Eastern Mediterranean University

"Virtue, Knowledge, Advancement"

FACULTY OF ENGINEERING

2021/2022
ACADEMIC YEAR

MECHANICAL ENGINEERING DEPARTMENT

MECHATRONICS ENGINEERING PROGRAM

me.emu.edu.tr

THE WORLD UNIVERSITY RANKINGS 2022 TOP 600

QS STARS RATED FOR EXCELLENCE 2019 TEACHING

QS STARS RATED FOR EXCELLENCE 2019 FACILITIES

QS STARS RATED FOR EXCELLENCE 2019 INCLUSIVENESS

QS STARS RATED FOR EXCELLENCE 2019 INTERNATIONALIZATION

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Welcome Note by Head of Department

Dear Students,

I would like to welcome you to the Department of Mechanical Engineering. I am pleased that you have chosen our department and I hope that you would find the university experience in our department exceedingly rewarding. Our department has a distinguished record in both teaching and research. Our Mechanical and Mechatronics Engineering BS programs are accredited by ABET.

Mechatronics Engineering undergraduate program is administered by the Mechanical Engineering Department and jointly supported by the Mechanical Engineering Department and Electrical and Electronics Engineering Department since 2009-2011. Mechatronics is an inter-disciplinary field, combining traditional electrical, electronic, mechanical, control and computer engineering skills, applied to solve problems that bridge the boundaries between these disciplines, requiring multi-skilled practitioners. The objective of the program is to inculcate a flexible, multi-technological approach in our graduates by imparting the knowledge of mechanical, electrical and electronics, and computer engineering.

Together we strive to provide you with high-quality engineering education and hope that all our graduates have a strong education and practical background, with teaming and leadership skills. We believe in a broad education which instills a sense of lifelong learning, community and leadership values in students, together with an appreciation of global issues. We encourage students to express and improve themselves with their knowledge and skills to respond to engineering problems in wide range of areas. We are dedicated to prepare our graduates to be leading contributors in response to the dire needs of industry, academia, and government, by providing them high quality education through continuous improvement of the program. Our curriculum undergoes regular revisions to ensure local relevance with a global perspective. Our vision is to graduate creative problem-solvers who can tackle issues from a variety of perspectives. Our mission is to empower you with sound knowledge of the foundations of mechanical engineering along with effective communication, analytical, and problem-solving skills and thus prepare you as competent engineers who can adapt to new circumstances in professional life.

As a department our vision is to be recognized nationally and internationally for excellence in mechanical engineering education, graduating world-class mechanical engineers, and supporting innovative research. We aim to be the first choice in the Middle East region for students starting their engineering education, and for employers that hire mechanical engineers.

We aim to provide academic guidance to help you with program requirements, course prerequisites, course sequencing, etc., as well as provide career guidance to help you choose a meaningful and gratifying job after graduation. All our faculty members, staff and I look forward to working closely with you during your education here in the Mechatronics Engineering Program. You will notice that our department has a very friendly atmosphere and we always promote a close knit community of students and faculty. Please make good use of this document and I encourage you to contact our faculty and staff if you have any questions regarding the department and our programs.

Sincerely

Prof. Dr. Hasan HACIŞEVKİ
Chair of Department

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1- GENERAL INFORMATION

1.1 Mechanical Engineering Department

The Department of Mechanical Engineering (ME) is one of the first three departments established in this University. The graduate program of the department was started in 1990. The Department offers programs of study leading to the degrees of Bachelor of Science (B.S.) in Mechanical & Mechatronics Engineering, Master of Science (M.S.), and Doctor of Philosophy (Ph.D.) in Mechanical Engineering. The Mechanical Engineering Department has the largest population of international students in EMU at present. Our Mechanical and Mechatronics Engineering BS programs are accredited by ABET (Accreditation Board for Engineering and Technology). ABET is a non-profit organization and accreditation board that accredits programs in engineering, applied science, computing etc. ABET assures the quality of university programs, college or institutions. It is required by ABET that our engineering programs meet the quality standards set by ABET. ABET accreditation provides vast number of opportunities to students, institutions, programs and employers, for example, it helps students and parents to choose among quality assured programs. Engineers, graduated from an ABET accredited engineering program, are distinguished from others as employers seek for well-prepared engineers. Institutions or colleges continuously improve quality of their programs for better outcomes.

