including reservoir rocks properties and earth rock types of classification. The Lab has facilities to measure drilling fluids properties and cement properties. The Lab has tools that measure reservoir fluids properties such as fluid density, Ph value, reservoir fluids (oil and water) electrical resistivity and surface and interface tension

6. LIBRARIES AND INFORMATION SERVICES CENTRE

Since its inception in 1972, the Arab Academy for Science & Technology, and Maritime Transport (AASTMT) saved no effort in supporting the educational process. And because academic libraries play a major role in supporting educational activities and enriching the academic life of students and faculty members, AASTMT established a specialized library in order to make use of the information published in different media.

Due to the change in the role libraries play in the information field in general, and the academic field in particular, the Library's name changed to "Libraries & Information Services Centre" A change that was crucial due to the emergence of new information resources - in addition to books - and the growing reliance on diverse information sources that meet users" information needs.

The Centre serves the academic community in all branches of the Academy. It consists of: The Main Library (Abu-Qir), Architecture Library (Abu-Qir), Maritime Library (Abu-Qir), Management Library (Miami), Graduate School of Business Library - Alexandria (Miami), Sheraton Engineering Library, Sheraton Management & Logistics Library, Dokki Management & Logistics Library, Graduate School of Business Library (Sheraton), Port Saeed Library, Smart Village Library, WabourElmaya Library, and GanoubElwadi Library.

The libraries are all connected through online interactive terminals to ensure easy access to the centre's in-house database. In order to offer a distinguished information service, the Centre established an integrated information system that facilitates direct search through a computerized catalogue and electronic databases.

The Main Library

The Main Library in Abu-Qir campus mainly serves the College of Engineering and Technology, the College of Computing & Information Technology, and the College of International Transport & Logistics, in addition to performing all technical activities of acquisition and cataloguing of all information media. The Main Library comprises a collection of books, in addition to Periodicals, Dissertations, Projects, and Electronic Journals.

The Main Library building consists of 3 floors, and can host (225) users at the same time. The first floor comprises the references, periodicals, graduation projects, and dissertations. It also comprises a computer lab for Library users to retrieve information from the Internet, Online Public Access Catalogue (OPAC), and search our set of databases and e-journals.The second floor comprises English books in the fields of: Mechanical, Marine, Construction, Industrial Engineering, and International Transport & Logistics, in addition to a photocopy unit.The third floor comprises English and Arabic books. English books are in the fields of: Computer, Electrical and Control, and Electronics and Communications Engineering, and Basic and Applied Sciences.

The Main Library's collection consists of (15125) books, (87) Printed Periodicals, (1243) Dissertations, and (463) Projects, in addition to Full-Text e-journals, e-books and e-dissertations.

The Architecture Library

The Architecture Library in Abu-Qir campus serves the department of Architectural Engineering and Environmental Design of the College of Engineering and Technology. It comprises a collection of the latest publications in architecture. Its collection consists of (2580) titles, (64) Dissertations (10) periodicals, in addition to Full-Text e-journals, e-books and e-dissertations.

The Library is equipped with (5) terminals for Library users to retrieve information from the Internet, Online Public Access Catalo (OPAC), and search our set of databases and e-journals.

Users can also scan and save/print images from books or periodicals available in the library. The Architecture Library can host up to (50) users at the same time.

The Maritime Library

The Maritime Library in Abu-Qir campus serves the Nautical Specializations of the College of Maritime Transport and Technology. It comprises a collection of the latest publications in the maritime field which consist of (2633) titles, (406) Dissertations, (16) Printed Periodicals, as well as all (489) International Maritime Organization (IMO) publications, as the AASTMT's Library is a depository library of IMO publications, in addition to Full-Text e-journals, e-books and e-dissertations. The Maritime Library can host up to (50) users at the same time.

The Management Library

The Management Library in Miami campus serves the College of Management and Technology. It comprises a collection of the latest publications in management fields. Its collection consists of (4804) titles, (34) periodicals, (263) Dissertations, (2500) Researches, in addition to Full-Text e-journals, e-books and e-dissertations, and a number of U.N. publications. The Management Library can host up to (35) users at the same time.

The Graduate School of Business (GSB) Library (Alexandria)

The Graduate School of Business (GSB) library in Miami campus serves graduate courses in management fields. It comprises (1280) titles, (361) Dissertations, in addition to Full-Text e-journals, e-books and e-dissertations. It also comprises the Books of the College of Language and Communication: (787) titles. Photocopying services are available for all library users.

WabourElmaya Library

The Library in WabourElmaya campus serves Graduate studies in Engineering, Computing, and Language & Communication. It comprises (368) titles, and (496) Dissertations, in addition to Full-Text e-journals, e-books and e-dissertations. Photocopying services are available for all library users. The Library can host up to (31) users.

Engineering Library – Sheraton

The Engineering Library in Sheraton branch serves the specializations the College of Engineering & Technology and the College of Computing & Information Technology in Cairo. The Library can serve (70) users at the same time. Its collection of engineering books is (4730) titles, (1112) Dissertations, and (78) Projects, (20) Periodicals, in addition to Full-Text e-journals, e-books and e-dissertations. Photocopying services are available for all library users.

Management & Logistics Library - Sheraton

The Management & Logistics Library in Sheraton serves the specializations the College of Management and Technology and the College of International Transport & Logistics in Cairo (Sheraton). The Library can serve (40) users at the same time. Its collection of management books is (3333) titles and (147) Dissertations, (2) Periodicals, in addition to Full-Text e-journals, e-books and e-dissertations. Photocopying services are available for all library users.

Management & Logistics Library - Dokki

The Management & Logistics Library in Dokki serves the specializations the College of Management and Technology and the College of International Transport & Logistics in Cairo (Dokki). The Library can serve (25) users at the same time. Its collection of management books is (1380) titles, and (72) Dissertations, in addition to Full-Text e-journals, e-books and e-dissertations. Photocopying services are available for all library users.

Smart Village Library

The Library in Smart Village mainly serves the departments of the College of Engineering and Technology: Architectural Engineering & Environmental Design, Electronics & Communication, Mechatronics, and Construction & Building Engineering College of Management & Technology, and the College of International Transport & Logistics.

The Library can serve (65) users at the same time. Its collection of books is (877) titles, (307) Dissertations, in addition to Full-Text e-journals, e-books and e-dissertations. Photocopying services are available for all library users.

GanoubElwady Library

The Library in GanoubElwady serves the specializations of Engineering and Management. It comprises (1922) titles, and (55) Dissertations, in addition to Full-Text e-journals, e-books and e-dissertations. The Library can host up to (55) users. Photocopying services are available for all library users.

Port Saeed Library

The Library in Port Saeed campus serves the specializations of Maritime Transport, Engineering, Management, and Logistics. It comprises (1840) titles, and (132) Dissertations, in addition to Full-Text e-journals, e-books and e-dissertations. The Library can host up to (31) users. Photocopying services are available for all library users.

○ 6.1 Summary of Libraries in AbuKir Campus

Library	Books	Printed Periodicals	Dissertations	Capacity
Main	30,816	54	1,119	229
Architecture	3,796	10	71	53
Maritime	8,734	20	434	52
Total	**43,346**	**84**	**1,624**	**334**

○ 6.2 Number of Books Available

Subject	Number of Books
Mechanical Engineering	1,570
Marine Engineering	810
Electronics & Communications Engineering	3,700
Basic & Applied Sciences	2,800
Electrical & Control Engineering	2,530
Construction & Building Engineering	2,130
Industrial Engineering	1,570
Computer Engineering & Computer Science	4,920
Quality Management	1,855
Architectural Engineering & Environmental Design	4,200
Nautical	2,760
Shipping & Logistics	5,800
Business Administration	2,250
Management Information Systems & E-Commerce	1,380
Hotels & Tourism	1,700

6.3 E-books

Database	Description / Journal Title
Knovel	Civil Engineering & Construction Materials
	Electrical & Power Engineering
	Electronics & Semiconductors
	General Engineering & Engineering Management
	Mechanics & Mechanical Engineering
	Metals & Metallurgy
	Oil & Gas Engineering
	Transportation Engineering
EBSCO	eBook Academic Collection
	eBook Arabic Collection
	eBook Business Collection

7. ADMINISTRATION, FACULTY AND STAFF

7.1 Administration

Deanery

Akram Soliman Mohamed, Dean of College.

Alaa Khalil, Vice Dean, Graduate Studies and Research.

Iman Morsi, Vice Dean, Practical Training and Community Service.

Ehab Farouk Badran, Vice Dean, Education Affairs.

Tarek Mostafa, Vice Dean, Student Affairs.

Departments

Nasser Mohamed El Magraby, Dean of Basic and Applied Sciences Institute

Adham Mohamed Aboulnour, Head of Architectural Engineering and Environmental Design Department

Ahmed Abdelaziz Youssef Shalaby, Head of Electronics and Communications Engineering Department

Ahmed Samir Kamal El Den, Head of Marine Engineering Department

Aly Ismail Mohamed Shehata Mohamed, Head of Mechanical Engineering Department

Elbadr Mohamed Mohamed Osman Ahmed Elgendi, Head of Construction and Building Engineering

Mahmoud Ahmed Mahmoud Elsayed Mahmoud, Head of Industrial and Management Engineering Department

Sherin Moustafa Mohamed Yousse, Head of Computer Engineering Department

Walid Ahmed Maher, Head of Electrical and Control Engineering Department

Sherine Shahfik Ahmed, Head of Postgraduate Studies Department

Special Units

Mostafa Ahmed Mohamed Abdelgalel Shaheen, Head of Energy Research Unit

Wael Abdelatif Ali Mohamed, Head of Quality Assurance Unit

7.2 Faculty Members

Architectural Engineering and Environmental Design

Adel Sami El-Menchawy, Professor, PhD, 1997 Arch. Dept., Faculty of Fine Arts, Alexandria University, Egypt, Tourism Urbanisation.

Adham Hany Abulnoor, Associate Professor, PhD, 2010, Politicnico di Milano, Milano, Italy, Architecture & Conservation.

Ahmed Bahaa El-Seragy, Professor, PhD, 2004, The University of Nottingham, Nottingham, UK, Environmental Design and Sustainable Architecture.

Ahmed F. Aboelwafa, Assistant Professor, PhD, 2018, Faculty of Fine Arts, Alexandria University, Egypt, Urban Design.

Ahmed Mohamed Moussa, Assistant Professor, PhD, 2017, Faculty of Fine Arts, Alexandria University, Egypt, Urban Design.

Alaa El Din Sarhan, Associate Professor, PhD, 1994, Faculty of Engineering, Alexandria University, Egypt, Architecture and Urban design.

Amal Mamdouh Fathallah, Assistant Professor, PhD, 2004, Faculty of Engineering, Alexandria University, Egypt, Environmental Design.

Amira Hassan Abd Elwahab, Assistant Professor, PhD, 2018, Tu-Darmstadt , Germany, Architectural Conservation.

Bakr Mohameed Gomaa, Assistant Professor, PhD, 2010, University of Nottingham, Nottingham, UK, Environmental Design (Natural ventilation in buildings).

Fahd Abdel Aziz Hemaida, Assistant Professor, PhD, 2014, Faculty of Engineering, Alexandria University, Egypt, Nano Materials in Architecture.

Gihan Mosad Hannallah, Professor, PhD, 2002, Faculty of Fine Arts, Alexandria University, Egypt, Environmental Design & Sustainable Design.

Hamad Hassan Mostafa, Assistant Professor, PhD, 2017, Faculty of Fine Arts, Alexandria University, Egypt, Architecture & Urban Design.

Hussein Ezzat Abul khair, Professor, PhD, 1982, Faculty of Fine Arts, Alexandria University, Egypt, Interior Design, Architecture & Urban Design.

Magdy wissa, Assistant Professor, PhD, 2014, Faculty of Fine Arts, Alexandria University, Egypt, Architecture & Urban Design

Maye Abbas Yehia, Associate Professor, PhD, 2007. Faculty of Engineering, Alexandria University, Egypt, Architecture & Urbanism.

Mohamed Adel El Desoky, Assistant Professor, PhD, 2012, Faculty of Engineering, Cairo University, Egypt, Architectural Conservation.

Mohamed Atef Elhamy, Professor, PhD, 2002, Faculty of Fine Arts, Alexandria University, Egypt, Architecture & Urban Design.

Mohamed Ibrahim Gomaa, Professor, PhD, 1982, D.P.L.G. Beaux Arts, Paris, France, Architecture & Urban Design.

Mohamed M. Gabr, Assistant Professor, PhD, 2018, Faculty of Fine Arts, Alexandria University, Egypt, Urban Design.

Mohamed Mustafa Ayoub, Associate Professor, PhD, 2012, Faculty of Fine Arts, Alexandria University, Egypt, Computational Architecture.

Mohamed Wahba Ebrahim, Professor, PhD, 2003, Faculty of Fine Arts, Alexandria University, Egypt, Architecture & Sustainable Urban Design.

Mostafa Mohamed Gabr, Professor, PhD, 1990, Edinburgh University, UK, Landscape Architecture & Urban Design.

Nermine Aly Hany, Assistant Professor, PhD, 2016, Faculty of Engineering, Alexandria University, Egypt, Environmental Design & Sustainable Design.

Rania Abdel Galil, Professor, PhD, 2007, Sheffield University, UK, Sustainable Urban & Regional Planning

Sally Said El Deeb, Assistant Professor, PhD, 2017, Faculty of Engineering, Alexandria University, Egypt, Environmental Design & Sustainable Design.

Sherine Shafik Aly, Professor, PhD, 2008, Faculty of Fine Arts, Alexandria University, Egypt, Sustainable Urban Design.

Sondos Aly Ragheb, Assistant Professor, PhD, 2018, Faculty of Engineering, Alexandria University, Egypt, Sustainable Urban Design.

Wael Mahmoud Hassab, Associate Professor, PhD, 2004, Faculty of Engineering, Alexandria University, Egypt, Sustainable Architecture.

Yasmin Sobhy Kandil, Assistant Professor, PhD, 2011, Faculty of Engineering, Cairo University, Egypt, Urban Design.

Yasser Ahmed Farghaly, Associate Professor, PhD, 2005, Faculty of Fine Arts, Alexandria University, Egypt, Architectural Education, Urban Landscape.

- **Basic and Applied Science**

Alaa Abdel-Wahed Abdel-Bary, Professor, Ph.D. (1999) Zagazig University, Egypt, Applied Mathematics.

Allam A. Allam, Associate Professor, Ph.D. (2011) Alexandria University, Egypt, Applied Mathematics.

Aly Abdel-Moneim Abdel-Halim, Associate Professor, Ph.D. (2006) Zagazig University, Egypt, Mathematical Physics.

Amany Mohamed Elsayed, Assistant Professor, Ph.D. (2008) Alexandria University, Egypt, Applied Mathematics.

El-Hady I Soliman, Assistant Professor, Ph.D. (2015) Alexandria University, Egypt, Pure Mathematics.

EmanShafik El-Malah, Associate Professor, Ph.D. (1999) Alexandria University, Egypt, Environmental Physics.

Houssam-EldinShawky Mohamed, Professor, Ph.D. (2006) Alexandria University, Egypt, Engineering Mathematics.

Ibrahim Hassan Mohamed, Professor, Ph.D. (2002) Alexandria University, Egypt, Chemical Engineering.

Khaled T Ramadan, Associate Professor, Ph.D. (2010) Alexandria University, Egypt, Applied Mathematics.

Mervat Aly Mohamed, Assistant Professor, Ph.D. (1998) Alexandria University, Egypt, Production Engineering.

Mohamed A Elsayed, Associate Professor, Ph.D. (2005) Virginia Tech University, USA, Engineering Mechanics.

Mohamed Abdel-Aziz Ibrahim, Professor, Ph.D. (1976) McGill University, Communication Engineering.

Mohamed Abdel-MoneimAbbasy, Professor, Ph.D. (1985) Washington State University, USA, Mechanical Power Engineering.

Mohamed Abdel-Zaher Abdel-Rasoul, Professor, Ph.D. (2003) Alexandria University, Egypt, Nuclear Physics.

Mohamed El-Sayed Amer, Professor, Ph.D. (1982) Alexandria University, Egypt, Analytical Chemistry.

Mohammed A. Omar, Associate Professor, Ph.D. (2009) Alexandria University, Egypt, Engineering Mathematics.

Nasser Mohamed El-Maghraby, Professor, Ph.D. (2001) Alexandria University, Egypt, Applied Mathematics.

Sherief Gamal El-Sharkawy, Associate Professor, Ph.D. (2009) Zagazig University, Egypt, Computational Physics.

Tahany A. Ehsan, Assistant Professor, Ph.D. (2008) Alexandria University, Egypt, Applied Mathematics.

- **Computer Engineering**

Abd El-Baith Mohamed, Professor, Ph.D. (1992) Vienna University, Austria, Computer System Security.

Ahmed Abd El-KhalekAbou El-Farag, Associate Professor, Ph.D. (2009) Cairo University, Egypt, Computer Architecture.

Ahmed Khadragi, Assistant Professor, Ph. D. (2011), University of Salford, UK, Virtual Reality.

Amani Saad, Professor, Ph.D. (1996) on a Channel system between University of Milano, Italy, and University of Alexandria, Egypt, Object Oriented Database Management Systems.

CherineFathy, Assistant Professor, Ph. D. 2013, Cairo University, Egypt Computer Networks.

Fatma F. Zada, Associate Professor, Ph.D. (1994) Mansoura University, Egypt, Intelligent Robotics.

Hany H. Mahmoud, Assistant Professor, Ph.D. (2015) University of Stafordshire, UK, Video coding

Hesham El-Zouka, Associate Professor, Ph.D. (2006) University of Nottingham, UK, Network Security.

Marwa El-Shenawy, Assistant Professor, Ph. D. 2013, University of Salford , UK, Biomedical image processing.

Mohamad Abou El-Nasr, Professor, Ph.D. (2003) Georgia Institute of Technology, USA, Computer Networks Architecture, Security and Control.

Mohamed Taher El-Sonni, Assistant Professor, Ph.D. (1978) University of Illinois, Urbana-Champaign, USA, Computer Architecture and Pattern Recognition.

Ossama Ismail, Professor, Ph.D. (1994) Queens University, Canada, Robotics, Mechatronics, Computer Control.

Rania Ahmed Kadry, Assistant Professor, Ph. D. 2013, University of Salford , UK, Biomedical image processing.

Sherin Youssef, Professor, Ph.D. (2004) University of Nottingham, UK, Artificial Intelligence, Intelligent Mobile Agents, Swarm Intelligence.

- **Construction and Building Engineering**

Ahmed Ragheb, Associate Professor, Ph.D. (1994) Rensselaer Polytechnic Institute, USA, Geotechnical Engineering.

AkramSoliman, Professor, Ph.D. (2003) Nottingham University, UK, Coastal Engineering and Hydraulics.

AlaaMorsy, Associate Professor, Ph.D. (2010) Alexandria University, Egyypt, Structural Engineering.

Aly I. Eldarwish, Professor, Ph.D. (1994) Michigan State University, USA, Construction Materials and Reinforced Concrete Structures.

Ehab El-Kassas, Professor, Ph.D. (2001) Dundee University, UK, Structural Engineering.

HeshamBassioni, Professor, Ph.D. (2004) Loughborough University, UK, Construction Management.

Karim M. Helmy, Assistant Professor, Ph.D. (2007) University of Manitoba, Canada, Structural

Khaled Shawki, Associate Professor, Ph.D. (2003) Alexandria University, Egypt, Construction Engineering.

Mohamed Essam El-Bahy, Associate Professor, Ph.D. (1987) Southampton University, UK, Geotechnical Engineering.

Mohamed Foda, Assistant Professor, Ph.D. (1988) McGill University, Canada, Transportation and Highway Engineering.

Mohamed Ihab El-Masry, Professor, Ph.D. (2004) University of Southern California, USA, Structural Engineering.

Nabil El-Ashkar, Professor, Ph.D. (2002) Georgia Institute of Technology, USA, Construction Materials.

Nabil Ismail, Professor, Ph.D. (1981) University of California, Berkeley, USA, Coastal Engineering and Water Resources.

Tarek M. Abdel-Aziz, Assistant Professor, Ph.D. (2007) Alexandria University, Egypt, Geotechnical Engineering.

WaelKamel, Professor, Ph.D. (1994) University of Paul Sabatier, France, Environmental Engineering.