1.2 Eastern Mediterranean University Mission Statement

The Eastern Mediterranean University has set as a mission becoming a university acting in line with universal values, guided by internationally recognized academic educational criteria, providing solutions for regional and international problems with a sense of social responsibility, raising graduates who have internalized multiculturalism, free thought, tolerance and participation as well as carrying out work to make international improvements in the fields of production, science, arts and sports. This statement is published in the University website: http://ww1.emu.edu.tr/en/about-emu/mission-and-vision/c/594

1.3 Faculty of Engineering Mission Statement

- Contribute to the betterment of our society through the pursuit of innovative education, active learning and cutting edge scientific research.
- Maintain our regional leadership in engineering education and research, and develop close relationships with and provide knowledge, services and technology to all related communities in its area.
- Provide opportunities and create an esteemed academic environment for the exchange of diversity of cultures, social, political and ideological knowledge and professional talents among the students as well as the faculty.
- Assure quality and foster systematic pursuit of improvement in quality of education to graduate engineers with abilities to analyze and interpret data, design and conduct experiments, apply knowledge to solve engineering problems in a global, economic, environmental, societal context with focus on social, political, ethical, health and safety, manufacturability, and sustainability in a life-long learning capacity.

This statement is published in the Faculty website: http://eng.emu.edu.tr/

1.4 Departmental Mission Statement

The mission of the Mechanical Engineering Department is to cultivate on the creation integration, transfer and application of knowledge relevant to the disciplines of Mechanical and Mechatronics Engineering. The aim of the Mechanical and Mechatronics Engineering programs is to encourage students to express and improve themselves with their knowledge and skills to respond to engineering problems in wide range of areas. The programs are dedicated to prepare the graduates to be leading contributors in response to the needs of industry and society. Also, the purpose of the post graduate programs is to contribute to the technological improvement to serve national and international communities. Through continuously developing our educational and research programs, students graduating as engineers become professional leaders who can apply their knowledge and skills to work on the engineering problems encountered by community and industry. This statement is published in the Department website. https://me.emu.edu.tr/en/about-us/mission-and-vision

1.5 Mission of the Program

Mechatronics Engineering undergraduate program is administered by the Mechanical Engineering Department and jointly supported by the Mechanical Engineering Department and Electrical and Electronics Engineering Department since 2009-2011. Mechatronics is an inter-disciplinary field, combining traditional electrical, electronic, mechanical, control and computer engineering skills, applied to solve problems that bridge the boundaries between these disciplines, requiring multi-skilled practitioners. The objective of the program is to inculcate a flexible, multi-technological approach in our graduates by imparting the knowledge of mechanical, electrical and electronics, and computer engineering. The mission of the mechatronics engineering program is to educate creative engineers that

can establish the relationship between mechanical, electrical, electronic, and software and control engineering subjects and generate pragmatic solutions for engineering problems.

1.6 Program Educational Objectives

The educational objectives of the undergraduate program in Mechatronics Engineering are to provide a high-standard education and training to its students so that beyond 3 to 5 years after graduation will enable the graduates to

PEO1: Perform successfully in mechatronics engineering and related fields
PEO2: Attain advancement in their career through professional activities and higher education
PEO3: Develop versatile relations in a global work environment
PEO4: Have respect and appreciation for individuals, society, human heritage and environment

1.7 Student Outcomes

The Mechatronics Engineering program ensures the student outcomes '1' through '7' in its curriculum, and the outcomes are evaluated through direct and indirect assessments. Upon completion of the BS in Mechatronics Engineering Program at the Department of Mechanical Engineering, Eastern Mediterranean University, the graduates have the following knowledge, understanding, and capabilities:

1. **an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics**
2. **an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors**
3. **an ability to communicate effectively with a range of audiences**
4. **an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts**
5. **an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives**
6. **an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions**
7. **an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.**

7.1 Department Website

The following information is made available on the department's homepage (https://me.emu.edu.tr/en):

- Program Educational Objectives
- Student Outcomes
- Enrollment Statistics
- News
- About Us
- Mission and Vision
- Facilities
- Laboratories
- Academic Calendar
- Information Booklet
- Semester Course List
- Honor and High Honor List
- Curriculum
- Course Descriptions
- Capstone Team Projects
- Academic Staff
- Administrative Staff
- Technician Staff

2- STAFF

2.1. Academic Staff of Mechanical Department
Full Time Faculty Members

Hasan HACISEVKI

Chair of the Department, Professor of Mechanical Engineering. Dr. Hacisevki received his B.S, M.S and Ph.D. degrees from Eastern Mediterranean University. Dr. Hacisevki`s research interests include Experimental studies in Fluid Dynamics, Automotive Engineering and Mechanical Design.
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Murat ÖZDENEFE

Vice Chair of the Department, Associate Professor of Mechanical Engineering. Dr. Özdenefe gained his BSc. from Mechanical Engineering Department, Çukurova University. Dr. Özdenefe then received his MSc. in Mechanical Engineering Department, Eastern Mediterranean University. He completed His PhD in School of Mechanical, Aerospace and Civil Engineering, The University of Manchester with the PhD. project "Phase Change Materials and Thermal Performance of Buildings in Cyprus". Dr. Özdenefe's research interests are: Building Heat Transfer, Building Thermal Performance Simulation, Phase Change Materials, Energy Auditing, Passive Buildings.
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Devrim AYDIN