Ahmed Osman Idris, Assistant Professor, Ph.D. (2013) University of Toronto, Canada, Transportation Engineering and Planning.

- **Electronics and Communications Engineering**

AbdelMoneimAbdelBary, Professor, Ph.D. (1992) Kent University, UK, Chaotic Behavior of Nonlinear Circuits.

Ahmed Abd El-Aziz, Assistant Professor, Ph.D. (2012) Northumbria University UK, Optical Communication and Photonic Devices.

Amira Zaki, Assistant Professor, Ph.D. (2012) Alexandria University, Wireless Communication, Antenna and Wave Propagation.

Amr El-Helw, Associate Professor, Ph.D. (2008) Staffordshire University, UK, Pattern Recognition Using Spread Spectrum.

Darwish Abdel-Aziz, Professor, Ph.D. (1988) Military Technical College, Egypt, Antennas.

Ehab Farouk Badran, Professor, Ph.D. (2002) Louisiana State University, USA, Communications and Signal Processing.

Farouk A. Salem, Assistant Professor, Ph.D. (1997) Rostock University, Germany, Communications Engineering.

Heba Fayed, Assistant Professor, Ph.D. (2011) Alexandria University, Optical Communications.

HebaShaaban, Associate Professor, Ph.D. (2010) Virginia Tech, Wireless Communication.

HossamGawesh, Assistant Professor, Ph.D. (1983) Alexandria University, Integrated Navigation Systems.

Ibrahim Abdelhafiz, Associate Professor, Ph.D. (2006) Waterloo University, Canada, Pattern Analysis and Recognition.

ImanMorsi, Professor, Ph.D. (2002) Alexandria University, Egypt, Measurements and Instrumentation.

Mohamed El-Sharkawy, Associate Professor, Ph.D. (2006) University of Mississippi, USA, Electromagnetics and Antennas.

Mohamed EssamKhedr,Professor, Ph.D. (2004) University of Ottawa, Canada, Wireless Communications.

Mohamed Essam Moussa, Assistant Professor, Ph.D. (2015) Queen's University, Canada,Navigation and Wireless Localization.

Mohamed EssamTamazin, Assistant Professor, Ph.D. (2015) Queen's University, Canada,Navigation and Wireless Localization.

Mohamed Mahmoud Omar, Associate Professor, Ph.D. (2007) Alexandria University, Egypt, Communications Engineering.

Mohamed SaadZaghloul, Assistant Professor, Ph.D. (2002) Monofeia University, Egypt, Communications Engineering.

Moustafa Hussein, Professor, Ph.D. (1987) Alexandria University, Egypt, Optical Communications.

Omnia Amr Attallah, Assistant Professor, Ph.D. (2015) Aston University, UK, Signal Processing.

Radwa Khalil, Assistant Professor, Ph.D. (2015) Alexandria University, Communication and Digital Signal Processing.

Roshdi Abu-Elazayem, Professor, Ph.D. (1981) University of Houston, USA, Electronic Devices and Circuits.

SharafEldin El-Nahas, Professor, Ph.D. (1984) Washington University in St. Louis, USA, Electronic Communications.

WaelAbd El-Latif, Assistant Professor, Ph.D. (2012) Alexandria University, Antennas & Electromagnetic Wave Propagation.

Waleed Kamal Badawi, Assistant Professor, Ph.D. (2012) Stanford University, UK, Communication and Signal Processing.

▪ Electrical and Control Engineering

Ahmed Amer , Professor ,Ph.D.(1989)Laboratoired'Automatique,L'Univestie des sciences et Technique de Lille Flandres , Artois,France .

Ahmed AnasHelal, Associate Professor, Ph.D. (2004) Heriot-Watt University, UK, Electrical Machines and Drives.

Ahmed Lotfy, Professor, Ph.D. (1997) Alexandria University, Egypt, Electrical Power.

Ahmed KadryAbdelsalam, Associate Professor, Ph.D. September 2009, University of Strathclyde, UK.

Ahmed K. El Shenawy, Assistant professor, Ph.D. April 2010, University of Mannheim, Germany.

Alaa Khalil, Professor, Ph.D. (1999) Ain Shams University, Egypt, Electrical Machines and Drives.

Amany El-Zonkoly, Professor, Ph.D. (2003) Tanta University, Egypt, Power Systems Engineering.

EzzEldinZakzouk, Professor, PHD. (1977) AntonimZapotockyAcademy, BrnoCzecoslovakia, Electrical (Control System Engineering)

HamdyAshour, Professor, Ph.D. (1999) Heriot-Watt University, UK, Electrical Machines and Drives.

HussienDessuky, Professor, Ph.D. (1990), Suez University, Egypt, Electrical Power Systems.

Mahmoud Abouzeid, Professor, Ph.D. (1991) Alexandria University, Egypt, Electrical Machines and Drives.

Mostafa S.Hamad, Associate Professor, Ph.D. 2009, Strathclyde University, United Kingdom.

Mostafa AbdElgalil, Assistant Professor, Ph.D. (2006) University of Mannheim, Germany, Control Engineering.

NahlaE.Zakzouk, Professor, Ph.D. 2015, Strathclyde University, United Kingdom.

Samah El-Safty, Professor, Ph.D. (1998) Ain Shams University, Egypt, Electrical Power.

Rania A.Ibrahim, Assistant Professor, Ph.D. (2015), Strathclyde University, United Kingdom.

WalidGhoneim, Professor, Ph.D. (2003) Heriot-Watt University, UK, Electrical Machines and Drives.

Yasser G. Dessouky, Professor, Ph.D. (1998) Heriot-Watt University, UK, Electrical Machines and Drives.

Rana M. Mohamed, Associate Professor, Ph.D. (2016), Aix Marsielle, France.

Mona Ibrahim Abd ELKader, Assistant Professor, Ph.D. (2017), Alexandria University, Egypt

Ahmed Mohamed Mohamed Ahmed Abdel-Reheem, Assistant Professor, Ph.D. (2022), Strathclyde University, United Kingdom.

Ahmed Hebala, Assistant Professor, Ph.D. (2023), University of Nottingham, Nottingham, U.K

- **Industrial and Management Engineering**

Abdel-RazekKandeil, Professor, Ph.D. (1979) Carleton University, Canada, Materials and Manufacturing Engineering.

Ahmed F. Abdelmoneim, Professor, Ph.D. (1970) Odessa University, Soviet Union, Mechanical Engineering.

Aziz EzzatElsayed, Professor, Ph.D. (1983) Alexandria University, Egypt, Industrial Planning.

Hala A. Farouk, Assistant Professor, Ph.D. (2011) Cairo University, Egypt, Electronics and Electrical Engineering.

Ingy A. El-Khouly, Assistant Professor, Ph.D. (2015) Dublin City University, Ireland, Industrial Engineering.

Khaled S. El-Kilany, Professor, Ph.D. (2004) Dublin City University, Ireland, Systems Modelling and Analysis.

Mahmoud A. El-Sayed, Assistant Professor, Ph.D. (2012) University of Birmingham, UK, Metallurgy and Materials.

Mohamed Khamis, Associate Professor, Ph.D. (2004) University of Akron, USA, Quality Engineering and Material Science.

MootazGhazy, Assistant Professor, Ph.D. (2012) Newcastle University, UK, Mechanical and Systems Engineering.

Noha M. Galal, Assistant Professor, Ph.D. (2010) Alexandria University, Egypt, Production Engineering.

Yehia M. Youssef, Associate Professor, Ph.D. (2003) Imperial College London, UK, Material Science and Engineering.

Aly M. Owida, Assistant Professor, Ph.D. (2018) Limerick University, Ireland, Service Contracting.

Houssam M. Eldessouky, Assistant Professor, Ph.D. (2018) University Of Bath, UK, Manufacturing Technology.

Mohamed Nabil Mourad, Assistant Professor, Ph.D. (2018) University Of Bath, UK, Cloud Manufacturing.

▪ Marine Engineering

Ahmed Khalifa Mehana, Assistant Professor, Ph.D. (2015) Port Said University, Egypt, Marine Engineering and Naval Architecture Engineering.

Ahmed Naguib Ahmed,Associate Professor, Ph.D. (2007) University of Alexandria, Egypt, Marine Engineering and Naval Architecture.

Amr Ali Hassan, Professor, Ph.D. (2002) University of Nottingham, UK, Computational Fluid Dynamics, Heat Transfer.

Ashraf Sharara,Associate Professor, Ph.D. (2010) Ain Shams University Egypt, Mechanical Engineering department.

El-Sayed Hegazy, Professor, Ph.D. (1973) University of Alexandria, Egypt, Structural Ship Design.

Hamdy Hassan,Professor, Ph.D. (1983) De Montfort University Leicester, UK, Mechanical Engineering department.

Mohamed Abbas Kotb, Visiting Professor, Ph.D. (1985) Virginia Polytechnic Institute and State University, USA, Ship hydrodynamics, Ship Propulsion, Energy Systems.

Mohamed El-Nour Abdel-Radi, Professor, Ph.D. (1984) University of Glasgow, UK, Offshore Engineering.

Mohamed El Shaib,Associate Professor, Ph.D. (2012) University of Heriot Watt, UK, Material Engineering.

Mohamed FahmyShehada, Professor, Ph.D. (2006) University of Heriot-Watt, UK, Material Engineering.

Nagi El Semelawy, Professor, Ph.D. (1984) University of Glasgow, UK, Naval Architecture Engineering.

Omar Abdulaziz,Professor, Ph.D. (1982) Paisley University, Scotland, UK, Welding And Quality Department.

Aly Hassan El-Batran, Associate Professor, Ph.D. (2016), UTM University, Malysia, Marine Engineering.

▪ Mechanical Engineering

Ahmed F. El-Safty, Professor, Ph.D. (2001) Coventry University, UK, Renewable Energy, Absorption Air Conditioning.

Ahmed SeifEldinBayoumi, Assistant Professor, Ph.D. (2013) Strathclyde University, UK, Mechanical Power, Renewable Energy.

Ali Ismail Sheahata, Assistant Professor, Ph.D. (2012) Ain Shams University, Egypt, Mechanical Power, Refrigeration.

ElarabyMorsi, Visiting Professor, Ph.D. (1995) Ph.D. In Mechanical engineering, Faculty of engineering, Alexandria University, Egypt

El-Sayed Saber, Professor, Ph.D. (1995) Alexandria University, Egypt, Applied Mechanics, Tribology, CFD.

Hassan Abdel-Hamid, Professor, Ph.D. (1966) University of Manchester, UK, Applied Mechanics, Stress Analysis.

Hassan Rashid, Professor, Ph.D. (1982) Alexandria University, Egypt, Applied Mechanics.

Khaled Mohamed Abdou, Associate Professor, Ph.D. (2003) De Montfort University, UK, Concurrent Engineering.

Khaled MohiEldinSaqr, Assistant Professor, Ph.D. (2013 UniversitiTeknologi Malaysia, Mechanical Power, CFD.

Mohamed Abou El-Azm, Associate Professor, Ph.D. (2008) Ain Shams University, Egypt, Mechanical Power, CFD.

Mohamed A. Teamah, Visiting Professor, Ph.D. (1988) Faculty of Engineering, University of Alexandria, Egypt, Thermal Engineering.

Mahmoud Z. El-Feki, Professor, Ph.D. (1988) Alexandria University, Egypt, Nuclear Engineering.

RoushdyHammouda, Visiting Professor, Ph.D. (1969) Odessa Technical Institute, USSR, Refrigeration and Air Conditioning.

Sohair F. Rezeka, Visiting Professor, Ph.D. (1984) Wayne State University, USA, Control systems and Mechatronics.

Ahmed A. Taha, Associate Professor, Ph.D. (2017), University of Alexandria, Applied Mechanics.

Aly M. Elharidi, Associate Professor, Ph.D. (2017), University of Strathclyde, UK, Energy of Building.

Mahmoud H. Salem, Assistant Professor, Ph.D. (2017), University of Aston, UK, Applied Mechanics.

Enass Zakaria Massoud, Assistant Professor, Ph.D. (2019), University of Strathclyde, Glasgow, United Kingdom, Thermal Engineering

Iham Farid Zidane, Assistant Professor, Ph.D. (2019), Aston University, Birmingham, UK, Engineering and Applied Science

Mina Atta Saad, Assistant Professor, Ph.D. 2021, University of Oviedo, Spain, Fluid Engineering.

Essam Sedik, Assistant Professor, Ph.D. (2021) McMaster University Canada, Artificial intelligence

Hesham El Sayed Saber, Assistant Professor, Ph.D. (2022), University of Oviedo, Spain, Applied Mechanics

Ahmed Essam Tourab, Assistant Professor, Ph.D. (2023) University name: University of Oviedo (in Spain), Thermal Engineering.

Anwar Hegazy, Assistant Professor, Ph.D. (2023) Auckland, New Zealand. Thermal engineering.

Mohamed Tarek Mohamed Mito, Assistant Professor, Ph.D. (2022), Aston University, UK, Thermal engineering.

○ 7.3 Staff

Ahmed Shaaban, Electrical and Control Engineering Department.

Asia Mohamed Shaalan, Dean's Educational Office.

Dalia Mohamed Gomaa, Industrial and Management Engineering Department.

Doaa Hassan, Mechanical Engineering Department.

Doaa Mostafa Khamis, Dean's Office.

Hanaa Mahmoud, Mechanical Engineering Department.

Hala Gaber Ahmed ElMasry, Computer Engineering Department.

Marwa Aly Magdy, Dean's Office.

Nehal Abdel Monsif, Marine Engineering Department.

NermeenTalatMoustafa, Architecture Engineering and Environmental Design Department.

NevinDaif, Postgraduate Office.

Noha Fouad Mansour, Postgraduate Office.

Ragaa Mohamed ElHenawy, Construction and Building Engineering Department.

Rania Agamya, Dean's Office.

SafaaAbdelhamid, Basic and Applied Science Department.

WafaaHegazy, Dean's Office.

8. ABUKIR CAMPUS

8.1 Classrooms

No.	Room No.	Capacity	Floor	Building	Whiteboard	Data Show	Air Conditioning	Type
1	004	100	Ground	B				Theatre
2	A	40	Ground	C				Class Room
3	006	167	Ground	G				Theatre
4	070	120	Ground	E				Theatre
3	100	25	1st	B	√		√	Class Room
4	102	25	1st	B	√		√	Class Room
5	104	25	1st	B	√		√	Class Room
6	106	25	1st	B	√		√	Class Room
7	108	25	1st	B	√		√	Class Room
8	110	25	1st	B	√		√	Class Room
9	144	50	1st	C	√	√		Class Room
10	134A	25	1st	C				Class Room
11	134B	25	1st	C				Class Room
12	135	50	1st	D	√	√	√	Class Room
13	137	50	1st	D	√	√		Class Room
14	139	50	1st	D	√	√		Class Room
15	141	50	1st	D	√	√		Class Room
16	149	50	1st	D	√	√		Class Room
17	151	50	1st	D	√	√		Class Room
18	153	50	1st	D	√	√		Class Room
19	172	75	1st	E	√	√		Class Room
20	190A	40	1st	E	√	√	√	Architectural Computer Lab
21	190B	40	1st	E	√	√	√	Architectural Computer Lab
22	G108	30	1st	G	√	√	√	Class Room
23	G109	60	1st	G	√	√	√	Class Room
24	G110	30	1st	G	√			Computer Lab
25	203	120	2nd	A	√	√		Theatre
26	200	25	2nd	B	√	√		Class Room
27	202	25	2nd	B	√	√		Class Room
28	204	25	2nd	B	√	√		Class Room
29	206	25	2nd	B	√	√		Class Room
30	208	25	2nd	B	√	√		Class Room
31	210	25	2nd	B	√	√		Class Room
32	214	50	2nd	B	√	√		Class Room
33	242	25	2nd	C	√	√		Class Room
34	244	50	2nd	C	√	√		Class Room
35	246	50	2nd	C	√	√		Class Room
36	250	25	2nd	C	√	√		Computer Lab

No.	Room No.	Capacity	Floor	Building	Whiteboard	Data Show	Air Conditioning	Type
37	249	50	2nd	D	√	√		Class Room
38	251	50	2nd	D	√	√		Class Room
39	253	50	2nd	D	√	√		Class Room
40	239	25	2nd	D	√	√		Computer Lab
41	241	25	2nd	D	√	√		Computer Lab
42	272	70	2nd	E	√	√		Class Room
43	288	70	2nd	E	√	√		Drawing Studio
44	290	60	2nd	E	√	√		Drawing Studio
45	G208	30	2nd	G	√			Class Room
46	G209	60	2nd	G	√			Class Room
47	G210	30	2nd	G	√			Computer Lab
48	302	25	3rd	B	√	√		Class Room
49	304	25	3rd	B	√	√		Class Room
50	306	25	3rd	B	√	√		Class Room
51	308	25	3rd	B	√	√		Class Room
52	300	25	3rd	B	√	√		Computer Lab
53	312	25	3rd	B	√	√		Computer Lab
54	342	25	3rd	C	√	√		Class Room
55	344	50	3rd	C	√	√		Class Room
56	346	50	3rd	C	√	√		Class Room
57	350	50	3rd	C	√	√		Class Room
58	326	25	3rd	C	√	√		Computer Lab
59	328	25	3rd	C	√	√		Computer Lab
60	330	25	3rd	C	√	√		Computer Lab
61	335	50	3rd	D	√	√		Class Room
62	337	50	3rd	D	√	√		Class Room
63	349	50	3rd	D	√	√		Class Room
64	351	50	3rd	D	√	√		Class Room
65	353	50	3rd	D	√	√		Class Room
66	339	25	3rd	D	√	√		Computer Lab
67	341	25	3rd	D	√	√		Computer Lab
68	370	70	3rd	E	√	√		Drawing Studio
69	390A	80	3rd	E	√	√		Drawing Studio
70	390B	95	3rd	E	√	√		Drawing Studio
71	G308	30	3rd	G	√			Class Room
72	G309	60	3rd	G	√			Class Room
73	G310	30	3rd	G	√			Computer Lab
74	405A	25	4th	A	√			Class Room
75	405B	25	4th	A	√			Class Room
76	401	60	4th	A	√			Drawing Studio
77	403	55	4th	A	√	√		Drawing Studio

No.	Room No.	Capacity	Floor	Building	Whiteboard	Data Show	Air Conditioning	Type
78	400	25	4th	B	√			Class Room
79	402	25	4th	B	√	√		Class Room
80	404	25	4th	B	√			Class Room
81	406	25	4th	B	√			Class Room
82	408	25	4th	B	√	√		Class Room
83	410	25	4th	B	√	√		Class Room
84	412A	50	4th	B				Class Room
85	412B	55	4th	B				Class Room
86	442	25	4th	C	√	√		Class Room
87	444	50	4th	C	√	√		Class Room
88	446	50	4th	C	√	√		Class Room
89	435	50	4th	D	√			Class Room
90	437	50	4th	D	√			Class Room
91	439	50	4th	D	√			Class Room
92	449	50	4th	D	√			Class Room
93	451	50	4th	D	√	√		Class Room
94	453	50	4th	D	√	√		Class Room
95	441	25	4th	D	√			Computer Lab
96	470	130	4th	E	√	√		Class Room
97	490A	75	4th	E	√	√		Drawing Studio
98	490B	75	4th	E	√	√		Drawing Studio
99	G406	30	4th	G	√	√	√	Class Room
100	G407	60	4th	G	√	√	√	Class Room
101	G408	30	4th	G	√	√	√	Computer Lab
102	G403	55	4th	G	√			Engineering Drawing Room
103	G404	50	4th	G	√			Engineering Drawing Room
104	G505	30	5th	G	√	√	√	Class Room
105	G506	60	5th	G	√	√	√	Class Room
106	G507	30	5th	G	√	√	√	Computer Lab
107	G502	55	5th	G	√	√	√	Drawing Studio
108	G503	55	5th	G	√	√	√	Drawing Studio

○ 8.2 List of Labs

#	Room Number	Building No. / Floor	Description
Building (A)			
A1	004	100	Auditorium (130 m^2)
A2	005	Ground	Thermodynamics & Heat Transfer
A3	007	Ground	Fluid Mechanics & Hydraulics
A4	009	Ground	Mechatronics
A5	011	Ground	Material Destructive Tests