Vice Chair of the Department, Assistant Professor of Mechanical Engineering. Dr. Aydin gained his BSc. and MSc. from Mechanical Engineering Department, Yildiz Technical University. He completed His PhD. in Institute of Sustainable Energy Technology, Engineering Faculty, The University of Nottingham with the PhD. project "Investigation of innovative thermochemical energy storage processes and materials for building applications". Dr. Aydin's research interests are: Thermal energy storage, adsorption/absorption materials and processes, evaporative cooling, desiccant systems, power cycles, low carbon buildings, drying systems, solar energy systems and water harvesting technologies.
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Uğur ATİKOL

Professor of Mechanical Engineering. Dr. Atikol is a Professor of Mechanical Engineering. He received his B.S degree from the University of Leicester and M.Sc. degree from the University of Manchester. He completed his Ph.D. in Eastern Mediterranean University. Dr. Atikol`s research interests are Energy Management, Planning and Utilization, Solar Energy and Desalination. He has been the director of EMU Energy Research Center since 2004.
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Qasim ZEESHAN

Associate Professor of Mechanical Engineering. Dr. Qasim Zeezhan received his B.E. Mechanical Degree from National University of Sciences and Technology (NUST), Pakistan. He received his MS and PhD in Flight Vehicle Design from Beihang University (BUAA), China. His research interests include Aerospace Vehicle Design, Multidisciplinary Design and Optimization (MDO), Manufacturing Systems Engineering, Industry 4.0, Machine Learning and application of Modern Meta-Heuristic Optimization Techniques, and Composite Materials.
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Mohammed ASMAEL

Assistant Professor of Mechanical Engineering. Dr Mohammed his BSc. From faculty of mechanical engineering, AL-TAHDI University-Libya. Dr Mohammed then received his MSc. in Mechanical-Advanced manufacturing technology from faculty of Mechanical Engineering, University Technology Malaysia (UTM). He completed his PhD in faculty of Mechanical and Manufacturing Engineering, University Tun Hussein Onn Malaysia (UTHM). Dr Mohammed research interests are: Aluminum alloys, Magnesium alloys, Casting, Solidification, Phase transformation, Thermal analysis, welding, Materials Engineering and Performance.
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Babak SAFAEI

Assistant Professor of Mechanical Engineering. Dr. Babak Safaei received his Bachelor and Master degree in Mechanical Engineering from Iran. He received his PhD. degree in Mechanical Engineering from Department of Mechanical Engineering at Tsinghua University. Dr. Babak's research interests are: Micro and Nano Mechanics, Computational Mechanics, Advanced Manufacturing, Design of Lightweight Structures, Composite Materials, Mechanical Vibration, Biomechanics and Drug Delivery, Nonlocal Theory, Finite Element and Mesh-Free Method.
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Assistant Professor of Mechanical Engineering. Dr. Omid Shekoofa received his Bachelor degree in Electronic Engineering from Iran University of Science and Technology (IUST). Dr. Omid then received his Master degree in Physics Engineering from Amirkabir University of Technology (AUT). He also received his Ph.D. degree in Electronic Science and Technology from Department of Electronic Engineering at Tsinghua University. Dr. Omid's research interests are power systems for space and terrestrial applications, nanomaterials for solar energy harvesting, energy storage system design and management, mechatronics, and robotics.
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Emeritus Faculty Members

Fuat EGELİOĞLU

Professor Emeritus of Mechanical Engineering. Dr. Egelioglu received his B.S degree from Bogazici University and received his M.Sc. and Ph.D. degrees from Eastern Mediterranean University. His research interests include Energy Savings, Renewable Energy and Energy Conversion.
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Ibrahim SEZAİ

Professor Emeritus of Mechanical Engineering. Prof. Sezai received his B.Sc. and M.Sc. degrees from Middle East Technical University, and second M.Sc. from UMIST, University of Manchester, UK. Furthermore, he received his Ph.D. from Eastern Mediterranean University. Prof. Sezai`s current research interests include Computational Heat and Fluid Flow, Solar Energy, Flow through Porous Media and Crystal Growth.
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Part Time Faculty Members

Barış HACIŞEVKI

Part time Lecturer in Mechanical Engineering. Barış Hacışevki was born in Nicosia/Cyprus. He completed his high school education at Turk Maarif College. Later, he completed Bachelor's Degree in Mechanical Engineering at Eastern Mediterranean University. After a short job experience as a sales engineer at Borusan Oto, he moved to the UK to study for a postgraduate degree in Engineering Business Management. Succeeding the postgraduate degree, he moved back to Cyprus to work for Cypri-Cola Company. His role was production and maintenance engineer for the Coca-Cola production plant. Lastly, he left the Cypri-Cola Company in order to start his engineering design office. His area of work consists of the design of plumbing and HVAC systems for the buildings. He is currently a board member and treasurer at Cyprus Turkish Chamber of Mechanical Engineers.
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2.4 Academic Staff of Electrical & Electronics Department

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2.6. Administrative and Technical Staff of Electrical Department

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3- FACILITIES

3.1 American Society of Mechanical Engineers (ASME) Student Section

ASME is a non-profit educational and technical organization of professional mechanical engineers. ASME Student Section, in EMU, has been established since March 1997. EMU is one of the four universities in North Cyprus and Turkey having ASME Student Section. The main purpose of ASME Student Section is to organize conferences relating to mechanical engineering topics and to share views and ideas between prospective mechanical engineers and industry.

3.2 Society of Mechatronics Engineering Students (EMUMTXS)

EMUMTXS was established by the students of MECT program in order to share knowledge, experience and enthusiasm. EMUMTXS aims to lead mechatronics engineering students to act together and share their experiences.

3.3 Departmental Library & Reading Area

Departmental library in ME018 consists of nearly 350 books, M.S. and PhD. theses (submitted by mechanical engineering graduate students), and undergraduate project reports.

3.4 Conference Hall

Conference Hall (MESEM2) is located within the Mechanical Engineering Department building at the ground floor. It is equipped with the instructional technology in order to have an excellent teaching environment. This unit is also used for national/international seminars and presentations.

3.5 Laboratories

The program has extensive, well equipped modern laboratories that cover all the core disciplines of Mechanical, Electrical and Electronics Engineering. The Mechanical Engineering department has separate laboratories for ME008 Mechanical Workshop, ME014 Mechanics of Materials Lab., ME016 Electric Vehicle Development Center, ME018 Library & Reading Area, ME020 Fluid Mechanics & Automotive Lab., ME024B Manufacturing Lab., ME024C Material Science Lab., ME024D Metrology and Quality Control Lab., ME025 Thermal Sciences Lab. ME028 Mechatronics Lab., ME029 CNC Workshop, and a separate room ME001 for Capstone Team Projects. The Undergraduate Computer Laboratory EE117, EE118 and EE119, Logic Circuit Design and Microprocessors Laboratory –EE002, Basic Circuits Laboratory – EE005, Electronics Laboratory – EE001, Control Systems Laboratory – EE004 are available in the Electrical and Electronics Engineering Department. The laboratories are equipped with apparatus ranging from basic instrumentation for fundamental exercises to more advanced experiments using its state-of-the-art equipment. A variety of modern engineering tools and software are available for teaching and research. The laboratories provide undergraduate level instruction to meet the requirements of the industry and also serve as a platform for graduate level research.

Mechanical Workshop - ME008

The workshops include well-equipped machining, sheet metal working and welding sections. The machining section is equipped with various sized lathes, milling machines, drilling machines, shaper, and grinding machines including tool, surface and cylindrical grinders. The welding section has a number of arc and gas welding equipment including TIG and MIG welding sets and a Plasma Cutting Machine. These sections are available for use by staff and students under supervision. The workshop staff also undertakes industrial work and projects.

Mechanics of Materials Laboratory - ME014

Mechanics of Materials Laboratory provides testing facilities for Strength of Materials, Engineering Dynamics and Vibrations. Whirling of shafts apparatus, Coriolis acceleration apparatus, gyroscopes, inertia wheels, and balancing equipment are available for tests. Moreover, other equipment is also available for stress analysis experimentation, including thin/thick walled cylinders for experiments, beam deflections experiments with strain gages, torsion testing machine, and a 50 ton hydraulic press for tension & compression experiments. A vibration bench is also available to study the effects of various vibration parameters.

Electric Vehicle Development Center - ME016

Dedicated laboratory reserved for research and development purposes of electric vehicle technologies. Mechanical parts, electrical circuits and mechatronic systems are designed, developed and manufactured in this facility.

Aerodynamics Laboratory - ME017

In the Aerodynamics Laboratory, there are two wind tunnels. Wind tunnels are used to study aerodynamics, effect of air, aerodynamic forces and how air flows through the tunnel. One of the wind tunnels has maximum capacity of 50 m/s with 10x40 cm test section and the other wind tunnel has the maximum capacity of 30 m/s with 50x50 test section.