#	Room Number	Building No. / Floor	Description
A6	101	1st	Automation Lab
A7	103	1st	Automatic Control
A8	105	1st	Digital Control
A9	107	1st	Metallurgy and Non Destructive Testing
A10	201	2nd	Electrical Machines
A11	205	2nd	Mechanical Vibration
Building (B)			
B1	008	Ground	Refrigeration And Air Conditioning
B2	010	Ground	Renewable Energy
B3	114	1st	Power Systems Lab
B4	216	2nd	CDI lab
B5	300	3rd	Computer Lab 6
B6	312	3rd	Computer Lab 4
Building (C)			
C1	026	Ground	CAD/CAM Laboratory
C2	034	Ground	Electrical Circuits
C3	036	Ground	Light Structures
C4	038	Ground	Solid State Electronics
C5	042	Ground	Electrical Drivers and Renewable EnergiesLab
C6	044	Ground	Advanced Manufacturing Laboratory
C7	130	1st	Communication engineering Lab 1
C8	132	1st	Communication engineering Lab 2
C9	138	1st	Electrical Circuits Lab
C10	142	1st	Electric Power Lab
C11	146	1st	Electrical Circuits Lab
C12	150A	1st	Power Electronics Lab
C13	150B	1st	Electrical Motors Operation and Protection Lab
C14	230	2nd	Electrical Circuits Lab 1
C15	232	2nd	Electrical Circuits Lab 2
C16	234A	2nd	Digital Electronics And Signal Processing
C17	250	2nd	Computer Lab
C18	326	3rd	Microprocessors Lab
C19	328	3rd	Computer Lab 2
C20	330	3rd	Computer Lab 3
C21	424	4th	Human Factors and Ergonomics Laboratory
C22	426	4th	Antenna And Microwave Lab
C23	428	4th	Radar Lab
C24	430	4th	Global Maritime Distress And Safety System (GMDSS)
Building (D)			
D1	035	Ground	Heavy Structures
D2	037	Ground	Construction Surveying Lab
D3	039	Ground	Construction Materials
D4	041	Ground	Soil Mechanics

#	Room Number	Building No. / Floor	Description
D5	043	Ground	Construction Surveying & Highway Lab
D6	047	Ground	Construction Surveying and Geology Lab
D7	239	2nd	Computer Lab 1
D8	241	2nd	Computer Lab 2
D9	441	4th	Computer Lab
Building (E)			
E1	270	2nd	Environmental Design
E1	190A	1st	Architectural Computer Lab
E2	190B	1st	Architectural Computer Lab
E3	270	2nd	Environmental Design
E4	474	4th	Workshop Lab / Sculpture Lab
E5	480	4th	Computer Lab
Building (G)			
G1	G002	Ground	Materials Testing and Characterization Laboratory
G2	G003	Ground	Automotive Lab
G3	G105	1st	Chemistry Lab
G4	G106	1st	Physics Lab
G5	G110	1st	Computer Lab
G6	G205	2nd	Chemistry Lab
G7	G206	2nd	Physics Lab
G8	G210	2nd	Computer Lab
G9	G305	3rd	Chemistry Lab
G10	G306	3rd	Physics Lab
G11	G310	3rd	Computer Lab
G12	G408	4th	Computer Lab
G13	G501	5th	Renewable Energy Lab
G14	G507	5th	Computer Lab

8.3 Mabps

- **Abu-Kir Site Map**

Ground Floor

- **First Floor**

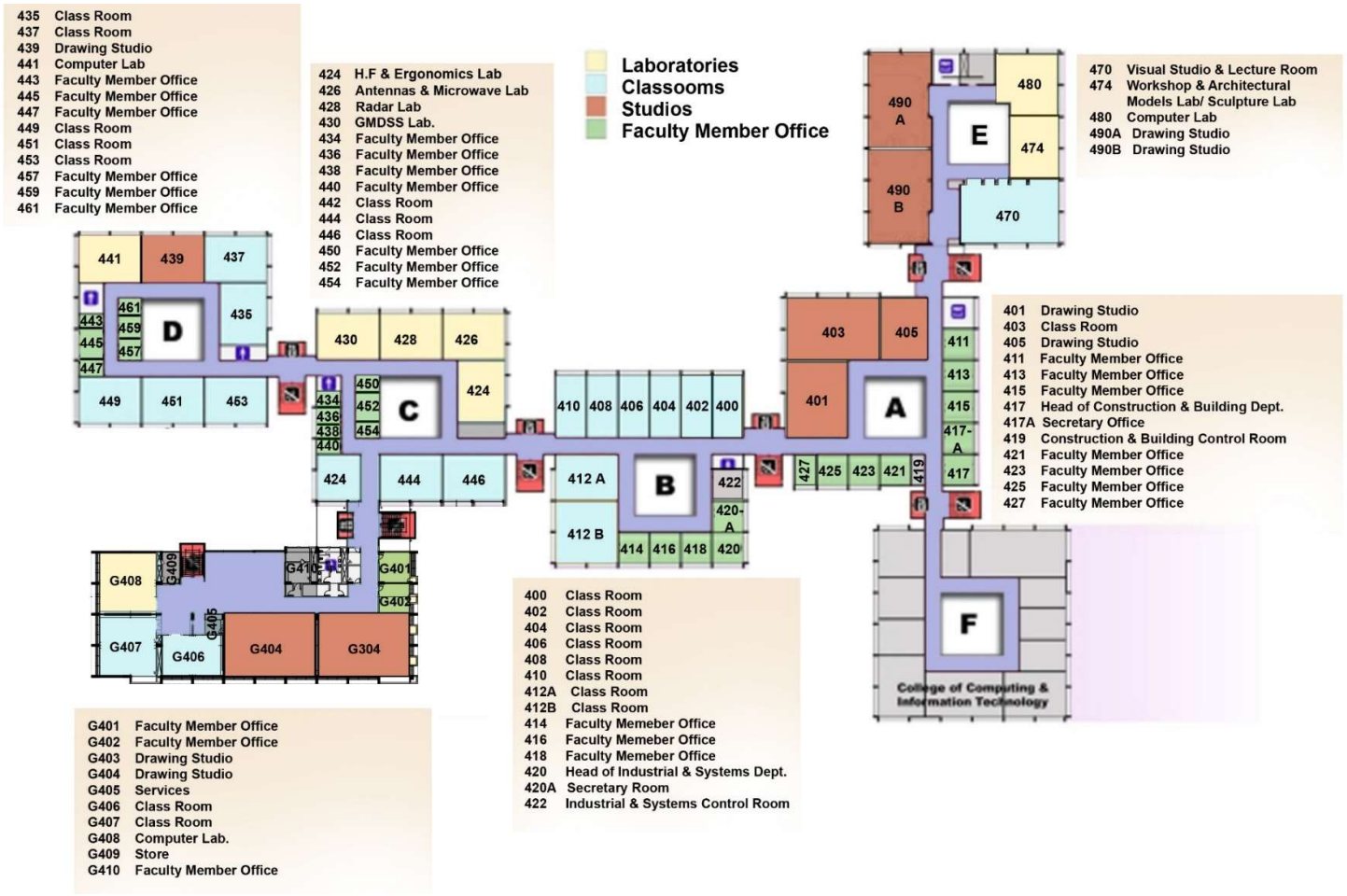

Laboratories
Classooms
Studios
Faculty Member Office
135 Class Room
137 Class Room
139A Class Room
139B Class Room
145 Faculty Member Office
147 Faculty Member Office
149 Class Room
151 Class Room
153 Class Room
130 Communications Eng. Lab. (1)
132 Communications Eng. Lab. (2)
134A Class Room
134B Class Room
138 Electrical Circuits Lab
140 Faculty Member Office
142 Electric Power Lab.
144 Class Room
146 Electrical Circuits Lab.
150A Power Electronics Lab
150B Electrical Motors Operation & Protection Lab
170 Projects' Storage
172 Lecture Room
174 Lecturer Office
176 Department Secretary
178 Head of the Department
180 Meeting Room
182 Control Room
190A Architectural Computer Lab
190B Architectural Computer Lab
101 Automation Lab
103 Automatic Control Lab
105 Digital Control Lab
107 Metallurgy & non-Dest. Testing Lab
111 Faculty Member Office
113 Faculty Member Office
115 Faculty Member Office
117 Vice Dean Postgraduate Studies & Research
117A Secretary Office
119 Store
121 Faculty Member Office
123 Faculty Member Office
125 Faculty Member Office
100 Class Room
102 Class Room
104 Class Room
106 Class Room
108 Class Room
110 Class Room
114 Power Systems Lab
116 Class Room
118 Faculty Member Office
120 Faculty Member Office
122 Engineering Center Consulting Engineers
124 Engineering Center Consulting Engineers
128 Store
G101 Faculty Member Office
G102 Faculty Member Office
G103 Faculty Member Office
G104 Faculty Member Office
G105 Chemistry Lab.
G016 Physics Lab.
G108 Class Room
G109 Class Room
G110 Computer Lab.
G111 Store
G112 Faculty Member Office
G113 Basic and Applied Science Control Room
College of Computing & Information Technology

Second Floor

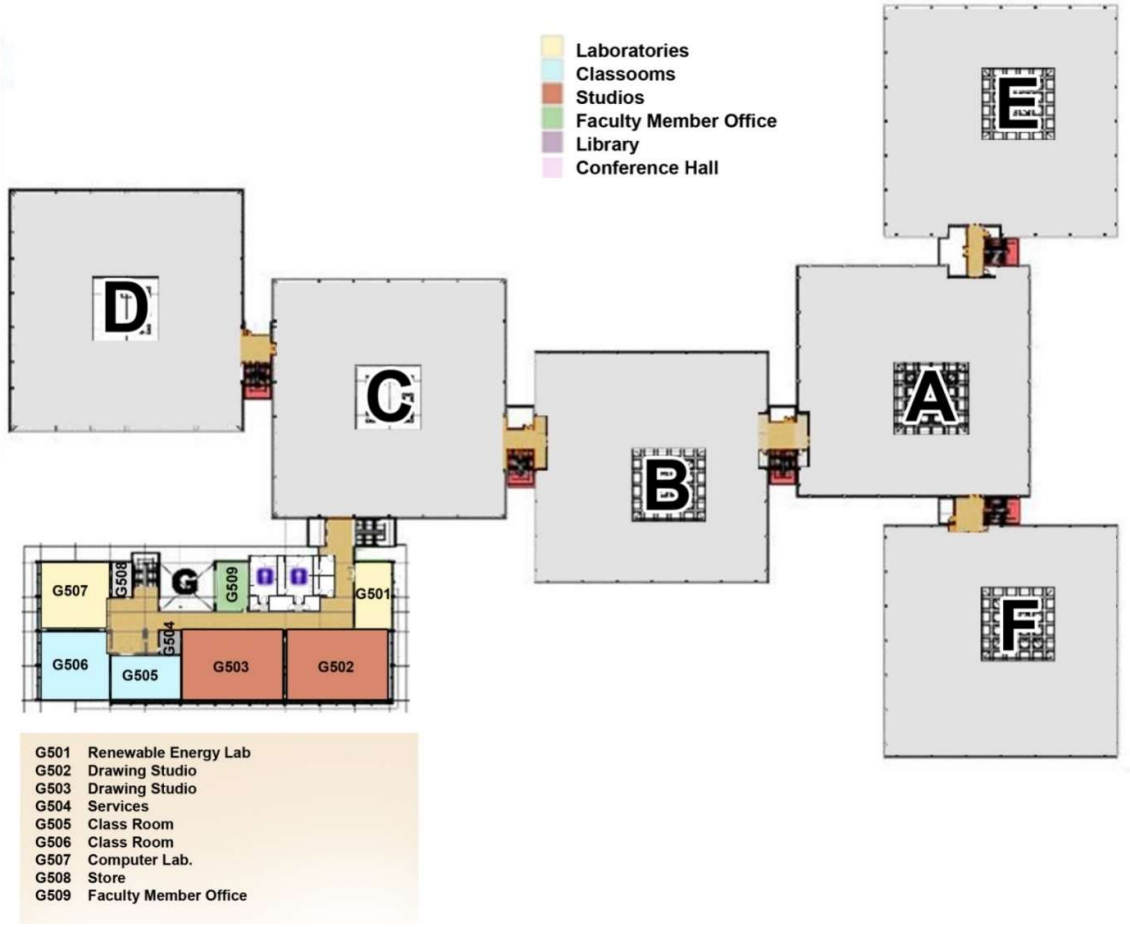
Third Floor


335 Class Room
337 Class Room
339 Drawing Studio
341 Drawing Studio
345 Head of Comp. Eng. Dept.
347 Secretary Room
349 Class Room
351 Class Room
353 Class Room
355 Faculty Member Office
357 Faculty Member Office
359 Computer Engineering Conrol Room
326 Microprocessor Lab.
328 Computer Lab. (2)
330 Computer Lab. (3)
334 Faculty Member Office
336 Faculty Member Office
338 Faculty Member Office
340 Faculty Member Office
342 Class Room
344 Class Room
346 Class Room
350 Lecture Room
352 Faculty Member Office
354 Faculty Member Office
356 Faculty Member Office
Laboratories
Classooms
Studios
Faculty Member Office
370 Drawing Studio
374 Secretary Office Office
376 Vice Dean's Education Affairs
378 The Dean's Secretary Office
380 The Dean's Office
390-A Drawing Studio
390-B Drawing Studio
301 Staff Cafeteria
303 Conference Room
305 College Council Conference Room
311 Faculty Member Office
313 Vice Dean Student Affairs
315 Faculty Member Office
317 Faculty Member Office
317A Central Secretary Office
319 College Warehouse
321 Faculty Member Office
323 Faculty Member Office
325 Faculty Member Office
300 Computer Lab. (6)
302 Lecture Room
304 Lecture Room
306 Lecture Room
308 Lecture Room
310 Faculty Memeber Office
312 Computer Lab. (4)
314 Faculty Memeber Office
316 Faculty Memeber Office
318 Faculty Memeber Office
320 Head of Mechanical Dept.
320A Secretary Office
G301 Faculty Member Office
G302 Faculty Member Office
G303 Head of Electrical & Computer
G303A Secretary Room
G304 Faculty Member Office
G305 Chemistry Lab.
G306 Physics Lab.
G308 Class Room
G309 Class Room
G310 Computer Lab.
G312 Cafeteria
A
B
C
D
E
F
College of Computing & Information Technology

Fourth Floor



- **Fifth Floor**


Laboratories
Classooms
Studios
Faculty Member Office
Library
Conference Hall
D
C
B
A
E
F
G
G507
G508
G509
G501
G504
G506
G505
G503
G502
G501 Renewable Energy Lab
G502 Drawing Studio
G503 Drawing Studio
G504 Services
G505 Class Room
G506 Class Room
G507 Computer Lab.
G508 Store
G509 Faculty Member Office

الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري

كلية الهندسة والتكنولوجيا

برنامج ماجستير الهندسة

موارد ولوائح الكلية

الجزء الأول

Prof. Akram Soliman Elselmy
Dean, College of Engineering and Technology

2025

جدول المحتويات

1. رؤية ورسالة الكلية

1.1 الرؤية

التميز كواحدة من أفضل كليات الهندسة على المستويين المحلي والإقليمي والاستمرارية في تقديم البرامج الدراسية المعتمدة، مع تقلدنا مكانة أكاديمية متقدمة على المستوي الدولي. كذلك استهداف أعلي مستوى جودة للبرامج الدراسية المقدمة، والبحث العلمي، وخدمة المجتمع، والريادة في جميع المجالات الهندسية المرتبطة بأنشطتنا ككلية هندسية من أهم الكليات في العالم العربي.

2.1 الرسالة

نعمل على تهيئة الأجيال القادمة لتلبية احتياجات السوق المجتمعية المبنية علي المعرفة. وذلك بتسخير جميع إمكاناتنا المادية، والمعنوية، عن طريق التعاون الوثيق بين أعضاء هيئة التدريس، والهيئة الإدارية، والطلاب، والباحثين، والخريجين، والقيادات الصناعية، والإدارية، لتقديم برامج أكاديمية متنوعة، تنافسية، تحركها الاحتياجات المجتمعية، والبحث علمي، وخدمة المجتمع. كذلك نعمل على استمرارية وتطوير شراكة طويلة الأمد مع المؤسسات العربية، والكيانات الدولية ذات السمعة المتميزة.

2. خلفية عامة عن الأكاديمية

1.2 الاعتمادات

الأكاديمية بصفة عامة

إن جميع برامج التعليم بالأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري معتمدة اعتمادًا كاملاً من كل من اتحاد الجامعات العربية والاتحاد الدولي للجامعات.

كلية الهندسة والتكنولوجيا بصفة خاصة

أما كلية الهندسة والتكنولوجيا فبالإضافة إلى ما سبق، فإن برامج التعليم بها معتمدة بالكامل من المجلس الأعلى للجامعات المصرية، والمعاهد البريطانية المهنية المتخصصة، وهيئة الـ ABET الأمريكية لكل التخصصات ما عدا تخصص الهندسة المعمارية، والذي حصل على اعتماد RIBA. هذا بالإضافة إلى حصول الكلية على شهادة اعتماد الأيزو 9001 ، وكذلك هيئة ضمان جودة التعليم والاعتماد.

وبيان ذلك كما يلي:

شهادة الأيزو

وقد تم الحصول على شهادة اعتماد الأيزو 9001 عام 2000، وتم تجديد هذا الاعتماد في 2002 و2008.

المجلس الأعلى للجامعات المصرية

أما برامج البكالوريوس فتم اعتمادها من المجلس الأعلى للجامعات المصرية بالقرار رقم 135 في 27 أغسطس 1996. كما تم تجديد هذا الاعتماد بالقرارات: رقم 3 في 5 فبراير 2002، ورقم 118 في 10 يوليه 2007، ورقم 36 في 24 فبراير 2011، ورقم 284 في 10 ديسمبر 2012 ورقم 22 فى 22 يناير 2017 ورقم 52 فى 6 مارس 2022.

أما برامج الدراسات العليا فتم اعتمادها من المجلس الأعلى للجامعات المصرية بالقرار رقم 30 في 28 أبريل 2001. كما تم تجديد هذا الاعتماد بالقرارات: رقم 70 و 79 في 19 يونيه 2006، ورقم 97 في 24 يوليه 2006، ورقم 164 في 8 سبتمبر 2009، ورقم 224 في 17 أكتوبر 2010، ورقم 84 في 26 ديسمبر 2013، وأرقام 105 و 106 و 107 في 22 أبريل 2014 و رقم 84 فى 5 ابريل 2022.

المعاهد البريطانية المهنية المتخصصة

أما اعتماد المعاهد البريطانية المهنية المتخصصة فهو كالآتي:

قسم الهندسة البحرية: معتمد من معهد (IMarEST) في 13 مارس 2007.

قسم الهندسة الميكانيكية وقسم الهندسة الصناعية والإدارية: معتمد من معهد (IMechE) في 22 نوفمبر 2005.

قسم الهندسة الكهربية والتحكم وقسم هندسة الحاسب وقسم هندسة الإلكترونيات والاتصالات: معتمد من معهد (IET) في 27 أبريل 2005.

قسم هندسة التشييد والبناء: معتمد من معهد (IStructE) في 14 ديسمبر 2005.

المعهد الملكي للمعماريين البريطانيين RIBA

قسم الهندسة المعمارية والتصميم البيئي: معتمد من المعهد الملكي للمعماريين البريطانيين (RIBA) في يونيه 2005، وتم تجديد الاعتماد في أكتوبر 2014 لمدة خمس سنوات.

هيئة ABET الأمريكية

تم اعتماد البرامج الدراسية لجميع أقسام الكلية (ما عدا قسم الهندسة المعمارية والتصميم البيئي) من هيئة ABET في 1 أكتوبر 2009 لمدة ست سنوات، كما تم تجديد هذا الاعتماد في 30 سبتمبر 2015 لمدة ست سنوات أخرى وتم التجديد فى 2021 الى 30 سبتمبر 2027.

هيئة ضمان جودة التعليم والاعتماد NAQAAE

تم اعتماد البرامج الدراسية لجميع أقسام الكلية من هيئة ضمان جودة التعليم والاعتماد لمدة خمس سنوات في 10 مارس 2014 وتم التجديد فى 5 اكتوبر 2020 لمدة خمس سنوات.

2.2 بروتوكولات التعاون

أبرمت كلية الهندسة والتكنولوجيا عدة بروتوكولات واتفاقيات تعاون مع جامعات عالمية مرموقة. وتدعم هذه الاتفاقيات الطلاب (تبادل طلابي تدريب) وأعضاء هيئة التدريس بالكلية. وتشمل هذه الاتفاقيات:

جامعة Lincoln (إنجلترا)

جامعة Northombria (إنجلترا)

جامعة Staffordshire (إنجلترا)

جامعة UTM (ماليزيا)

جامعة Fatih (تركيا)

جامعة Central Florida (الولايات المتحدة الأمريكية)

جامعة Missouri (الولايات المتحدة الأمريكية)

جامعة Tennessee (الولايات المتحدة الأمريكية)

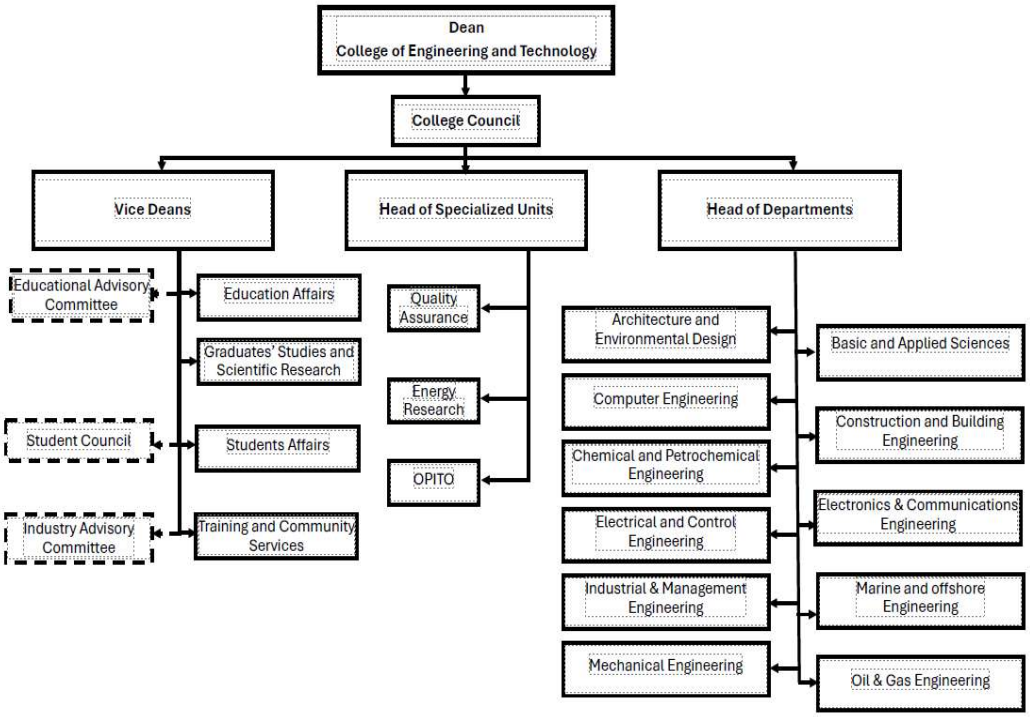
جامعة Waterloo (كندا)

جامعة Carlton (كندا)

جامعة Concordia (كندا)

كما أبرمت كلية الهندسة والتكنولوجيا عدة اتفاقيات تعاون مع جامعات حكومية مصرية لدعم دراسة درجة الدكتوراة بها، وتشمل جامعات: القاهرة – الإسكندرية – عين شمس – حلوان.

3.2 المخطط التنظيمي للكلية



3. قواعد وأحكام

تُعتبر ماجستير الهندسة درجة علمية مهنية تُقدَّم على أساس دراسة مقررات، بما يغاير درجة ماجستير العلوم التي تعتمد أساسًا على البحث العلمي (بالإضافة للمقررات). ومن المعروف أن درجة ماجستير الهندسة تقدمها الكثير من الجامعات العالمية المرموقة في الولايات المتحدة الأمريكية.

وتُعتبر هذه الدرجة مرحلة منتهية في مجال الدراسات العليا الهندسية، ولا يحق للدارس الحاصل على هذه الدرجة أن يستكمل بعدها دراسة درجة دكتوراة الفلسفة، ويوقع الدارس على نموذج التقدم لهذه الدرجة بما يفيد علمه بذلك.

1.3 القبــول

تعتمد عملية قبول المتقدمين لدرجة ماجستير الهندسة على مؤهلاتهم التي تبين تميز قدراتهم وجهدهم التي بها يستطيعون إنجاز هذه الدرجة. ويجب على المتقدم أن يكون قد حصل على درجة البكالوريوس من أحد الجامعات المعترف بها. كما يشترط حصوله على معدل تراكمي جيد (أو 2.4/4.0) على الأقل في مرحلة البكالوريوس. كما يتم عمل مقابلة شخصية لكل المتقدمين عن طريق القسم التعليمي. كشرط أساسي للقبول. كما يجب ألا يمر أكثر من فصلين دراسيين بعد قبول المتقدم لكي يبدأ دراسة المقررات، وإذا تجاوز هذه المدة، فعليه التقدم بطلب الالتحاق من جديد.

2.3 الأوراق المطلوبة للتقدم

يتم تقديم الأوراق التالية لعمادة القبول والتسجيل:

- سجل دراسي معتمد يحتوي على تفاصيل الدرجات والتقديرات في درجة البكالوريوس. وأن تكون جميع النسخ المقدمة أصلية، ولا تُقبل صور منها.
- صورة من جواز السفر أو البطاقة الشخصية (أو الرقم القومي للمصريين).
- خطة التمويل في حالة أن يكون المتقدم مدعمــًا ماليـًا من أي جهة.
- نموذج التقدم كاملا البيانات.

3.3 التقويم الأكاديمي والقيــد

- الفصل الدراسي الأول (الخريف): يبدأ يوم السبت من الأسبوع الثالث من شهر سبتمبر ولمدة 16 أسبوع.
- الفصل الدراسي الثاني (الربيع): يبدأ يوم السبت من الأسبوع الثالث من شهر فبراير ولمدة 16 أسبوع.

4.3 الموعــد النهائي للقبول

يجب التقدم لدراسة هذه الدرجة واستكمال جميع الأوراق المطلوبة قبل بداية شهر سبتمبر (الفصل الدراسي الأول) أو قبل بداية شهر فبراير (الفصل الدراسي الثاني).

5.3 الموعــد النهائي للقبول

يجب التقدم لدراسة هذه الل بالكلية (بالقسم المطلوب) بعد الموافقة على طلب الالتحاق إذا كان مستوفيًا الشروط. ويتم التسجيل طبقًا للجدول المعلن بأقسام الكلية. ويعتبر الدارس (المتقدم) مسئولاً مسئولية كاملة عن التسجيل لجميع المقررات المطلوبة. ويتم ذلك في الأسبوع الأول من كل فصل دراسي.

6.3 مدة الدراسة

أقل مدة لدراسة درجة ماجستير الهندسة هي 18 شهرًا بدءًا من تاريخ تسجيل أول مقرر. ولا تزيد المدة الإجمالية للدراسة عن 5 سنوات بدءًا من تاريخ تسجيل أول مقرر.

7.3 دراسة حالة تطبيقية

يتم تسجيل تطبيق حالة الدراسة بعدد 9 ساعات معتمدة للدارس بعد استكمال (إنجاز) عدد 42 ساعة معتمدة، عن طريق المرشد الأكاديمي.

8.3 متطلبات التخرج

يجب على الدارس استكمال (إنجاز) عدد 33 ساعة معتمدة (على الأقل) منها 24 ساعة معتمدة للمقررات الدراسية، و 9 ساعات لدراسة الحالة التطبيقية طبقًا لمجال التخصص الذي اختاره الدارس.

ويحصل الدارس على درجة (ماجستير الهندسة) بعد استكماله (إنجازه) متطلبات الدراسة مع تحقيق معدل تراكمي (3.0/4.0) على الأقل. وذلك في فترة زمنية لا تقل عن 18 شهرًا بدءًا من تاريخ تسجيل أول مقرر.

9.3 الدرجات والتقديرات

يحصل الدارس على الدرجات والتقديرات المبينة بالجدول التالي، وذلك في كل مقرر

Grade Letter	Points	Percentage
A	12/3=4.00	93% to 100%
A–	11/3=3.66	89% to less than 93%
B+	10/3=3.33	84% to less than 89%
B	9/3=3.00	79% to less than 84%
B–	8/3=2.66	76% to less than 79%
C+	7/3=2.33	73% to less than 76%
C	6/3=2.00	70% to less than 73%
C-	5/3=1.66	67% to less than 70%
D+	4/3=1.33	64% to less than 67%

D	3/3=1.00	60% to less than 64%
F	0.00	less than 60%
W	--	Withdraw
I	--	Incomplete
Au	--	Auditing
Tr	--	Transferred

يتم حساب المعدل التراكمي بقسمة عدد النقاط التي تم إنجازها على عدد الساعات المعتمدة التي سجلها الدارس.

ويحصل الدارس على تقدير (I) أي (مقرر غير مكتمل) إذا تغيب بعذر مقبول عن الامتحان، على أن يُحدد له موعد آخر للامتحان، ويتم تعديل تقديره إلى التقدير الجديد الذي حصل عليه.

ويحصل الدارس على تقدير (W) أي (انسحاب) إذا رغب الدارس في عدم استكمال المقرر. وكذلك يُحسب له هذا التقدير في حالة غيابه ثلاثة أسابيع أو أكثر في نفس المقرر. ولا يضاف أي نقاط أو ساعات لهذا المقرر عند حساب المعدل التراكمي. تغيب بعذر مقبول عن الامتحان، على أن يُحدد له موعد آخر للامتحان.

وفي حالة تحسين الدارس لأي مقرر، يُحسب له التقدير الأعلى عند حساب المعدل التراكمي.

10.3 الامتحانات

يتم الامتحان النهائي للمقرر في الأسبوع الدراسي رقم 16، ويمكن عمل امتحانات أعمال الفصل الدراسي في الأسبوع رقم 7 وكذلك الأسبوع رقم 12. وإذا تغيب الدارس بعذر مقبول عن الامتحان النهائي، يُرصد له تقدير (I) أي (مقرر غير مكتمل) إذا تغيب بعذر مقبول عن الامتحان، على أن يُحدد له موعد آخر للامتحان قبل نهاية الفصل الدراسي التالي. ويتم تعديل تقديره إلى التقدير الجديد الذي حصل عليه.

11.3 الحضـــور

الحضور شرط أساسي في دراسة أي مقرر. وإذا تكرر الغياب في نفس المقرر 3 أسابيع أو أكثر يُعتبر الطالب منسحبًا انسحابًا إجباريًا.

12.3 دراسة حالة تطبيقية

يُعتبر هذا التطبيق هو الخطوة الأخيرة في برنامج ماجستير الهندسة، ويشمل ذلك تطبيق المفاهيم، والمهارات والتقنيات التي تعلمها الدارس خلال دراسته. ويتم تقديم تقرير بهذه الدراسة، ويتم تقييمه من خلال لجنة داخلية من أساتذة القسم في نفس التخصص. كما يمكن أن يدعو القسم أساتذة متخصصين للجنة التقييم.

13.3 تحويل الساعات المعتمدة

إذا كان الدارس قد أنجز بعض الساعات المعتمدة في أي جامعة معتمدة قبل التحاقه ببرنامج ماجستير الهندسة فغيمكن قبول نقل هذه الساعات المعتمدة بشرط أن يكون المقرر الذي درسه المتقدم قبل التحاقه مطابقًا للمقرر المطروح في برنامج ماجستير الهندسة بالقسم، وبشرط حصول الدارس على تقدير جيد (2.4/4.0) على الأقل في هذا المقرر. ويضاف هذا المقرر الذي تم معادلته للسجل الدراسي للطالب. ولا يزيد الحد الأقصى لعدد الساعات التي يمكن نقلها واعتمادها عن 6 ساعات معتمدة. ولا يمكن اعتماد (أو نقل) مقرر مضى على إنجازه أكثر من 3 سنوات.

14.3 المعايير الأكاديمية

يجب حصول الدارس على معدل تراكمي (3.0/4.0) على الأقل ليتمكن من الحصول على درجة ماجستير الهندسة، على ألا يحتوي السجل الدراسي للدارس على تقدير (غير مكتمل I) في أي فصل دراسي، ويتم مراجعة السجل الدراسي قبل بداية الفصل الدراسي الأخير واستكمال التسجيل المطلوب في الفصل الدراسي الأخير لاستيفاء متطلبات التخرج.

15.3 إعادة القيـــد

في حالة انقطاع الدارس لمدة فصلين دراسيين متتاليين، فعليه التقدم لإعادة القيد.

16.3 الانسحاب

الدارس الذي تم انسحابه انسحابًا إجباريًا خلال العام الدراسي الأكاديمي أو عند نهاية الفصل الدراسي له فرصة الرجوع، بشرط ألا تتجاوز الفترة الكلية للانسحاب أكثر من فصلين دراسيين متتاليين.

17.3 وقف القيـــد

يسمح نظام التسجيل بهذا البرنامج للدارس بحصوله على وقف قيد كما يلي:

- يتقدم الدارس بطلب كتابي لعميد الكلية لوقف القيد، موضحـًا به الأسباب التي تدعو لوقف القيد.
- يمكن قبول وقف القيد لمدة فصل دراسي أو فصلين دراسيين على الأكثر. وفي حالة مرور فصليين دراسيين، فعلى الدارس تقديم طلب جديد لعميد الكلية لإعادة وقف قيده.
- الدارس الذي تم وقف قيده لأسباب طبية عليه تقديم الشهادات الطبية المعتمدة قبل إعادة قيده.

18.3 النزاهة الأكاديمية

حيث أن الدارسين المقبولين يمكن أن يكونوا من جهات مختلفة وثقافات مختلفة ولهم تصورات وسلوكيات مختلفة، فقد وضعت الأكاديمية بعض الآداب والأخلاقيات التي يجب أن يتحلى ويلتزم بها الدارسون:

- أي تقرير يتم تقديمه أو ورقة امتحان يجب أن تكون خاصة بالدارس فقط، ولا يُقبل أن يستخدم الدارس أوراق دارسين آخرين.
- يتعهد الدارس ألا يتقدم بأوراق أو أفكار تخص غيره من الدارسين، احترامًا لحقوق الملكية.
- في الأمور التي تتطلب عمل مع الفريق، يجب أن يُذكر دلك صراحة.
- يتعهد الدارس بالمحافظة على المعايير الأكاديمية والأمانة.
- يقوم المرشد الأكاديمي بتنبيه الدارسين على كل هذه الأمور.
- يجب أن يكون الدارس مقتنعا بأن أي مخالفة سوف يتم إبلاغها لعميد الكلية مباشرة.

19.3 الفصل من البرنامج الدراسي

الدارس الذي لا يحقق الأداء الأكاديمي المقنِع في مجال تخصصه، سوف يتم فصله من البرنامج الدراسي. وسوف يعتمد ذلك عميد الكلية.

وسوف يتم إلغاء التسجيل (بعد موافقة عميد الكلية) في الحالات الآتية:

- عدم حصول الدارس على الدرجة خلال 5 سنوات (بحد أقصى) بدءًا من موعد تسجيل أول مقرر. ويتقدم المشرف بتقرير رسمي بإلغاء التسجيل إلى عميد الكلية.
- عدم حصول الدارس على متطلبات التخرج في المقررات، وإذا كان معدله التراكمي في نهاية مدة التسجيل أقل من (3.0/4.0)، وكذلك إذا حصل على معدل (2.0/4.0) في أكثر من مقررين دراسيين.
- إذا كان التقرير النهائي لتطبيق دراسة الحالة مرفوضـًا.
- إذا تقدم الطالب بطلب رسمي لإلغاء التسجيل.

20.3 التماسات الدارسين

يجب إعلام الدارس بالدرجة النهائية لكل مقرر بعد الامتحان النهائي، ويمكن للدارس التقدم بالتماس لإعادة تقييم الامتحان النهائي، وذلك في الامتحانات التحريرية فقط. ولا يجوز للطالب التقدم بأي التماس في الامتحانات الشفوية.

21.3 الرسوم الدراسية

يجب سداد الرسوم الدراسية لكل فصل دراسي قبل بدايته وذلك لجميع المقررات التي يرغب الدارس في تسجيلها. وفي حالة عدم السداد في الموعد سوف يتم إلغاء التسجيل تلقائيًا. وتتحدد الرسوم الدراسية (للساعات المعتمدة) عن طريق عمادة القبول والتسجيل قبل بداية الفصل الدراسي بمدة كافية.

4. الإمكانيات المعمليـــة

إن الخبرة المعملية هي جزء لا غنىً عنه في العملية التعليمية، وهو أداة هامة لتهيئة الطلاب ليصبحوا مهندسين أكفاء في حياتهم العملية. ولهذا السبب، فإن كلية الهندسة بها أكثر من 40 معمل بملحقاتها. وهذه المعامل مجهزة بأحدث الأجهزة والأدوات التي تمكن الطلاب للجو العملي الذي سوف يمارسونه بعد تخرجهم، كما يوجد بها الكثير من الأجهزة التي تُستخدم في الأبحاث العلمية. ويقوم بالعمل في هذه المعامل نخبة منتقاة من أكفأ المهندسين والفنيين. كما يتم تطبيق عوامل الأمان القياسية بجميع هذه المعامل.

وفيما يلي أسماء المعامل الموجودة بكلية الهندسة والتكنولوجيا

1- معمل التصنيع المتقدم.
2- معمل الهوائيات والموجات الميكروووية.
3- معمل التحكم التناظري.
4- معمل الحاسوب للهندسة المعمارية.
5- معمل التحكم الآلي.
6- معمل الأتمتـــة.
7- معمل التصميم بالحاسب.
8- مجموعة معامل الكيمياء.
9- مجموعة معامل هندسة الاتصالات.
10- مجموعة معامل الحاسوب.
11- معمل الحاسب والشبكات.
12- معمل المسح البنائي والجيولوجيا.
13- معمل بناء المواد.
14- معمل محركات الديزل.
15- معمل الدوائر الرقمية.
16- معمل التحكم الرقمي.
17- مجموعة معامل الإلكترونيات.
18- ورشة الهندسة الكهربية.
19- معمل الدوائر الكهربية.
20- معمل المحركات الكهربية.

21- معمل مجال مصفوفة البوابة المبرمجة.
22- معمل الموائع الميكانيكية والهيدروليكا.
23- المعمل العالمي للاستغاثة البحرية ونظام الأمان.
24- معمل الإنشاءات الثقيلة.
25- معمل العوامل الإنسانية وبيئة العمل.
26- معمل الإنشاءات الخفيفة.
27- مجموعة معامل الهندسة البحرية.
28- معمل اختبار ووصف المواد.
29- معمل اختبار المواد.
30- معمل الاهتزازات الميكانيكية.
31- معمل الإلكترونيات الميكانيكية (الميكاترونيك).
32- محموعة معامل المعالجات الدقيقة.
33- معمل هندسة الإنترنت والمتنقلات.
34- معمل الاختبارات غير المتلفة.
35- مجموعة معامل الفيزياء.
36- معمل الرادار.
37- معمل التبريد والتكييف.
38- معمل الطاقة المتجددة.
39- معمل النحت.
40- معمل ميكانيكا التربة وهندسة النقل.
41- معمل هندسة قوة البخار.
42- معمل الديناميكا الحرارية.
43- ورشة النماذج المعمارية.