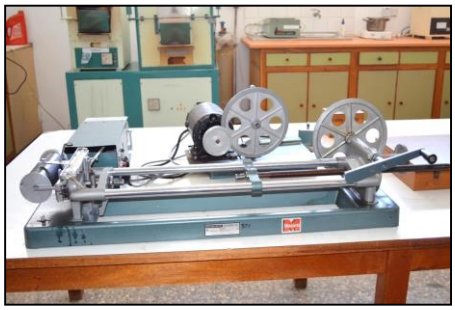
Fluid Mechanics and Automotive Laboratory - ME020

Fluid Mechanics Laboratory contains following setups for demonstration and study of basic fluid mechanics principles as flow measuring apparatus, Heleshaw apparatus, pipe friction loss, vortex motion apparatus, water jets, etc. In addition, small compact wind tunnel and air bench enable students to perform experiments on compressible fluids. This laboratory also contains Francis and Pelton turbines, axial and radial flow pump-turbine test rigs, and pumps of various sizes for experimentation.
Automotive Laboratory is equipped for performance tests on petrol/diesel, two and four stroke engines. A variable compression ratio I.C. engine test bed is used for the study of compression ratio and timing effects on petrol and diesel engine performance.

Manufacturing Laboratory - ME024B

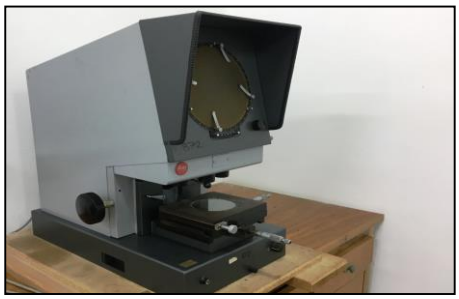
The Manufacturing laboratory seeks to establish a rational foundation for manufacturing based on a systematic understanding of the complex interactions among the many areas of manufacturing like process planning, design, simulation, and control. The facilities include Programmable Logic Controllers (PLC) and software programs for Manufacturing Lifecycle Management (MLM), G-Code programming, industrial robot programming, material resource planning and ergonomic analysis.

Materials Science Laboratory - ME024C



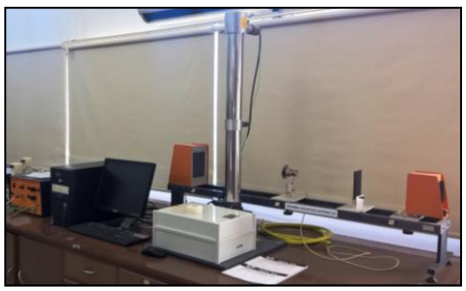
Materials Science Laboratory provides testing facilities for determining various properties of engineering materials, such as strength & hardness, and testing for creep and impact. Available equipment includes optical microscopes, hardness tester, impact tester, tensile testing apparatus, corrosion test apparatus and furnaces for heat treatment.

Metrology and Quality Control Laboratory - ME024D



The equipment in the Quality Control laboratory enables students to perform roundness, flatness, and straightness tests as well as the tests for checking accuracy of the measuring instruments and machine tools. Optical instruments such as autocollimator, angle decor, interferometer, alignment telescope, and optical microscope are also available. The laboratory is also equipped with digital instruments and printer for statistical process control.

Thermal Sciences Laboratory - ME025



In the Thermodynamic Section, facilities are available for experimentation and demonstration of practical concepts to undergraduate students. These experimentations include steam bench, steam engine, air compressor, bomb calorimeter, flash point apparatus and converging-diverging nozzle, and ram-jet.

In the Heat Transfer Section, various tests can be conducted on conduction, free and forced convection and radiation heat transfer apparatus. Heat exchanger equipment is used to investigate the performance of parallel- and counter-flow configurations. The laboratories are also equipped with a hot wire anemometer and data loggers.

Refrigeration and Air Conditioning Section contains test and demonstration equipment on refrigeration ranging from small scale to industrial scale. Some benches are modular and allow connection of different modules for comparative studies. Tools necessary for servicing a refrigeration system are also available. An air conditioning bench with pre-heaters, after-heaters and humidifiers, enables psychometric processes to be studied. An experimental cooling tower is also available for tests.

Mechatronics Laboratory – ME028

The Mechatronics Lab provides state of the art facilities and experimental setups to learn and enjoy the field of mechatronics. These experiments cover the function of basic devices for measuring and acquiring data of different kinds of variables in mechatronic systems with emphasis on analog electronics, digital electronics, sensors and transducers, actuators, microprocessors and PLCs.

CNC Workshop – ME029

This laboratory is used for undergraduate and graduate studies, as well as research. The hardware and software available at the laboratory include: Master-CAM Mill version 7.0, Pro-Model, Mechanical Desktop, Mill-CAM Designer, Lathe CAM Designer, Genius, AutoCAD, Master-CAM, Solid Works etc., and the hardware such as CNC turning and milling machines.

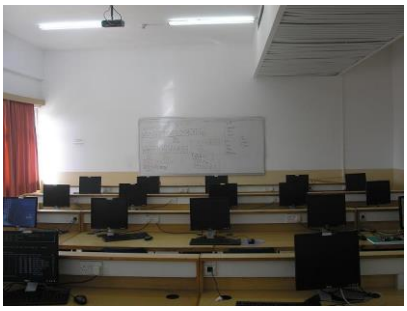
Computer Laboratories - ME116

There are three computer laboratories in addition to a CAD/CAM Lab. Of these labs, two are AUTOCAD labs, with each one having 30 computers and a plotter. These equipment are used, primarily, for engineering graphics and engineering drawing courses. The Computer Laboratory is an internet laboratory facilitated with 30 computers.

Capstone Team Project Room - ME001

This is a reserved workplace is a space dedicated for prototype assembly. The capstone project teams regularly comes together to finalize their design at this facility, which also serves as a storage space for project components and tools for each individual group. The facility offers various hand tools, working desk area, storage cupboards and internet access.

Undergraduate Computer Laboratory - EE117, EE118 and EE119.



The laboratory provides facilities for undergraduate computer-based courses. It also provides a wide range of computer-based tools to students for their various computing needs in courses and projects. This laboratory is equipped with 53 personal computers connected to a network with file and print servers providing shared resources.

Logic Circuit Design and Microprocessors Laboratory –EE002

This laboratory is used for teaching the fundamentals of combinational and sequential logic circuits. The equipment includes a logic analyzer, several boards with power supplies, clock generators and LED displays. Also, this laboratory provides facilities for performing experiments on microprocessors and single-board microcomputers. The equipment includes several evaluation kits based on the 8086 microprocessor, suitable both for software and interfacing experiments, and also 80386 based PC/AT interface experimental tools and micro-controller evaluation boards.

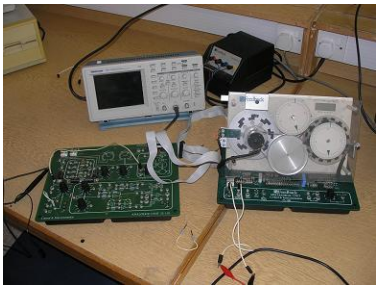
Basic Circuits Laboratory – EE005

This laboratory is used to familiarize students with the fundamental laboratory procedures of electrical measurements. In addition to demonstrating the uses of voltmeters, ammeters, watt-meters, signal generators and oscilloscopes, experiments are designed to illustrate basic electrical circuit theory concepts for linear and non-linear DC circuits, simple time-invariant circuits, and single-phase and three-phase linear AC circuits.

Electronics Laboratory – EE001

Well equipped for undergraduate electronics experiments, this laboratory is used to familiarize students with electronic devices, amplifiers and analogue and digital electronic circuits. It also provides facilities for undergraduate and graduate research projects.

Control Systems Laboratory – EE004



This laboratory provides experimental facilities to help students grasp the theory and applications of feedback control systems. The equipment includes electro-pneumatic sets, electro-hydraulic sets, servo systems, a computer based servo fundamental training system, DC servo mechanism and other electronic apparatus that can be used as basic elements to construct open- or closed-loop systems of various orders. The set-up allows for a number of experiments to demonstrate techniques of system modeling, analysis and design in control engineering.

4- PROGRAM CURRICULUM

4.1 Courses

The Bachelor of Science (B.S.) Mechatronics Engineering program offers a wide range of courses in the curriculum which cover all the key areas of mechatronics engineering. The coursework covers the core subjects in electrical circuits, electronics, control systems, material science, mechanics, thermal sciences, design and manufacturing. A wide range of area elective courses offered to students in their *senior* year enables them to specialize in their areas of interest. According to the requirement, courses are supplemented with tutorials and experimental work. Moreover, students are required to spend a total of *eight weeks* in industry to gain practical experience. The breadth and depth of the Mechatronics engineering program curriculum enables our graduates to choose from a variety of career options in research, development, design, production, sales, and management in the industry.