5. الإمكانيات المكتبيـــة

يوجد بالمقر الرئيسي بأبي قير
المكتبة العامة
مكتبة قسم الهندسة المعمارية
مكتبة النقل البحري
والآتي بيان ملخص لمحتويات كل منها

المكتبة	عدد الكتب	عدد الدوريات المطبوعة	عدد الرسائل العلمية	سعة المكتبة (عدد الطلاب)
المكتبة الرئيسية	30,816	54	1,119	229
مكتبة قسم العمارة	3,796	10	71	53
مكتبة النقل البحري	8,734	20	434	52
إجمالي	43,346	84	1,624	334

6. المخطط العام للمقر الرئيسي بأبي قير

الطابق الأرضي

الطابق الأول

135 Class Room
137 Class Room
139A Class Room
139B Class Room
145 Faculty Member Office
147 Faculty Member Office
149 Class Room
151 Class Room
153 Class Room

130 Communications Eng. Lab. (1)
132 Communications Eng. Lab. (2)
134A Class Room
134B Class Room
138 Electrical Circuits Lab
140 Faculty Member Office
142 Electric Power Lab.
144 Class Room
146 Electrical Circuits Lab.
150A Power Electronics Lab
150B Electrical Motors Operation & Protection Lab

170 Projects' Storage
172 Lecture Room
174 Lecturer Office
176 Department Secretary
178 Head of the Department
180 Meeting Room
182 Control Room
190A Architectural Computer Lab
190B Architectural Computer Lab

101 Automation Lab
103 Automatic Control Lab
105 Digital Control Lab
107 Metallurgy & non-Dest. Testing Lab
111 Faculty Member Office
113 Faculty Member Office
115 Faculty Member Office
117 Vice Dean Postgraduate Studies & Research
117A Secretary Office
119 Store
121 Faculty Member Office
123 Faculty Member Office
125 Faculty Member Office

G101 Faculty Member Office
G102 Faculty Member Office
G103 Faculty Member Office
G104 Faculty Member Office
G105 Chemistry Lab.
G016 Physics Lab.
G108 Class Room
G109 Class Room
G110 Computer Lab.
G111 Store
G112 Faculty Member Office
G113 Basic and Applied Science Control Room

100 Class Room
102 Class Room
104 Class Room
106 Class Room
108 Class Room
110 Class Room
114 Power Systems Lab
116 Class Room
118 Faculty Member Office
120 Faculty Member Office
122 Engineering Center Consulting Engineers
124 Engineering Center Consulting Engineers
128 Store

الطابق الثاني

235 Faculty Member Office
237 Faculty Member Office
239 Computer Lab. (2)
241 Computer Lab. (1)
241A Faculty Member Office
243 Faculty Member Office
245 Faculty Member Office
247 Faculty Member Office
249 Class Room
251 Class Room
253 Class Room
255 Faculty Member Office
257 Faculty Member Office
259 Faculty Member Office

230 Electrical Circuits Lab. (1)
232 Electrical Circuits Lab. (2)
234A Digital Electronics Lab.
234B Compter Network Center
236 Faculty Member Office
238 Faculty Member Office
240 Head of Electronic Dept.
242 Class Room
244 Class Room
246 Class Room
250 Computer Lab.
252 Faculty Member Office
254 Faculty Member Office
256 Faculty Member Office

270 Environmental Studies Lab
272 Lecture Room
274 Faculty Member Office
276 Faculty Member Office
278 Faculty Member Office
280 Faculty Member Office
288 Drawing Studio
290 Drawing Studio

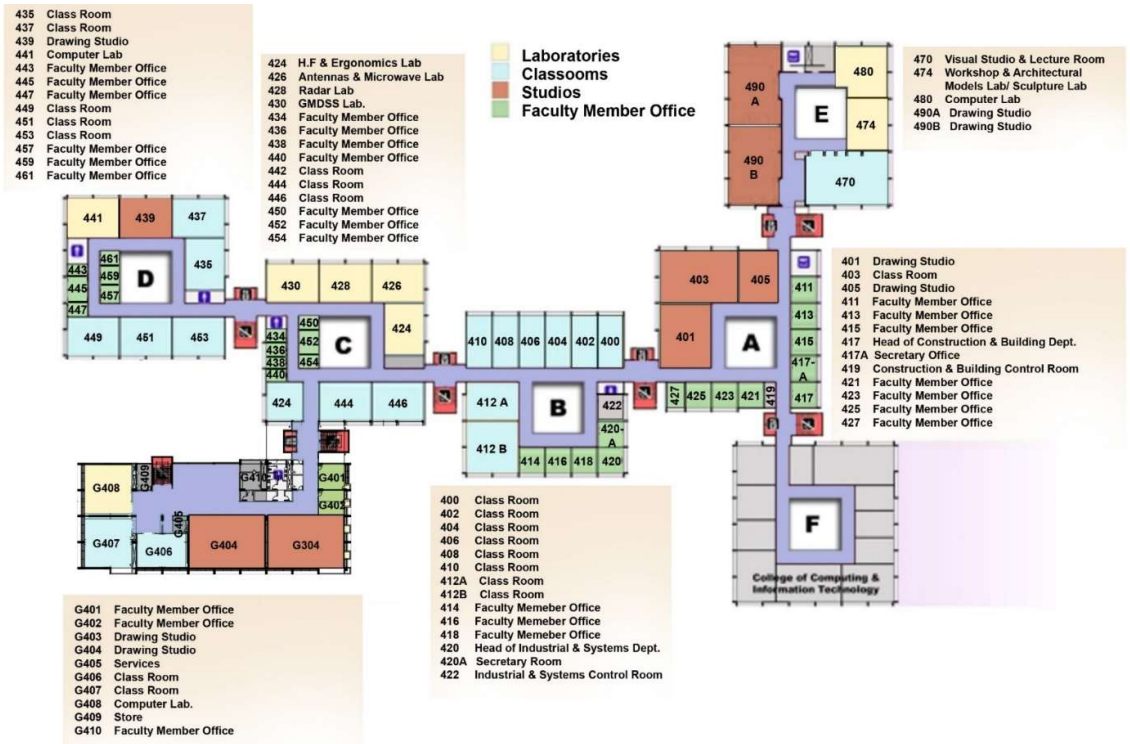
201 Electrical Machines Lab.
203 Lecture Room
205 Mechanical Vibration Lab
211 Faculty Member Office
213 Faculty Member Office
215 Faculty Member Office
217 Faculty Member Office
219 Store
221 Faculty Member Office
223 Faculty Member Office
225 Faculty Member Office

G201 Meeting Room
G202 Faculty Member Office
G203 Head of Basic and Applied Sciences Dept.
G203A Secretary Room
G204 Faculty Member Office
G205 Chemistry Lab.
G206 Physics Lab.
G207 Store
G208 Class Room
G209 Class Room
G210 Computer Lab.
G211 Basic and Applied Sciences Copy Center
G212 Faculty Member Office

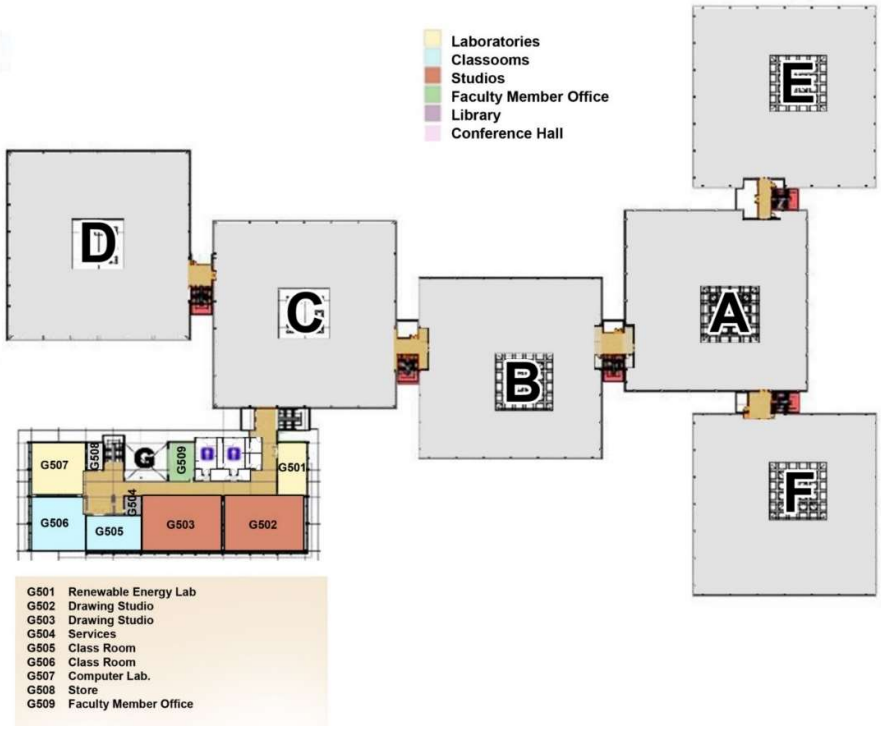
200 Class Room
202 Class Room
204 Class Room
206 Class Room
208 Class Room
210 Class Room
214 Class Room
216 C.D.I. Lab
218 Faculty Memeber Office
220 Faculty Memeber Office
222 Faculty Memeber Office
224 Haed of Marine Eng. Dept
224A Secretary Office

الطابق الثالث

الطابق الرابع



الطابق الخامس



G501 Renewable Energy Lab
G502 Drawing Studio
G503 Drawing Studio
G504 Services
G505 Class Room
G506 Class Room
G507 Computer Lab.
G508 Store
G509 Faculty Member Office

ARAB ACADEMY FOR SCIENCE, TECHNOLOGY AND MARITIME TRANSPORT

COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

ALEXANDRIA - EGYPT

Master of Engineering Program

IN
RENEWABLE ENERGY AND ENVIRONMENTAL ENGINEERING

VOLUME II
CURRICULUM

Prof. Akram Soliman Elselmy
Dean, College of Engineering and Technology

2025

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1.INTRODUCTION

1.1. Overview

The Master of Engineering in Renewable Energy and Environmental Engineering at the Arab Academy for Science, Technology and Maritime Transport (AASTMT) is designed to accommodate graduate students from diverse engineering backgrounds. The program is particularly well suited for practicing engineers from various disciplines who seek to advance their technical and managerial capabilities in the fields of sustainable energy systems and environmental protection. It adopts an integrated approach to the design, analysis, and management of renewable energy technologies, environmental systems, and sustainable processes, providing graduates with the expertise required to address contemporary energy and environmental challenges.

There has been considerable interest in this MEng program from both engineering professional bodies and firms in MENA region and worldwide. It provides a pathway for the growing number of very capable MEng graduates to achieve advanced professional knowledge and skills without leaving work and enables firms to attract graduates that are coping with rapid changing world.

1.2. Program Objectives

Due to high competition, sometimes professional engineers would work towards the MSc qualification while they need to develop the required competence, however, obtaining the MSc degree can't be beneficial for their professional firm. Nowadays, professional degrees like MEng have met the criteria of the professional industries, though, MSc programs would be more useful as academic degrees. After all, the Knowledge Exchange Partnership (KEP) between industry and academia is essential for markets' development.

Addressing the needs of engineers transitioning into leadership and management positions within the sustainability sector, the Master of Engineering in Renewable Energy and Environmental Engineering aims to equip graduates with the interdisciplinary skills required to manage complex energy and environmental systems. The program complements the technical background of engineers with essential knowledge in management, economics, policy, project planning, resource allocation, risk assessment, and advanced analytical tools necessary for effective decision-making and sustainable program management.

The master program is subdivided into two major modules, namely **renewable energy technologies and environmental and energy management modules.**

The **Renewable Technologies Module** includes the studies of solar, wind, wave, and tidal as well as geothermal energy at its applications for different industries like agriculture, food/bio-fuels production

The **Environmental and Energy Management Module** focuses on the mechanical and biological treatment of solid waste as well as design of solid waste treatment plants. The module covers wastewater treatment of urban areas and industrial processes drainage. Air quality control is also covered within this module where air pollutant measurements and sampling are focused as well as flue gas treatments.

The specific objectives of the program at AASTMT are to:

- Provide the body of knowledge required by international professional organizations related to renewable energy, sustainability, and environmental management, supporting globally recognized certifications.
- Develop analytical, organizational, and managerial competencies that bridge the gap between renewable energy and environmental engineering specialties and technical management roles.
- Enhance decision-making and problem-solving skills through hands-on learning, real-world case studies, and applied projects addressing current energy and environmental challenges.
- Assists in developing knowledge and workforce skills, for advancing competitive economy.
- Provides a platform to develop business and professional skills / capabilities.
- Offers potential successful engineering models that enable development of new technologies, innovative methods and problem-solving skills.

1.3. The Need for Renewable Energy and Environmental Engineering Education

The emerging discipline of Renewable Energy and Environmental Engineering has experienced rapid growth over the past few decades. This growth is driven by the increasing complexity of engineering projects, the accelerated pace of technological innovation, and the global emphasis on sustainability and environmental responsibility. The need for Engineering Management education can be identified at three interrelated levels: individual, organizational, and societal.

At the individual level, engineers working in renewable energy and environmental sectors are increasingly required to assume leadership roles that demand not only strong technical expertise but also proficiency in project management, financial analysis, risk assessment, regulatory compliance, and strategic decision-making.

At the organizational level, energy and environmental organizations must efficiently manage multidisciplinary teams, large-scale infrastructure projects, and rapidly evolving technologies while ensuring economic viability, environmental protection, and compliance with international standards.

At the **societal level,** the global transition toward sustainable energy systems and environmental stewardship necessitates engineering leaders who can integrate technical innovation with policy, economics, and social considerations to address climate change, energy security, and sustainable development goals.

The Industry Level

The critical importance of engineering skills and technical knowledge is widely recognized in the effective management of renewable energy and environmental engineering systems. As engineers progress throughout their careers, they demonstrate varying levels of engineering management competence, ranging from first-line supervisory roles to senior and strategic leadership positions. Across the renewable energy, environmental protection, and sustainability sectors, engineering management is essential for planning and optimizing resources, directing and controlling complex technical operations, and ensuring compliance with environmental regulations and international standards. Furthermore, the expanding role of energy services, environmental consultancy, and sustainability-driven industries has intensified the need for engineering managers who combine strong managerial and decision-making skills with a solid technical foundation in renewable energy and environmental engineering.

The National Level

The increasing scarcity of natural resources, declining productivity, and intensified global competition have created significant challenges to technological leadership, shifting priorities toward the development of innovative technologies and the effective management of complex engineering systems. In the renewable energy and environmental sectors, these challenges are further amplified by the need for sustainable resource utilization, environmental protection, and long-term system reliability.

The growing emphasis on export-oriented industries, supported by government policies, has increased exposure to global markets and competition, thereby demanding higher levels of strategic resource management. In addition, the prevalence of turnkey projects particularly in developing countries—places greater emphasis on managerial, financial, and coordination skills rather than purely technical expertise.

In response to engineers' need for technically oriented management education, many universities now offer Engineering Management programs tailored for engineers and scientists who are transitioning into technical management roles without abandoning their engineering foundations. These programs prepare engineers for broader responsibilities within technological and sustainability-driven systems. The strong growth observed in Engineering Management programs over the past decade continues, providing engineers with a structured pathway for a smooth transition from technical specialists to effective leaders in renewable energy and environmental engineering management.

This summary shows the potential of developing a new MEng program to explore the upcoming market's challenges and interests concerning different engineering fields. In general terms, the benefits of these professional Masters' programs give advantages towards an efficient use of time and resources for both professional organization and the graduate.

Finally, the main purpose of developing such practical-based program is to prepare graduates with professional skills in engineering, Renewable Energy and Environmental Engineering. The Middle Eastern countries will be -shortly- impacted by all these market's changes and high competition. Therefore, we need to be ready for all these challenges by upgrading our postgraduate education system.

1.4. Program Admission Requirements

To join the Master of Engineering in Renewable Energy and Environmental Engineering the following minimum prerequisites are required:

A bachelor's degree (or higher) in an engineering area from an accredited university or college.

An overall Grade Point Average (GPA) of at least 2.40/4.00 (or Good) in the undergraduate degree is required. Otherwise, the applicant may be accepted if they hold a post-Bachelor Diploma in a relevant area with a minimum GPA of 3.00/4.00 (or Very Good).

According to earlier survey conducted, this master program will be targeting engineers from different inter **d**isciplines such as:

- Marine Engineers
- Electrical Engineers.
- Mechanical Engineers

- Industrial Engineers

1.5. Graduation Requirements

The candidate needs to accomplish 33 credit hours of Master courses to achieve the MEng. degree.

The 33 hours are organized as follows:

- 6 credit hours core courses.
- 6 credit hours General elective courses.
- 12 credit hours elective courses (according to the chosen module).
- 9 credit hours case study application.

Program Structure

2 Program Structure

First, students will have to register two fundamental compulsory courses, which must be taught for the two modules, then will choose two elective courses from the general elective courses. After finishing the core compulsory and the general elective courses students will take their path in one of the two available modules (Renewable Energy Technology) and (Environmental and energy management), in each module students will have to study four specialized courses from the available oriented courses in each module as shown in the previous table. Finally, as to end students will register the Case Study Application with 9 credit hours to finalize the 33 Cr.

2.1 Core Compulsory Courses

The following list of courses are compulsory courses and required by all candidates equivalent to 6 credit hours.

Course Code	Course Title	Credit Hours
ECR 7101	Introduction to Renewable Energy	3
ECR 7102	Introduction to Environmental Sciences	3
Subtotal	2 Courses * 3 Credit Hours	6

2.2 General Elective Courses

Candidates are required to select two courses (equivalent to 6 credit hours) from the following list.

Course Code	Course Title	Credit Hours
ECR 7103	Advanced Computational Fluid Dynamics	3
ECR 7104	Sustainability	3
ECR 7105	Materials for Renewable Energy Systems	3
ECR 7106	Renewable Energy Economics and finance	3
Subtotal	2 Courses * 3 Credit Hours	6

2.3 Master of Engineering Program Elective Courses

Renewable Energy Technology Module

The following are the newly added courses that are specific to the Master of Engineering program (Renewable Energy Technology Module) Candidates are required to select a minimum of 4 courses equivalent to 12 credit hours.

Course Code	Course Title	Credit Hours
ECR 7201	Solar Energy Resources and Technologies	3.0
ECR 7202	Wind Energy Resources and Technologies	3.0
ECR 7203	Wave and Tidal and Hydro-power Energies Resources and Technologies	3.0
ECR 7204	Advanced Topics in Renewable Energy Applications	3.0
ECR 7205	Renewable Energy Applications for Sustainable agriculture and food/ bio-fuels production	3.0

ECR 7206	Dynamic Modelling and Simulation of Renewable Energy Systems	3.0
ECR 7207	Water Desalination Technologies	3.0
ECR 7208	Energy Storage Systems for Renewable Energy	3.0
ECR 7209	Renewable Energy Management	3.0
Subtotal	**Choose 4 Courses * 3 Credit Hours**	**12**

2.4 Master of Engineering Program Elective Courses

Environmental and Energy Management Module

The following are the newly added courses that are specific to the Master of Engineering program (Environmental and Energy Management Module) Candidates are required to select a minimum of 4 courses equivalent to 12 credit hours.

Course Code	Course Title	Credit Hours
ECR 7301	Environmental Impact Assessment	3.0
ECR 7302	Life Cycle Assessment	3.0
ECR 7303	Industrial Waste Treatment	3.0
ECR 7304	Combustion and Air Pollution	3.0
ECR 7305	Green Buildings Simulations, Ratings and management	3.0
ECR 7306	Energy Management in Industrial Facilities	3.0
ECR 7307	Environmental Hazards and Risk	3.0
Subtotal	**Choose 4 Courses * 3 Credit Hours**	**12**

2.5 Case Study Application

The case study application is a 9-credit hour course. All candidates are required to register for the case study application in an area approved by the academic advisor and the department (Renewable Energy Technology Module/ Environmental and Energy Management Module)

Course Code	Course Title	Credit Hours
ECR790E	Case Study Application Related to (Renewable Energy Technology Module/ Environmental and Energy Management Module)	9
Subtotal	**9 Credit Hours**	**9**

Courses Description

DETAILED STRUCTURE

3.1 Core Compulsory Courses

Course Code : **ECR 7101**

Course Title : **Introduction to Renewable Energy**

Credit Hours : **3**

Course Description

This course provides a comprehensive introduction to renewable energy technologies and their role in the global energy landscape. The course covers the fundamental principles, status, and prospects of various renewable energy sources, including solar, wind, biomass, geothermal, and hydropower. It also examines the environmental, economic, and social implications of renewable energy adoption and the challenges in transitioning from conventional to renewable energy systems. Through a combination of lectures, case studies, and project work, students will gain a solid understanding of the technical, economic, and policy aspects of renewable energy systems.

Course Objectives

The Course is intended to provide students with awareness, experience and competences on renewable energy applications.