Subject Areas in Mechatronics Engineering

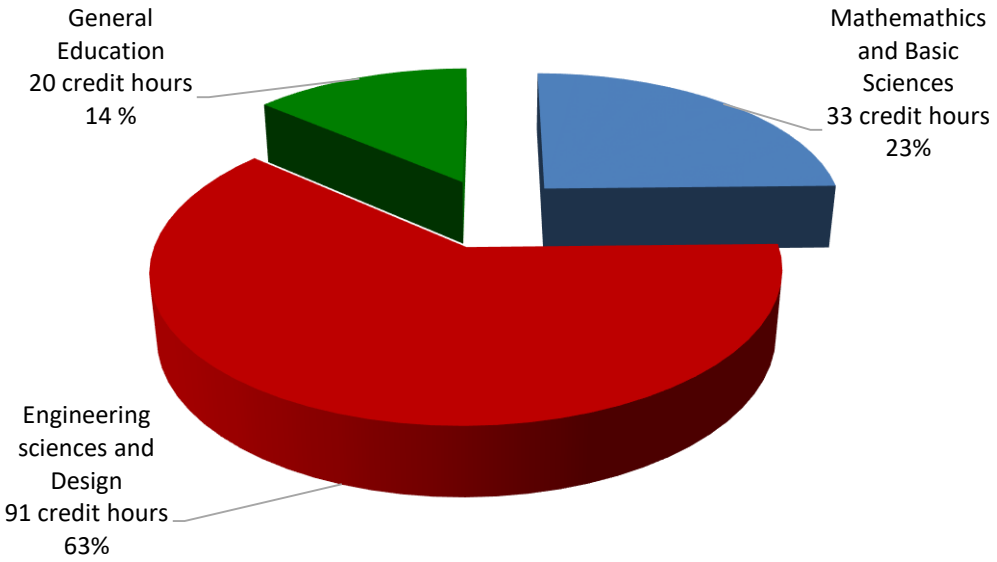
Consistent with the other engineering programs at Eastern Mediterranean University, Mechatronics Engineering BS curriculum begin with studies in basic science and mathematics. These basic science and mathematics courses are applied in engineering sciences and design courses. Ability of communication; oral and written, understanding ethical and professional issues and working in multicultural environment are mostly gained with general education courses. Engineering design activities start during the second year in various courses, progressing in-depth during the third and fourth years as the student's technical skill increases. The design experience culminates with a Capstone Design sequence, which builds upon the fundamentals of engineering, mathematics, science, communication skills, humanities and social sciences, economics, ethics, safety, reliability, industrial applicability, ergonomics and social impact as well as engineering standards. This helps the students to prepare themselves to their future career. Mechatronics Engineering curriculum includes three area elective courses i.e. Area Elective that are specially designed, aiming to give profound knowledge in particular areas.

Curriculum Course Categories

Courses in Mechatronics Engineering Program curriculum is sub grouped under three subject areas namely:

- Engineering Sciences and Design
- Mathematics and Basic Sciences
- General Education

Mathematics and Basic Sciences courses comprise 23% of the total credit hours, Engineering Sciences and Design courses constitute 63% of the total credit hours and the General Education courses are 14% of the total credit hours in the Mechatronics Engineering Program. Total credit hours and percentages of each subject area can be seen in Figure.



Total credit hours and percentages of each subject area of Mechatronics Engineering Program

The following list provides information on each course in the following order: Semester, Reference Code, Course Code, Full Course Title, Credit (weekly lecture hours, laboratory hours and tutorial hours) and Prerequisite Courses.