Course Topics

Week1: Introduction to Renewable Energy
Week2: Solar energy
Week3: Wind energy
Week4: Biomass Energy
Week5: Geothermal Energy
Week6: Hydropower
Week 7: Ocean Energy
Week8: Energy Storage Systems
Week9: Renewable Energy Integration
Week10: Environmental and Economic Impacts.
Week11: Renewable Energy Policy and Planning
Week12: Sustainable Development and Renewable Energy
Week13: Future Trends in Renewable Energy
Week14: Project Work and Case Studies
Week15: Course Review and Examination
Week 16: Final Examination

References

- **Boyle, G. (2019).** Renewable Energy: Power for a Sustainable Future (4th ed.). Oxford University Press.
- Twidell, J., & Weir, T. (2021). Renewable Energy Resources (4th ed.). Routledge.
- **Kalogirou, S. A. (2017).** Solar Energy Engineering: Processes and Systems (2nd ed.). Academic Press.
- **Sørensen, B. (2017).** Renewable Energy: Physics, Engineering, Environmental Impacts, Economics and Planning (5th ed.). Academic Press.

Course Code : **ECR 7102**

Course Title : **Introduction to Environmental Sciences**

Credit Hours : **3**

Course Description

The course provides a comprehensive overview of the fundamental concepts, principles, and methodologies that underpin environmental science. The course covers a wide range of topics, including ecosystems and biodiversity, environmental chemistry, pollution, climate change, natural resource management, and sustainable development. It also addresses the scientific, technical, and policy-related aspects of environmental protection and management. By understanding the interrelationships between human activities and the environment, students will gain the knowledge and skills necessary to assess and address environmental challenges in the context of renewable energy and engineering.

Course Objectives

To understand the fundamental principles of environmental science and analyse environmental issues from a scientific perspective and apply environmental science principles to engineering projects.

Course Topics

Week1: Introduction to Environmental Science
Week2: Ecosystems and Biodiversity
Week3: Environmental Chemistry
Week4: Environmental Pollution
Week5: Climate Change
Week6: Water Resources and Management
Week 7: Soil and Land Management
Week8: Renewable and Non-Renewable Resources
Week9: Environmental Impact Assessment (EIA)
Week10: Waste Management.
Week11: Environmental Laws and Policies
Week12: Sustainable Development
Week13: Project Work and Case Studies
Week14: Project Work and Case Studies
Week15 : Project Work and Case Studies
Week 16: Final Examination

References

- **Cunningham, W. P., & Cunningham, M. A. (2022).** Principles of Environmental Science: Inquiry and Applications (10th ed.). McGraw-Hill Education.
- **Masters, G. M., & Ela, W. P. (2021).** Introduction to Environmental Engineering and Science (4th ed.). Pearson.
- **Peirce, J. J., Vesilind, P. A., & Weiner, R. F. (2018).** Environmental Pollution and Control (5th ed.). Butterworth-Heinemann.
- **Morris, P., & Therivel, R. (2020).** Environmental Impact Assessment Handbook (4th ed.). Routledge.

3.2 General Elective Courses

Course Code : **ECR 7103**

Course Title : **Advanced Computational Fluid Dynamics**

Credit Hours : **3**

Course Description

This course provides a comprehensive introduction to the fundamental concepts and techniques used in Computational Fluid Mechanics. It begins with an overview of dimensions and units commonly applied in the field, followed by an in-depth exploration of control volume analysis, focusing on the conservation of mass, momentum, and energy. The course also covers key theoretical frameworks such as Potential Flow Theory and Boundary Layer Theory. Students will gain hands-on experience with Computational Fluid Dynamics (CFD) software, including an introduction to mesh generation and strategies for optimizing mesh density to improve the accuracy and efficiency of simulations. This course is designed to equip students with the foundational skills necessary to analyse and solve complex fluid mechanics problems using computational tools.

Course Objectives

Understand the fundamental principles of fluid dynamics and heat transfer, apply numerical methods to solve fluid dynamics problems, develop and implement CFD models, analyse the accuracy and stability of CFD simulations and apply CFD to solve engineering problems.

Course Topics

Week1: Introduction to Computational Fluid Dynamics
Week2: Review of Fluid Mechanics and Heat Transfer
Week3: Discretization Techniques in CFD
Week4: Finite Difference Method (FDM)
Week5: Finite Volume Method (FVM)
Week6: Finite Element Method (FEM)
Week 7: CFD Solution Algorithms
Week8: Turbulence Modeling in CFD
Week9: Heat Transfer Modeling in CFD
Week10: Multiphase Flow Modeling.
Week11: Meshing Techniques and Best Practices
Week12: CFD Software and Tools
Week13: Verification and Validation in CFD
Week14: Advanced Topics in CFD
Week15: Final Project Presentations
Week 16: Final Examination

References

- **Versteeg, H. K., & Malalasekera, W. (2019).** *An Introduction to Computational Fluid Dynamics: The Finite Volume Method* (3rd ed.). Pearson.
- **Ferziger, J. H., & Peric, M. (2020).** *Computational Methods for Fluid Dynamics* (4th ed.). Springer.
- **Blazek, J. (2015).** *Computational Fluid Dynamics: Principles and Applications* (3rd ed.). Elsevier.

Course Code : **ECR 7104**

Course Title : **Sustainability**

Credit Hours : **3**

Course Description

This course will cover the physics of energy, including thermodynamics, heat transfer, fluid mechanics, chemistry of energy, and electrical energy, up to a master's level. The emphasis will be on theory and practical methods that are particularly relevant to sustainable energy technologies and systems.

Course Objectives

Analyze heat transfer mechanisms and fluid mechanics mechanisms in energy systems, integrate theoretical knowledge with practical applications and design and evaluate sustainable energy systems

Course Topics

Week1: Introduction to the Physics of Energy
Week2: Fundamentals of Thermodynamics
Week3: Advanced Thermodynamics
Week4: Heat Transfer Mechanisms
Week5: Fluid Mechanics in Energy Systems
Week6: Advanced Fluid Mechanics
Week 7: Chemistry of Energy
Week8: Electrical Energy Fundamentals
Week9: Renewable Energy Technologies
Week10: Energy Efficiency and Conservation
Week11: Sustainable Energy Systems Design
Week12: Advanced Topics in Heat Transfer
Week13: Environmental Impact of Energy Systems
Week14: Project Work and Case Studies
Week15: Project Work and Case Studies
Week 16: Final Examination

References

- **Cengel, Y. A., & Boles, M. A. (2019).** *Thermodynamics: An Engineering Approach* (9th ed.). McGraw-Hill Education.
- **Dincer, I., & Rosen, M. A. (2012).** *Exergy: Energy, Environment, and Sustainable Development* (2nd ed.). Elsevier.
- **Boyle, G. (2019).** *Renewable Energy: Power for a Sustainable Future* (4th ed.). Oxford University Press.
- **Moran, M. J., Shapiro, H. N., Boettner, D. D., & Bailey, M. B. (2020).** *Principles of Engineering Thermodynamics* (9th ed.). Wiley.
- **Incropera, F. P., DeWitt, D. P., Bergman, T. L., & Lavine, A. S. (2017).** *Fundamentals of Heat and Mass Transfer* (8th ed.). Wiley.

Course Code : **ECR 7105**

Course Title : **Materials for Renewable Energy Systems**

Credit Hours : **3**

Course Description

This course provides an in-depth exploration of the intersection between renewable energy technologies and materials science. Students will examine the critical role that materials play in the development, efficiency, and sustainability of renewable energy systems such as solar cells, wind turbines, batteries, and fuel cells. The course is designed to cover both the fundamentals of renewable energy systems and the materials used in these technologies, emphasizing their properties, fabrication, and the challenges associated with their use.

Course Objectives

Analyze the role of materials in renewable energy, Evaluate the materials challenges in renewable energy systems and Assess the environmental impact of materials in renewable energy:

Course Topics

Week1: Introduction to Renewable Energy Systems and Materials
Week2: Photovoltaic Materials and Solar Energy
Week3: Wind Energy and Structural Materials
Week4: Energy Storage Systems and Battery Materials
Week5: Fuel Cells and Electrochemical Materials
Week6: Thermoelectric Materials and Heat Recovery
Week 7: Biomass and Bioenergy Materials
Week8: Hydrogen Production and Storage Materials
Week9: Advanced Materials for Solar Energy
Week10: Advanced Composites in Renewable Energy
Week11: Nanomaterials in Renewable Energy
Week12: Materials for Energy Efficiency and Conservation
Week13: Environmental Impact and Sustainability of Materials
Week14: Case Studies in Materials and Renewable Energy
Week15 : Course Review and Final Project Presentations
Week 16: Final Examination

References

- **Cengel, Y. A., & Boles, M. A. (2019).** Thermodynamics: An Engineering Approach (9th ed.). McGraw-Hill Education.
- Duffie, J. A., & Beckman, W. A. (2013). **Solar Engineering of Thermal Processes (4th ed.). Wiley.**
- Manwell, J. F., McGowan, J. G., & Rogers, A. L. (2010). **Wind Energy Explained: Theory, Design and Application(2nd ed.). Wiley.**
- Goodenough, J. B., & Park, K. S. (2013). **The Li-Ion Rechargeable Battery: A Perspective. Elsevier.**
- Vielstich, W., Gasteiger, H. A., & Lamm, A. (2009). **Handbook of Fuel Cells: Fundamentals, Technology, and Applications. Wiley.**

Course Code : **ECR 7106**

Course Title : **Renewable Energy Economics and Finance**

Credit Hours : **3**

Course Description

The course provides an in-depth analysis of the economic principles, financial models, and policy frameworks that drive the development and deployment of renewable energy technologies. The course covers the fundamentals of energy economics, project finance, investment analysis, and risk management in the context of renewable energy. Students will learn to evaluate the economic viability of renewable energy projects, understand the impact of government policies and incentives, and develop strategies for financing and managing renewable energy investments. This course is essential for students aiming to integrate technical knowledge of renewable energy with economic and financial acumen to make informed decisions in the field.

Course Objectives

Understand the economic principles underlying energy markets, Analyze the financial feasibility of renewable energy projects, Develop strategies for financing renewable energy projects and Manage risks associated with renewable energy investments:

Course Topics

Week1: Introduction to Energy Economics
Week2: Fundamentals of Renewable Energy Economics
Week3: Financial Analysis for Renewable Energy Projects
Week4: Project Finance and Investment Analysis
Week5: Risk Assessment and Management in Renewable Energy
Week6: Government Policies and Incentives for Renewable Energy
Week 7: Global Renewable Energy Markets and Trends
Week8: Renewable Energy Investment and Financing Mechanisms
Week9: Evaluation of Renewable Energy Projects
Week10: Renewable Energy Policy and Regulation
Week11: Carbon Markets and Renewable Energy
Week12: Social and Environmental Impact Assessment
Week13: Case Studies
Week14: Case Studies
Week15 : Final Project Presentations
Week 16: Final Examination

References

- Bhattacharyya, S. C. (2019). ***Energy Economics: Concepts, Issues, Markets and Governance*** **(2nd ed.). Springer.**
- Gatti, S. (2018). ***Project Finance in Theory and Practice: Designing, Structuring, and Financing Private and Public Projects*** **(3rd ed.). Academic Press.**
- Miller, N. (2020). ***Renewable Energy Finance: Theory and Practice*****. Elsevier.**

3.3 Elective Courses (Renewable Energy Technology Module)

Course Code : **ECR 7201**

Course Title : **Solar Energy Resources and Technologies**

Credit Hours : **3**

Course Description

This course provides a comprehensive study of solar energy, divided into two main sections: Solar Photovoltaic (PV) Systems and Solar Thermal Systems. In the first section, students will explore essential topics such as solar angle calculations and the detailed processes involved in the design, assembly, evaluation, and maintenance of solar PV power plants. The second section focuses on the practical applications of solar thermal systems, equipping students with the knowledge required for the design and implementation of systems such as solar water heaters, air heaters, food dryers, and water desalination units. This course aims to provide a solid foundation in both the theoretical and practical aspects of solar energy technology.

Course Objectives

The course aims to equip students with up-to-date scientific knowledge and technological expertise in solar energy, essential for advancing sustainable development. It also seeks to provide students with an understanding of the latest technologies in both low and high-temperature solar thermal systems, along with the necessary skills to design, assemble, and manage solar PV plants for efficient power generation.

Course Topics

Week1: Introduction to Solar Energy
Week2: Solar Geometry and Radiation
Week3: Solar Photovoltaic (PV) Systems: Fundamentals
Week4: Design of Solar PV Systems
Week5: Installation and Assembly of Solar PV Systems
Week6: Evaluation and Maintenance of Solar PV Systems
Week 7: Introduction to Solar Thermal Systems
Week8: Solar Water Heating Systems
Week9: Solar Air Heating and Food Drying Systems
Week10: Solar Desalination Systems
Week11: Advanced Solar Thermal Technologies
Week12: Hybrid Solar Systems
Week13: Economic and Environmental Aspects of Solar Energy
Week14: Case Studies in Solar Energy Applications
Week15 : Case Studies in Solar Energy Applications
Week 16: Final Examination

References

- Bhattacharyya, S. C. (2019). Energy Economics: Concepts, Issues, Markets and Governance (2nd ed.). Springer.
- Thermal Analysis and Design of Passive Solar Buildings. AK Athienitis, M. Santamouris James & James, 2013.
- Soteris A. Kalogirou, 'Solar Energy Engineering, Second Edition: Processes and Systems' 2nd Edition, ISBN-13: 978-012397270

Course Code : **ECR 7202**

Course Title : **Wind Energy Resources and Technologies**

Credit Hours : **3**

Course Description

This course explores the three key disciplines involved in wind power extraction: mechanical, electrical, and civil engineering. The mechanical engineering component focuses on the principles and technologies of wind power, providing insights into modeling wind power machinery, the fabrication processes for various types of turbines, and the relevant mechanical industry standards. The electrical engineering section emphasizes the selection and installation of electrical machinery within a wind turbine's electro-mechanical system. Finally, the civil engineering aspect addresses the design of the tower and includes stress analysis under different loading conditions.

Course Objectives

Understand Wind Power Principles, Model Wind Power Machinery, Learn Turbine Fabrication Processes, Select and Install Electrical Machinery and Design and Analyze Wind Turbine Towers

Course Topics

Week1: Introduction to Wind EnergyWind energy concept.
Week2: Turbine Types and TerminologyA
Week3: Machinery Description and Limitations
Week4: Linear Momentum and Basic Theory
Week5: Energy Extraction Theory and Betz Model
Week6: Aerodynamic Principles and Tip-Speed Ratio Calculations
Week7: Mechanical Drivetrain
Week8: Fabrication of HAWT and Savonius Turbine
Week9: Industrial Standards
Week10: Environmental Aspects
Week11: Wind Energy Economics
Week12: Electrical Aspects – Wind Turbine Generators, Batteries, and Cabling
Week13: Electrical Aspects – Trends in Control System Design
Week14: Column Design and Stress Analysis / Buckling in Columns
Week15: Material Aspects
Week16: Final Examination

References

- **Wind Energy Explained: Theory, Design, and Application** by James F. Manwell, Jon G. McGowan, and Anthony L. Rogers (2nd Edition, Wiley, 2009)
- **Fundamentals of Wind Energyb** by William R. Nelson (Academic Press, 2019)
- **Aerodynamics of Wind Turbines** by Martin O. L. Hansen (3rd Edition, Routledge, 2015)
- **Wind Energy Handbook** by Tony Burton, Nick Jenkins, David Sharpe, and Ervin Bossanyi (3rd Edition, Wiley, 2021)

Course Code : **ECR 7203**

Course Title : **Wave and Tidal and Hydropower Energies Resources and Technologies**

Credit Hours : **3**

Course Description

This course explores the connection between meteorological and oceanographic data and various forms of Wave and Tidal and Hydropower renewable energies, including wave, hydro, tidal, and ocean thermal energy conversion. It provides an in-depth examination of each type of marine renewable energy, with a focus on the engineering principles, economic considerations, and environmental impacts associated with their development and deployment.

Course Objectives

Understand the Relationship Between Meteorological and Oceanographic Data and Marine Renewable Energies, Analyze Economic Considerations in Marine Renewable Energy Projects, Evaluate Environmental Impacts of Marine Renewable Energies and Integrate Interdisciplinary Knowledge in Marine Renewable Energy.

Course Topics

Week1: Introduction to Meteorology and Oceanography
Week2: Wave Energy Resources and Wave Spectrum
Week3: Wave Energy Conversion
Week4: Classification of Wave Energy Converters – Part 1
Week5: Classification of Wave Energy Converters – Part 2
Week6: Performance Evaluation of Wave Energy Converters
Week7: Environmental Impacts of Wave Energy Converters
Week8: Types of Hydropower Systems – Part 1
Week9: Types of Hydropower Systems – Part 2
Week10: Hydraulic Machinery in Hydropower
Week11: Power and Flow-Rate Calculation for Hydropower
Week12: Environmental Impacts of Hydropower
Week13: Tides and Tidal Current/Stream Power Conversion
Week14: Ocean Thermal Energy Conversion Principles
Week15: Heat Exchangers, Pumping Requirements, and Environmental Impact
Week16: Final Examination

References

- **"Renewable Energy: Power for a Sustainable Future"** by Godfrey Boyle (4th Edition, Oxford University Press, 2019)
- **"Ocean Energy: Tide and Tidal Power"** by R. H. Charlier and Charles W. Finkl (Springer, 2009)
- **"Hydropower Engineering Handbook" by John S. Gulliver and Roger E. A. Arndt (McGraw-Hill, 1991)**
- **Bernard Multon, Marine renewable energy handbook, Wiley, ISBN: 978-1-84821-332-6**
- **"Marine Renewable Energy Handbook"** by Bernard Multon (Wiley-ISTE, 2011)
- **Shields, Mark A., Payne, Andrew I.L., 2014, Marine Renewable Energy Technology and Environmental Interactions, Springer**

Course Code : **ECR 7204**

Course Title : **Advanced Topics In Renewable Energies Applications**

Credit Hours : **3**

Course Description

The course explores a range of topics related to renewable energy applications, focusing on various approaches tailored to enhance energy capabilities across different industrial sectors using renewable resources.

Course Objectives

The student will be able to Explore Industry-Specific Approaches, Enhance Energy Capabilities Using Renewable Resources, Analyze the Impact of Renewable Energy on Industry and Promote Sustainable Energy Practices.

Course Topics

Week1: Introduction to Water Desalination Using Renewable Energies
Week2: Advanced Techniques in Renewable Energy Desalination
Week3: Refrigeration Technologies Using Renewable Energies
Week4: Renewable Energy in Cold Chain and Industrial Refrigeration
Week5: Fuel Cells Technology – Basics and Types
Week6: Advances in Fuel Cell Technology and Applications
Week7: Production of Biofuels – Overview and Technologies
Week8: Production of Syngas, Biodiesel, and Ethanol
Week9: Environmental and Economic Aspects of Biofuel Production
Week10: Building Management Systems for Improving Energy Efficiency
Week11: Smart Building Technologies and Energy Efficiency
Week12: Geothermal Energy Applications
Week13: Advances in Geothermal Energy Technology
Week14: Waste Heat Recovery – Methods and Applications
Week15: Thermal Storage Methods and Their Applications
Week16: Final Examination

References

- **"Renewable Energy: Power for a Sustainable Future"** by Godfrey Boyle (4th Edition, Oxford University Press, 2019)
- **"Water Desalination Using Renewable Energy"** by Gnaneswar Gude (CRC Press, 2018)
- **"Fuel Cell Technology: Reaching Towards Commercialization"** by Nigel Sammes (Springer, 2006)
- **"Biofuels Engineering Process Technology"** by Caye M. Drapcho, Nghiem Phu Nhuan, and Terry H. Walker (McGraw-Hill, 2008)

.

Course Code : **ECR 7205**

Course Title : **Renewable Energies for Sustainable Agriculture and Food Production**

Credit Hours : **3**

Course Description

This course explores the intersection of agriculture and energy engineering sciences and technologies. It emphasizes sustainable agriculture practices and precision farming techniques while providing a strong foundation for launching business ventures in agribusiness and food production.

Course Objectives

The course aims to provide the students with the recent technologies related to renewable energies serving agribusiness, livestock and food production fields considering sustainable agricultural standards.

Course Topics

Week1: Introduction to Agriculture, Food Production, and Energy
Week2: Traditional and Modern Farming Methods
Week3: Sustainable Agriculture Standards and Precision Farming
Week4: Renewable Energy in Agri-Business and Food Production – Part 1
Week5: Renewable Energy in Agri-Business and Food Production – Part 2
Week6: Renewable Energy in Agri-Business and Food Production – Part 3
Week7: Biofuels Production Methods – Overview
Week8: Pyrolysis in Biofuel Production
Week9: Gasification in Biofuel Production
Week10: Anaerobic Digestion in Biofuel Production
Week11: Esterification in Biofuel Production
Week12: Environmental Impacts of Unsustainable Farming – Part 1
Week13: Environmental Impacts of Unsustainable Farming – Part 2
Week14: Integration of Renewable Energy and Sustainable Farming
Week15: Course Review and Future Perspectives
Week16: Final Examination

References

- **"Renewable Energy in Agriculture: A Guide to Sustainable Power"** by Paul Gipe (Chelsea Green Publishing, 2008)
- **"Sustainable Agriculture: Principles and Practices"** by Julie Kurtz (Cengage Learning, 2019)
- **"Biofuels: Production, Application and Development"** by Lawrence E. Jones (Springer, 2012)
- **"Environmental Impact of Unsustainable Farming"** by Rebecca Sutton (Cambridge University Press, 2020)

Course Code : **ECR 7206**

Course Title : **Dynamic Modelling and Simulation of Renewable Energy Systems**

Credit Hours : **3**

Course Description

This course provides an in-depth understanding of dynamic modeling and simulation techniques as applied to renewable energy systems. Students will explore the mathematical and computational methods used to model the behavior of various renewable energy technologies, including wind, solar, biomass, and hybrid systems. The course emphasizes the development of accurate dynamic models to simulate the performance, control, and integration of renewable energy systems into the grid. By the end of the course, students will be equipped with the skills to analyze and optimize renewable energy systems using advanced simulation tools.

Course Objectives

The Course is intended to provide students with awareness, experience and competence on dynamic Modeling Principles, Apply Mathematical and Computational Techniques and Simulate Renewable Energy Technologies. Analyze System Performance, Optimize Renewable Energy Integration and Develop and Validate Models for Renewable Energy Systems.

Course Topics

Week1: Introduction to Dynamic Modeling and Simulation
Week2: Mathematical Foundations of Dynamic Modeling
Week3: Dynamic Modeling of Wind Energy Systems
Week4: Dynamic Modeling of Solar Photovoltaic (PV) Systems
Week5: Dynamic Modeling of Biomass Energy Systems
Week6: Hybrid Renewable Energy Systems
Week7: Control Strategies for Renewable Energy Systems
Week8: Grid Integration of Renewable Energy Systems
Week9: Power Electronics in Renewable Energy Systems
Week10: Energy Storage Systems and Their Dynamic Modeling
Week11: Advanced Topics in Dynamic Modeling and Simulation
Week12: Model Validation and Verification
Week13: Optimization Techniques in Dynamic Modeling
Week14: Case Studies in Dynamic Modeling and Simulation
Week15: Case Studies in Dynamic Modeling and Simulation
Week16: Final Examination

References

- **"Modeling and Simulation of Renewable Energy Systems: Application and Perspectives"** by Mukhtar Ahmad (Wiley, 2017)
- **"Dynamic Modeling, Simulation and Control of Energy Generation"** by Ranjan Vepa (CRC Press, 2013)
- **"Solar Photovoltaic Power Optimization: Dynamic Modeling and Optimization of Solar PV Systems"** by Tamer Khatib (Academic Press, 2021)
- **"Dynamic Modeling, Simulation and Control of Energy Generation"** by Ranjan Vepa (CRC Press, 2013)

Course Code : **ECR 7207**

Course Title : **Water Desalination Technologies**

Credit Hours : **3**

Course Description

This course provides a comprehensive exploration of water desalination technologies, focusing on the principles, processes, and engineering aspects involved in converting seawater and brackish water into potable water. Students will study various desalination methods, including thermal, membrane, and hybrid technologies, and will analyze their applications, efficiencies, and environmental impacts. The course also covers the integration of renewable energy sources with desalination processes and examines the latest advancements in desalination technology.

Course Objectives

. The Course is intended to provide students with awareness, experience and competence on Water Desalination Technologies.

Course Topics

Week1: Introduction to Water Desalination
Week2: Fundamentals of Thermal Desalination Processes
Week3: Advanced Thermal Desalination Technologies
Week4: Fundamentals of Membrane Desalination Processes
Week5: Advanced Membrane Desalination Technologies
Week6: Hybrid Desalination Technologies
Week7: Renewable Energy-Powered Desalination – Part 1
Week8: Renewable Energy-Powered Desalination – Part 2
Week9: Environmental and Economic Aspects of Desalination
Week10: Pre-treatment and Post-treatment in Desalination
Week11: Energy Recovery in Desalination Systems
Week12: Case Studies of Desalination Plants
Week13: Case Studies of Desalination Plants
Week14: Simulation and Optimization of Desalination Systems
Week15: Project Presentations
Week16: Final Examination

References

- **"Desalination: Challenges and Opportunities"** by Hassan A. Arafat (Springer, 2017)
- **"Membrane Desalination: Technologies and Processes"** by Arafat Al-Maskari (Springer, 2019)
- **"Sustainable Desalination Handbook: Planning, Design, and Operations"** by Aniruddha Bhalchandra Pandit and Prabhu Aravind (Elsevier, 2020)
- **"Water Desalination Using Renewable Energy"** by Gnaneswar Gude (2nd Edition, CRC Press, 2021)

Course Code : **ECR 7208**

Course Title : **Energy Storage Systems for Renewable Energy**

Credit Hours : **3**

Course Description

This course provides an in-depth exploration of energy storage technologies, focusing on their critical role in renewable energy systems. The course covers the principles, design, and applications of various energy storage technologies, including batteries, supercapacitors, flywheels, compressed air energy storage, and thermal storage systems. Students will learn about the integration of energy storage with renewable energy sources such as solar, wind, and hydropower. The course also examines the economic, environmental, and grid integration aspects of energy storage, equipping students with the skills to design, analyze, and optimize energy storage systems for enhanced performance and sustainability.

Course Objectives

Explore Different Energy Storage Technologies, Analyze the Integration of Energy Storage with Renewable Energy, Design and Optimize Energy Storage Systems, Assess Economic and Environmental Impacts and Explore Grid Integration and Control Strategies

Course Topics

Week1: Introduction to Energy Storage Systems
Week2: Electrochemical Energy Storage – Batteries
Week3: Thermochemical Energy Storage
Week4: Thermal Energy Storage Systems
Week5: Hydro Pumped Storage Systems
Week6: Reversible Chemical Reactions
Week7: Mechanical Energy Storage – Flywheels and Compressed Air
Week8: Hydrogen Production
Week9: Hydrogen Storage and Distribution
Week10: Fuel Cells Technology
Week11: Integration of Energy Storage Systems
Week12: Hybrid Energy Storage Systems
Week13: Economic and Environmental Aspects of Energy Storage
Week14: Simulation and Optimization of Energy Storage Systems
Week15: Project Presentations
Week16: Final Examination

References

- **"Energy Storage: Systems and Components"** by Alfred Rufer (CRC Press, 2017)
- **"Grid Energy Storage"** by Paul Denholm, Erik Ela, Brendan Kirby, and Michael Milligan (CRC Press, 2019)
- **"Handbook of Battery Materials"** by Claus Daniel and J. O. Besenhard (2nd Edition, Wiley-VCH, 2019)

Course Code : **ECR 7209**

Course Title : **Renewable Energy Management**

Credit Hours : **3**

Course Description

This course explores the fundamentals of renewable energy sources, policy frameworks, project development, and financing models. Participants will gain insights into the planning and implementation of renewable energy projects.

Course Objectives

Understand global and national policy frameworks for renewable energy and develop skills in planning and financing renewable energy projects.

Course Topics

Week1: Introduction to Renewable and Low-Carbon Energy Systems
Week2: Industry Structure and Market Framework
Week3: Energy Policies and Regulatory Mechanisms
Week4: Financing Renewable Energy Projects
Week5: Risk Management in Renewable Energy
Week6: Business Models in Renewable Energy
Week7: Commercialization of Renewable Energy Technologies
Week8: The Role of Innovation in the Renewable Energy Sector
Week9: Sustainable Energy and Corporate Social Responsibility (CSR)
Week10: Global Energy Markets and Trade
Week11: Policy and Regulation for Sustainable Energy Markets
Week12: Strategic Planning and Management in Renewable Energy
Week13: Case Studies: Strategic Planning in small-Scale Renewable Projects
Week14: Case Studies: Strategic Planning in large-Scale Renewable Projects
Week15: Project Presentations
Week16: Final Examination

References

- "Renewable Energy: Project Development and Management" by Peter A. Lilienthal and Wade A. Everard
- "Renewable Energy Management: Strategies for Climate Protection" edited by Volker Quaschning
- "Renewable Energy Management: Advanced Technologies, Energy Systems, and Sustainable Practices" by Trevor M. Letcher
- "Renewable Energy Systems: Fundamentals, Design, and Applications" by Mohammad A. S. Masoum and Ewald F. Fuchs
- "Renewable Energy: From Principles to Practice" by David Elliott

3.4 Elective Courses (Environmental and Energy Management Module)

Course Code : **ECR 7301**

Course Title : **Environmental Impact Assessment**

Credit Hours : **3**

Course Description

This course provides an in-depth exploration of Environmental Impact Assessment (EIA) as a key tool in the management of environmental issues associated with development projects, particularly within the context of renewable energy and environmental engineering. The course covers the principles, processes, and methodologies of EIA, with a focus on its application in assessing the potential environmental impacts of renewable energy projects. Students will learn how to prepare, review, and critique EIA reports, and will gain practical skills in conducting EIAs through case studies, simulations, and project work.

Course Objectives

Understand the principles and objectives of Environmental Impact Assessment (EIA) and its role in sustainable development and environmental protection. Identify and evaluate potential environmental impacts of renewable energy projects, considering both direct and indirect effects and Apply EIA methodologies and tools to assess the environmental consequences of development projects.

Course Topics

Week1: Introduction to Environmental Impact Assessment (EIA)
Week2: Legal and Regulatory Frameworks for EIA
Week3: EIA Process and Methodologies
Week4: Public Participation and Stakeholder Engagement
Week5: Baseline Studies and Environmental Data Collection
Week6: Assessing Impacts on Air Quality and Climate
Week7: Assessing Impacts on Water Resources
Week8: Assessing Impacts on Land and Soil
Week9: Assessing Impacts on Biodiversity and Ecosystems
Week10: Assessing Socio-Economic and Cultural Impacts
Week11: Cumulative Impact Assessment and Strategic Environmental Assessment (SEA)
Week12: Mitigation Measures and Environmental Management Plans (EMPs)
Week13: Reviewing and Critiquing EIA Reports
Week14: Innovations and Best Practices in EIA
Week15: Project Presentations
Week16: Final Examination

References

- "Handbook of Environmental Impact Assessment" by Judith Petts
- "Environmental Impact Assessment: A Guide to Best Professional Practices" by Charles H. Eccleston
- "Environmental Impact Assessment: Theory and Practice" by Peter Morris and Riki Therivel

Course Code : **ECR 7302**

Course Title : **Life Cycle Assessment**

Credit Hours : **3**

Course Description

This course provides a comprehensive understanding of Life Cycle Assessment (LCA) as a critical tool for evaluating the environmental impacts of products, processes, and services. It focuses on the methodology, applications, and interpretation of LCA in the context of renewable energy and environmental engineering. Students will explore the principles and frameworks of LCA, gain hands-on experience in conducting LCAs, and learn how to apply LCA results to support sustainable decision-making in engineering and policy contexts. The course will also cover the integration of LCA with other environmental management tools and the latest advancements in LCA research.

Course Objectives

Understand the principles and methodology of Life Cycle Assessment (LCA) and its role in environmental management and sustainability and Identify and analyze the environmental impacts associated with different stages of a product's life cycle, from raw material extraction to end-of-life disposal.Evaluate the strengths and limitations of LCA in comparison with other environmental assessment tools.Explore the integration of LCA with other sustainability assessment tools, such as carbon footprinting and eco-design.

Course Topics

Week1: Introduction to Life Cycle Assessment (LCA)
Week2: LCA Framework and Standards
Week3: Goal and Scope Definition in LCA
Week4: Life Cycle Inventory (LCI) Analysis
Week5: Life Cycle Impact Assessment (LCIA) – Introduction
Week7: LCIA Methods and Impact Categories
Week8: Interpretation and Reporting of LCA Results
Week9: LCA in Renewable Energy Systems
Week10: Social and Economic Life Cycle Assessment
Week11: LCA Software and Tools
Week12: Regulatory Frameworks and Industry Applications of LCA
Week13: Advanced Topics in LCA
Week14: Critiques and Limitations of LCA
Week15: Project Presentations
Week16: Final Examination

References

- "Life Cycle Assessment: Theory and Practice" by Michael Z. Hauschild, Ralph K. Rosenbaum, and Stig Irving Olsen
- "Introduction to Life Cycle Assessment" by Walter Klöpffer and Birgit Grahl
- "Environmental Life Cycle Assessment" by Olivier Jolliet, Myriam Saade-Sbeih, Shanna Shaked, and Almut Rebitzer

Course Code : **ECR 7303**

Course Title : **Industrial Waste Treatment**

Credit Hours : **3**

Course Description

This course provides an in-depth exploration of the principles, methods, and technologies used in the treatment and management of industrial waste. It covers various types of industrial waste, including solid, liquid, and gaseous emissions, and the environmental impacts associated with them. Students will learn about advanced treatment technologies, waste minimization strategies, regulatory frameworks, and best practices for sustainable industrial waste management. The course also emphasizes the role of renewable and environmental engineering in developing innovative solutions for waste treatment and resource recovery.

Course Objectives

Understand the types and characteristics of industrial waste and their environmental impacts. Identify and analyze the sources of industrial waste in various industries. Apply advanced treatment technologies for the management of industrial solid, liquid, and gaseous waste. Evaluate waste minimization and resource recovery strategies in industrial processes.

Course Topics

Week1: Introduction to Industrial Waste and Environmental Impacts
Week2: Regulatory Frameworks and Standards for Industrial Waste Treatment
Week3: Industrial Wastewater Treatment
Week4: Solid Waste Management in Industry
Week5: Treatment of Hazardous and Toxic Waste
Week6: Air Pollution Control and Emissions Treatment
Week7: Waste Minimization and Resource Recovery
Week8: Biological Treatment of Industrial Waste
Week9: Advanced Oxidation Processes (AOPs)
Week10: Thermal Treatment of Industrial Waste
Week11: Membrane Technologies in Industrial Waste Treatment
Week12: Sustainable Industrial Waste Management Practices
Week13: Design and Optimization of Industrial Waste Treatment Systems
Week14: Case Studies
Week15: Case Studies
Week16: Final Examination

References

- "Industrial Waste Treatment Handbook" by Frank Woodard
- "Wastewater Engineering: Treatment and Resource Recovery" by Metcalf & Eddy, Inc., George Tchobanoglous, H. David Stensel, Ryujiro Tsuchihashi
- "Hazardous Waste Management" by Michael D. LaGrega, Phillip L. Buckingham, Jeffrey C. Evans
- "Handbook of Industrial and Hazardous Wastes Treatment" edited by Lawrence K. Wang, Yung-Tse Hung, Nazih K. Shammas

Course Code : **ECR 7304**

Course Title : **Combustion and Air Pollution**

Credit Hours : **3**

Course Description

This course explores the fundamental principles of combustion processes and their impact on air quality and the environment. It covers the chemical and physical mechanisms of combustion, the formation of pollutants, and the strategies for controlling emissions from combustion systems. The course also addresses the assessment and management of air pollution, with a focus on the regulatory frameworks, measurement techniques, and advanced technologies used to reduce pollution from industrial, transportation, and power generation sources. Special emphasis is placed on the role of renewable energy technologies in reducing combustion-related air pollution.

Course Objectives

Understand the fundamental principles of combustion and its role in energy production and environmental impact. Analyze the chemical reactions and thermodynamics of combustion in various systems, including industrial, transportation, and residential. Identify the major pollutants produced by combustion processes and understand their effects on air quality and human health. Apply techniques for measuring and controlling air pollutants resulting from combustion. Evaluate the effectiveness of emission control technologies and strategies for different types of combustion systems.

Course Topics

Week1: Introduction to Combustion and Air Pollution
Week2: Fundamentals of Combustion Chemistry
Week3: Thermodynamics of Combustion
Week4: Combustion Kinetics and Mechanisms
Week5: Formation of Pollutants in Combustion
Week6: Measurement and Monitoring of Air Pollutants
Week7: Emission Control Technologies
Week8: Combustion in Internal Combustion Engines
Week9: Combustion in Industrial Boilers and Furnaces
Week10: Air Pollution Control Regulations and Standards
Week11: Environmental Impacts of Combustion Pollutants
Week12: Renewable Energy and Combustion
Week13: Air Quality Management and Pollution Prevention
Week14: Case Studies
Week15: Case Studies
Week16: Final Examination

References

- "Combustion" by Irvin Glassman, Richard A. Yetter, and Nick G. Glumac
- "Fundamentals of Combustion Processes" by Sara McAllister, Jyh-Yuan Chen, A. Carlos Fernandez-Pello
- "Air Pollution Control Engineering" by Noel de Nevers
- "The Science and Engineering of Thermal Processes" by Greg P. Smestad
- "Pollution Control in Combustion Systems" by N. A. Chigier

Course Code : **ECR 7305**

Course Title : **Green Buildings: Simulations, Ratings, and Management**

Credit Hours : **3**

Course Description

This course provides an in-depth exploration of the principles and practices of designing, simulating, rating, and managing green buildings. It covers the concepts of sustainable architecture, energy efficiency, and environmental impact in building design and operation. Students will learn how to use advanced simulation tools to evaluate building performance, understand green building rating systems such as LEED, BREEAM, and WELL, and develop strategies for managing green building projects. The course emphasizes the integration of renewable energy systems, sustainable materials, and innovative technologies in creating high-performance, environmentally responsible buildings.

Course Objectives

Understand the principles of green building design and their role in sustainable development. Apply simulation tools to evaluate the energy performance and environmental impact of building designs. Interpret and apply green building rating systems such as LEED, BREEAM, and WELL in assessing building projects. Develop strategies for managing green building projects from design through construction and operation. Integrate renewable energy systems, sustainable materials, and innovative technologies in green building design. Analyze the economic, environmental, and social benefits of green buildings.

Course Topics

Week1: Introduction to Green Buildings
Week2: Sustainable Site Selection and Design
Week3: Energy Audit in Buildings
Week4: Building Simulation Tools and Techniques
Week5: Green Building Materials and Resources
Week6: Water Efficiency and Management
Week7: Indoor Environmental Quality (IEQ)
Week8: Renewable Energy Integration in Green Buildings
Week9: Green Building Rating Systems: LEED, BREEAM, WELL
Week10: Economic Analysis of Green Buildings
Week11: Green Building Management and Operations
Week12: Building Codes and Regulations for Green Buildings
Week13: Maintenance Strategies for Sustainable Buildings
Week14: Case Studies
Week15: Case Studies
Week16: Final Examination

References

- "Sustainable Construction: Green Building Design and Delivery" by Charles J. Kibert
- "Energy Simulation in Building Design" by Joseph Clarke
- "LEED v4 Green Associate Exam Guide" by Gang Chen
- "The Integrative Design Guide to Green Building: Redefining the Practice of Sustainability" by 7group and Bill Reed
- "Green Building: Principles and Practices in Residential Construction" by Abe Kruger and Carl Seville

Course Code : **ECR 7306**

Course Title : **Energy Management in Industrial Facilities**

Credit Hours : **3**

Course Description

This course provides an in-depth examination of energy management practices and strategies within industrial facilities. Students will explore the principles of energy efficiency, energy auditing, and the optimization of energy use in industrial processes. The course covers key topics such as the management of electrical and thermal energy systems, the integration of renewable energy technologies, and the application of energy management standards like ISO 50001. Emphasis is placed on the economic, environmental, and operational benefits of effective energy management in industrial settings. Through practical case studies and project work, students will develop the skills necessary to design and implement comprehensive energy management plans that enhance sustainability and reduce operational costs.

Course Objectives

Understand the principles and objectives of energy management in industrial facilities. Analyze energy consumption patterns in industrial processes and identify opportunities for improvement. Conduct energy audits in industrial settings to evaluate energy performance and identify inefficiencies. Develop and implement strategies for improving energy efficiency in industrial facilities. Apply relevant energy management standards and regulations such as ISO 50001.

Course Topics

Week1: Introduction to Energy Management in Industrial Facilities
Week2: Energy Consumption in Industrial Processes
Week3: Energy Audits in Industrial Facilities
Week4: Electrical Energy Management in Industry
Week5: Thermal Energy Management in Industry
Week6: Steam Systems and Energy Management
Week7: Compressed Air Systems and Energy Management
Week8: Renewable Energy Integration in Industrial Facilities
Week9: Energy Management Standards and Regulations
Week10: Demand-Side Management in Industrial Facilities
Week11: Techniques for Monitoring and Verifying Energy Savings
Week12: Economic Analysis of Energy Management Initiatives
Week13: Retrofitting and Modernization for Energy Efficiency
Week14: Case Studies: Successful Retrofit Projects in Industrial Facilities
Week15: Case Studies: Advanced Energy Management in High-Tech Manufacturing
Week16: Final Examination

References

- "Energy Management Handbook" by Wayne C. Turner and Steve Doty
- "Guide to Energy Management" by Barney L. Capehart, Wayne C. Turner, and William J. Kennedy
- "Industrial Energy Management and Utilization" by L.C. Witte, P.S. Schmidt, and D.R. Brown

Course Code : **ECR 7307**

Course Title : **Environmental Hazards and Risk**

Credit Hours : **3**

Course Description

This course offers a comprehensive examination of environmental hazards and the associated risks to human health, ecosystems, and infrastructure. Students will explore the types, sources, and impacts of natural and anthropogenic hazards, and learn methods for assessing, managing, and mitigating these risks. The course covers hazard identification, risk assessment methodologies, and the development of risk management plans, with an emphasis on the integration of renewable and environmental engineering solutions. Through case studies, simulations, and project work, students will gain practical experience in addressing real-world environmental challenges and devising strategies to reduce vulnerability and enhance resilience.

Course Objectives

Identify and classify environmental hazards that pose risks to human health, ecosystems, and infrastructure. Understand the sources and impacts of natural and anthropogenic hazards on the environment. Apply risk assessment methodologies to evaluate the potential consequences of environmental hazards. Develop and implement risk management strategies to mitigate the impact of environmental hazards. Understand the regulatory frameworks and guidelines governing environmental hazard management. Integrate renewable and environmental engineering solutions into hazard mitigation and risk management plans.

Course Topics

Week1: Introduction to Environmental Hazards and Risk
Week2: Natural Hazards: Types and Impacts
Week3: Anthropogenic Hazards: Types and Impacts
Week4: Hazard Identification and Risk Assessment
Week5: Environmental Health Risk Assessment
Week6: Risk Management and Mitigation Strategies
Week7: Regulatory Frameworks and Environmental Hazard Management
Week8: Climate Change and Environmental Hazards
Week9: Technological Hazards and Risk
Week10: Ecosystem-Based Approaches to Hazard Mitigation
Week11: Renewable Energy Systems and Hazard Mitigation
Week12: Risk Communication and Public Awareness
Week13: Disaster Risk Reduction and Management
Week14: Case Studies
Week15: Case Studies
Week16: Final Examination

References

- "Introduction to Environmental Engineering and Science" by Gilbert M. Masters and Wendell P. Ela
- "Environmental Risk Assessment: A Toxicological Approach" by Ted Simon

3.5 Case Study Application

Course Code: **ECR 790E**

Course Title: **Case Study Application**

Credit Hours: **9**

Course Description

The student should be able to explore and investigate the application of engineering management concepts in a real-life context, report / present the findings in a case study form and assist group learning from the practical application.

Course Objectives

- Identify the key application areas in project management
- Examine the review techniques of relevant literatures
- Identify data collection techniques and case study formulation
- Demonstrate literature referencing styles
- Formulate case study/data collection questions/approach
- Analyze data collected
- Relate results to relevant practical issues/concepts
- Explain and discuss practical issues with a professional audience

Course Topics

- Literature reviews using academic and industry databases
- Reading and writing skills
- Referencing and plagiarism
- Data Collection and Case Study Techniques
- Overview of presentation skills and techniques
- Presentations and discussions

References

- Yin, R. (2003) Case Study Research: Design and Methods. Sage Publications, London, UK.
- Yin, R. (2011) Qualitative Research: From Start to Finish. The Guilford Press, New York, USA.
- Stake, R. (2010) Qualitative Research: Studying How Things Work. The Guilford Press, New York, USA.
- Skills for Learning (2009) Quote, Unquote, Harvard Referencing. Leeds Metropolitan University, UK.

كلية الهندسة والتكنولوجيا

الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري

برنامج ماجستير الهندسة

في

هندسة الطاقة المتجددة والبيئة

قسم الهندسة الميكانيكية

اللائحة الدراسية

الجزء الثاني

Prof. Akram Soliman Elselmy
Dean, College of Engineering and Technology

2025

جدول المحتويات

1

1-مقدمة

1-1 -نظره عامه

تم تصميم برنامج ماجستير الهندسة في الطاقة المتجددة والهندسة البيئية. في الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري لاستيعاب طلاب الدراسات العليا من التخصصات الهندسية المختلفة وهو برنامج يسمح بالتكامل بين مجالات التعليم المتقدمة في الهندسة وبين التطوير المهني. وهو برنامج مهني مفيد للغاية للمهندسين الذين يعملون في تخصصات هندسية وفنية مختلفة. يقلل البرنامج من الوقت اللازم لتحقيق المؤهلات المهنية، فضلا عن تعزيز المهارات العملية والمعرفة المتقدمة في المجال الهندسي. هناك اهتمام كبير بهذا البرنامج من قبل الكيانات والشركات الهندسية المهنية في منطقة الشرق الأوسط وشمال إفريقيا وجميع أنحاء العالم. حيث أنه يوفر طريقا للعدد المتزايد من خريجي الماجستير في الهندسة القادرين على تحقيق المعرفة المهنية والمهارات المتقدمة دون ترك عملهم – كما يمكن الشركات من جذب الخريجين القادرين على مواكبة التغير العالمي السريع.

1.2- أهم ملامح وأهداف برنامج ماجستير الهندسة

نظرًا للمنافسة العالية، يسعى بعض المهندسين المحترفين أحيانًا للحصول على درجة الماجستير في العلوم لتطوير الكفاءات المطلوبة، ورغم ذلك، قد لا يكون الحصول على هذه الدرجة الأكاديمية مفيدًا لشركاتهم المهنية بشكل مباشر. وفي الوقت الحاضر، أصبحت الدرجات المهنية مثل ماجستير الهندسة تلبي معايير الصناعات المهنية، بينما تظل برامج الماجستير في العلوم أكثر فائدة كدرجات أكاديمية. وفي نهاية المطاف، تعد شراكة تبادل المعرفة بين الصناعة والأكاديميا أمرًا ضروريًا لتطوير الأسواق.
وتلبيةً لاحتياجات المهندسين الذين ينتقلون إلى مناصب قيادية وإدارية في قطاع الطاقة المتجددة ضمن قطاع الاستدامة، يهدف برنامج ماجستير الهندسة في الطاقة المتجددة والهندسة البيئية إلى تزويد الخريجين بالمهارات المتعددة التخصصات اللازمة لإدارة أنظمة الطاقة والبيئة المعقدة. كما يكمل البرنامج الخلفية التقنية للمهندسين بالمعرفة الأساسية في الإدارة، والاقتصاد، والسياسات، وتخطيط المشاريع، وتخصيص الموارد، وتقييم المخاطر، والأدوات التحليلية المتقدمة الضرورية لاتخاذ قرارات فعالة وإدارة البرامج المستدامة.

ينقسم برنامج الماجستير إلى وحدتين رئيسيتين:

وحدة تقنيات الطاقة المتجددة : تشمل دراسات الطاقة الشمسية، وطاقة الرياح، وطاقة الأمواج والمد والجزر، بالإضافة إلى الطاقة الحرارية الأرضية وتطبيقاتها في صناعات مختلفة مثل الزراعة وإنتاج الغذاء والوقود الحيوي.

وحدة الإدارة البيئية وإدارة الطاقة : تركز على المعالجة الميكانيكية والبيولوجية للنفايات الصلبة وتصميم محطات معالجتها. كما تغطي الوحدة معالجة مياه الصرف الصحي في المناطق الحضرية وصرف العمليات الصناعية. ويتم تناول التحكم في جودة الهواء أيضًا من خلال التركيز على قياس ملوثات الهواء وأخذ العينات ومعالجة غازات العادم.

الأهداف المحددة لبرنامج الماجستير في الطاقة المتجددة والهندسة البيئية في الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري هي:

- توفير الحصيلة المعرفية المطلوبة من قبل المنظمات المهنية الدولية ذات الصلة بالطاقة المتجددة والاستدامة والإدارة البيئية، مما يدعم الشهادات المعترف بها عالميًا.
- تطوير الكفاءات التحليلية والتنظيمية والإدارية التي تسد الفجوة بين تخصصات الطاقة المتجددة والهندسة البيئية والأدوار الإدارية الفنية.
- تعزيز مهارات اتخاذ القرار وحل المشكلات من خلال التعلم العملي، ودراسات الحالة الواقعية، والمشاريع التطبيقية التي تعالج تحديات الطاقة والبيئة الحالية.
- المساعدة في تطوير المعرفة ومهارات القوى العاملة للنهوض باقتصاد تنافسي.
- توفير منصة لتطوير المهارات والقدرات التجارية والمهنية.
- تقديم نماذج هندسية ناجحة تمكن من تطوير تقنيات جديدة وأساليب مبتكرة ومهارات حل المشكلات.

1.3 -الحاجة إلى طرح برامج في الطاقة المتجددة والهندسة البيئية

أجريت العديد من الدراسات والاستطلاعات في أوروبا - وعدة دول صناعية – من خلال مجموعة من الشركات الهندسية العالمية والمحلية – التي تتطلع إلى توظيف خريجي الماجستير في الهندسة. بالإضافة إلى ذلك، فإن نسبة كبيرة من الشركات المهنية الكبرى ستكون مهتمة في المشاركة في الدورات التدريبية عن الجوانب العملية لاستخدام مقررات الماجستير في الهندسة في العديد من المجالات الهندسية - وخاصة في مجال الطاقة المتجددة والهندسة البيئية. على التوازي – فإنه يمكن تحقيق تغييرات مماثلة فيما يختص بالتعليم الهندسي في بعض دول الشرق الأوسط مثل مصر. ويمكن تحديد هذه التغيرات في النقاط التالية:

- معظم المعرفة في درجة البكالوريوس في جامعاتنا لا تصل إلى المستوى الحقيقي للتطبيقات المتقدمة في مجال الهندسة والتكنولوجيا.
- هناك مسؤولية مشتركة بين جامعاتنا وشركات الأعمال في تعزيز المهارات الهندسية والمهنية للخريجين.
- يوجد تأثير كبير للخريجين ذوي المستوى التنافسي العالي على تطوير أسواقنا المحلية

الهدف الرئيسي من هذا البرنامج العملي هو إعداد خريجين ذوي مهارات مهنية للمهندسين في الطاقة المتجددة والهندسة البيئية. في الواقع، فإن دول الشرق الأوسط لابد وأن تتأثر في الأجل القصير بجميع التغييرات والمنافسة العالية في الأسواق. لذلك، فإننا بحاجة للاستعداد لهذه التحديات من خلال تطوير نظام الدراسات العليا لدينا.

شهد التخصص الناشئ في طاقة المتجددة والهندسة البيئية نمواً متسارعاً على مدى العقود القليلة الماضية. ويعود هذا النمو إلى التعقيد المتزايد للمشاريع الهندسية، وتيرة الابتكار التكنولوجي المتسارعة، والتركيز العالمي على الاستدامة والمسؤولية البيئية. ويمكن تحديد الحاجة إلى تعليم "الإدارة الهندسية" على ثلاثة مستويات مترابطة:

1.3.1 على المستوى الفردي

- **على المستوى الفردي :**يُطلب من المهندسين العاملين في قطاعات الطاقة المتجددة والبيئة بشكل متزايد تولي أدوار قيادية تتطلب -بالإضافة إلى الخبرة الفنية القوية- كفاءة في إدارة المشاريع، التحليل المالي، تقييم المخاطر، الامتثال التنظيمي، واتخاذ القرارات الاستراتيجية.
- **على المستوى المؤسسي :**يجب على منظمات الطاقة والبيئة إدارة فرق متعددة التخصصات ومشاريع بنية تحتية ضخمة بكفاءة، مع ضمان الجدوى الاقتصادية وحماية البيئة والالتزام بالمعايير الدولية.
- **على المستوى المجتمعي :**يتطلب التحول العالمي نحو أنظمة طاقة مستدامة قادة هندسيين يمكنهم دمج الابتكار التقني مع السياسات والاقتصاد والاعتبارات الاجتماعية لمعالجة تغير المناخ وأمن الطاقة وأهداف التنمية المستدامة.

1.3.2 على مستوى الصناعة (القطاع المهني)

تبرز الأهمية القصوى للمهارات الإدارية مع تقدم المهندسين في مسيرتهم المهنية؛ حيث تظهر مستويات متفاوتة من كفاءة الإدارة الهندسية، بدءاً من أدوار الإشراف المباشر وصولاً إلى المناصب القيادية الاستراتيجية. وتعد الإدارة الهندسية ضرورية لتخطيط الموارد وتحسينها، وتوجيه العمليات الفنية المعقدة والتحكم فيها، وضمان الامتثال للوائح البيئية. ومع توسع دور الخدمات الطاقية والاستشارات البيئية، تزايدت الحاجة إلى مديرين يجمعون بين مهارات اتخاذ القرار والقاعدة التقنية الصلبة.

1.3.3 على المستوى الوطني

أدت ندرة الموارد الطبيعية والمنافسة العالمية المكثفة إلى تحويل الأولويات نحو تطوير تقنيات مبتكرة وإدارة الأنظمة الهندسية المعقدة بفعالية. وفي البلدان النامية، أدى انتشار "مشاريع تسليم المفتاح (Turnkey Projects) "إلى زيادة التركيز على مهارات التنسيق والإدارة والتمويل بدلاً من الخبرة الفنية البحتة.

1.4 -متطلبات القبول للبرنامج

للالتحاق ببرنامج ماجستير الهندسة في **هندسة الطاقة المتجددة والبيئة** يشترط ما يلي:

- الحصول على شهادة البكالوريوس في مجال الهندسة من جامعة معترف.
- المعدل التراكمي للطالب (GPA) لا يقل عن 2.40 / 4.00 (أو جيد) في شهادة البكالوريوس. ويجوز قبول الطالب إذا كان يحمل دبلوم في مرحلة ما بعد البكالوريوس في مجال ذي صلة (الحد الأدنى من المعدل التراكمي من 3.00 / 4.00 (أو جيد جدا).
- يعتمد البرنامج على مبدأ "التكامل الهندسي"، حيث أن مشاريع الطاقة المتجددة والبيئة في العصر الحديث لم تعد تقتصر على تخصص واحد، بل هي مزيج من عدة مجالات.

الفئات المستهدفة

وفقاً لنتائج الدراسات الاستقصائية التي أجريت سابقاً، يستهدف هذا البرنامج المهندسين من مختلف التخصصات المتداخلة، بما في ذلك:

- مهندسي الهندسة البحرية :لتصميم وإدارة طاقة الأمواج، المد والجزر، والأنظمة البيئية للمنصات البحرية.
- مهندسي الهندسة الكهربية :لتطوير أنظمة الشبكات الذكية ، وتوليد ونقل الطاقة من المصادر المتجددة.
- مهندسي الهندسة الميكانيكية :لتصميم توربينات الرياح، المحطات الحرارية، وأنظمة معالجة النفايات الصلبة.
- مهندسي الهندسة الصناعية :لتحسين العمليات، إدارة سلاسل الإمداد المستدامة، وتخصيص الموارد

1.5- متطلبات التخرج

يجب على المتقدم إنجاز 33 ساعة معتمدة من مقررات الماجستير للحصول على الدرجة العلمية.

يتم تقسيم إجمالي الساعات المعتمدة (33 ساعة) على النحو التالي:

يتوزع المنهج الدراسي على أربعة محاور أساسية لضمان تأهيل المهندس إدارياً وفنياً:

- ٦ ساعات معتمدة مقررات أساسية.
- ٦ ساعات معتمدة مقررات اختيارية عامه (يتم اختيار مقررين فقط)
- ١٢ ساعات معتمدة مقررات اختيارية (يتم اختيارها بناء على التخصص ما بين تكنولوجيا الطاقة المتجددة أو إدارة البيئة والطاقة)
- ٩ ساعات معتمدة دراسة حالة تطبيقية.
- يحتاج الطالب إلى تسجيل مقررين أساسيان إجباريان، يجب أن يتم تدريسهما في النظامين، ثم يقوم باختيار مقررين اختياريين من المقررات الاختيارية العامة.
- عند إتمام المقررات الأساسية الإلزامية والمقررات الاختيارية العامة، سيختار الطالب مساره واحد من النظامين المتاحين (تكنولوجيا الطاقة المتجددة) أو (إدارة البيئة والطاقة)، سيحتاج الطالب إلى دراسة أربع مقررات متخصصة من الدورات الموجهة المتاحة في كل وحدة كما هو موضح في الجدول التالي.
- لإنهاء البرنامج، يجب أن يسجل الطالب تطبيق دراسة الحالة الذي يحتوي على ٩ ساعات معتمدة.

2

2 هيكل البرنامج

2.1 مقررات أساسية

القائمة التالية من المواد هي مواد إجبارية والمطلوبة من قبل جميع الطلبة و هو ما يعادل ٦ ساعات معتمدة.

رمز المقرر	اسم المقرر	الساعات المعتمدة
ECR 7101	مقدمة للطاقة المتجددة	3
ECR 7102	مقدمة في العلوم البيئية	3

2.2 المواد الاختيارية العامة

القائمة التالية من المواد هي مواد اختياريه عامه والمطلوبة من قبل جميع الطلبة اختيار مقررين فقط وهو ما يعادل ٦ ساعات معتمدة.

رمز المقرر	اسم المقرر	الساعات المعتمدة
ECR 7103	حسابات ديناميكا الموائع المتقدمة	3
ECR 7104	الاستدامة	3
ECR 7105	المواد لأنظمة الطاقة المتجددة	3
ECR 7106	اقتصاديات وتمويل الطاقة المتجددة	3

2.3 مواد اختيارية متخصصه (نظام تكنولوجيا الطاقة المتجددة)

ويطلب من الطلاب اختيار ٤ مقررات (ما يعادل ١٢ ساعات معتمدة) من القائمة التالية

رمز المقرر	اسم المقرر	الساعات المعتمدة
ECR 7201	موارد وتقنيات الطاقة الشمسية	3
ECR 7202	موارد وتقنيات طاقة الرياح	3
ECR 7203	موارد وتقنيات طاقة الأمواج والمد والجزر والطاقة المائية	3
ECR 7204	مواضيع متقدمة في تطبيقات الطاقة المتجددة	3
ECR 7205	تطبيقات الطاقة المتجددة للزراعة المستدامة وإنتاج الغذاء/الوقود الحيوي	3
ECR 7206	النمذجة الديناميكية والمحاكاة لأنظمة الطاقة المتجددة	3
ECR 7206	تقنيات تحلية المياه	3
ECR 7208	أنظمة تخزين الطاقة للطاقة المتجددة	3
ECR 7209	إدارة الطاقة المتجددة	3

2.4 مواد اختيارية متخصصه (إدارة البيئة والطاقة)

ويطلب من الطلاب اختيار ٤ مقررات (ما يعادل ١٢ ساعات معتمدة) من القائمة التالية

رمز المقرر	اسم المقرر	الساعات المعتمدة
ECR 7301	تقييم الأثر البيئي	3
ECR 7302	تقييم دورة الحياة	3
ECR 7303	معالجة النفايات الصناعية	3
ECR 7304	الاحتراق وتلوث الهواء	3
ECR 7305	محاكاة وتقييم وإدارة المباني الخضراء	3
ECR 7306	إدارة الطاقة في المنشآت الصناعية	3
ECR 7307	المخاطر البيئية والمخاطر	3

2.5 دراسة حالة تطبيقية

دراسة حالة تطبيقية بواقع ٩ساعة معتمدة كمتطلب أساسي من جميع الطلبة في مجال التخصص يوافق عليه المشرف على الدراسة ومجلس القسم.

رمز المقرر	اسم المقرر	الساعات المعتمدة
ECR790E	دراسة حالة تطبيقية (مسار تقنيات الطاقة المتجددة او مسار الإدارة البيئية وإدارة الطاقة)	9