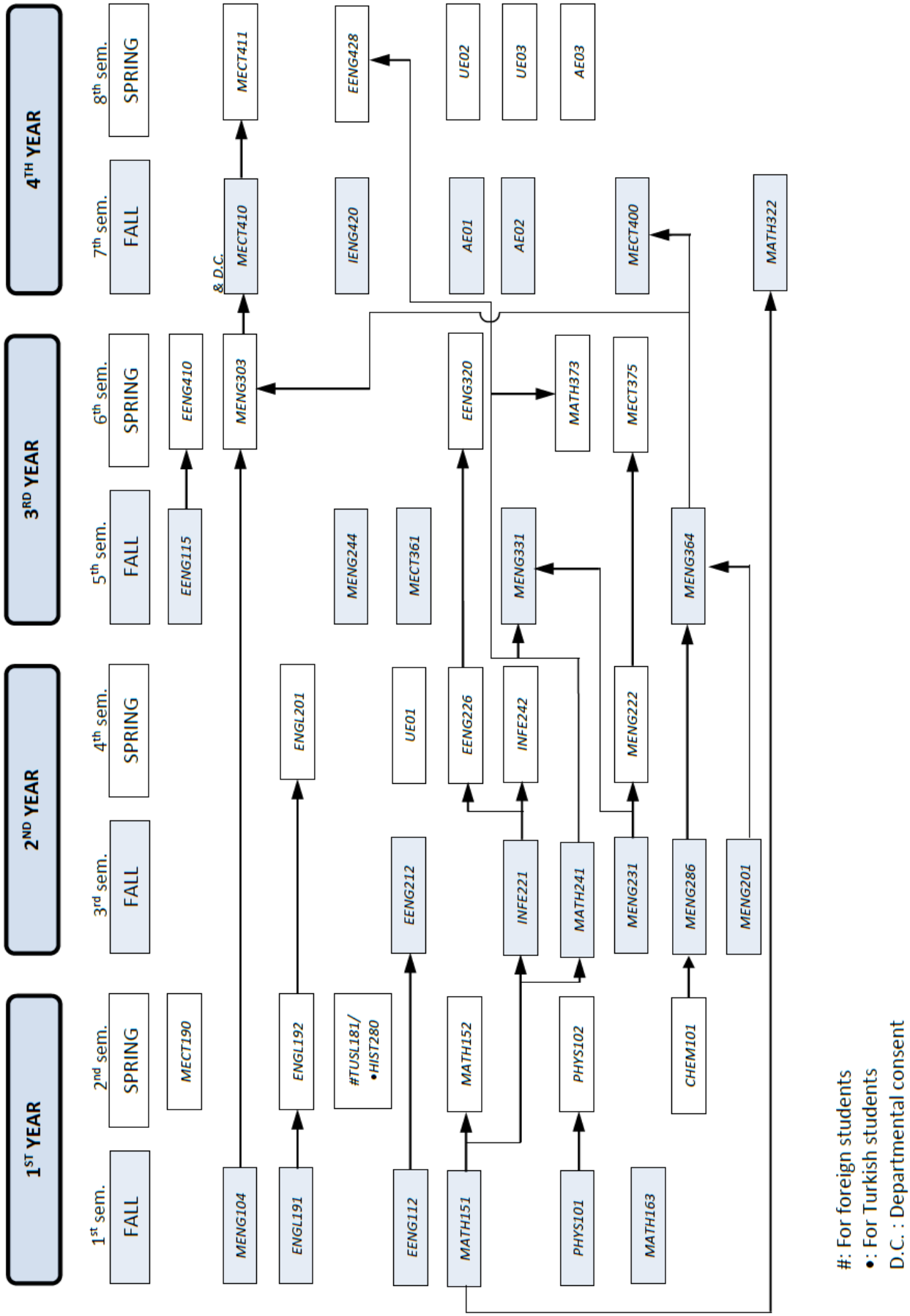
Mechatronics Engineering Curriculum

Semester	Ref Code	Course Code	Full Course Title	Course Category	Credit				Prerequisites	ECTS
					Lec	Lab	Tut	Total		
1	2A710	MENG104	Engineering Graphics	AC	2	3	0	**3**		8
1	2A711	EENG112	Introduction to Programming	UC	4	1	0	**4**		8
1	2A712	ENGL191	Communication in English - I	UC	3	1	0	**3**		5
1	2A713	MATH151	Calculus – I	FC	4	0	1	**4**		6
1	2A714	PHYS101	Physics – I	FC	4	1	0	**4**		6
1	2A715	MATH163	Discrete Mathematics	AC	3	0	1	**3**		5
			1st Semester Total Credits					**21/21**		
2	2A720	MECT190	Introduction to Mechatronics Engineering	FC	1	0	1	**1**		3
2	2A721	CHEM101	General Chemistry	AC	4	0	1	**4**		6
2	2A722	ENGL192	Communication in English - II	UC	3	1	0	**3**	ENGL191	4
2	2A723	MATH152	Calculus – II	FC	4	0	1	**4**	MATH151	6
2	2A724	PHYS102	Physics – II	FC	4	1	0	**4**	PHYS101	6
2	2A725	TUSL181/ HIST280	Communication in Turkish*/ History of Turkish Reforms**	UC	2	0	0	**2**		2
			2nd Semester Total Credits					**18/39**		
3	2A730	MENG201	Mechanical Workshop Practice	AC	1	3	0	**2**		3
3	2A731	MENG286	Materials Science	AC	3	1	0	**3**	CHEM101	6
3	2A732	INFE 221	Electrical Circuits	AC	4	1	0	**4**	MATH151	6
3	2A733	EENG212	Algorithms and Data Structures	AC	4	1	0	**4**	EENG112	6
3	2A734	MENG231	Engineering Mechanics	AC	3	0	1	**3**		6
3	2A735	MATH241	Ordinary Differential Equations and Linear Algebra	AC	4	0	1	**4**	MATH151	6
			3th Semester Total Credits					**20/59**		
4	2A740	INFE242	Electronics	AC	4	1	0	**4**	INFE221	6
4	2A741	MENG222	Strength of Materials	AC	4	1	0	**4**	MENG231	6
4	2A742	UE-01	University Elective I (IENG355- Engineering Ethics)	UE				**3**		3
4	2A743	EENG226	Signals and Systems	AC	4	1	0	**4**	INFE221	6
4	2A744	ENGL201	Communication Skills	FC	3	0	0	**3**	ENGL192	4
			4th Semester Total Credits					**18/77**		
5	2A750	MECT361	Mechatronics Components and instrumentation	AC	3	1	0	**3**		6
5	2A751	MENG244	Fundamentals of Thermodynamics	AC	3	1	0	**3**		5
5	2A752	MENG364	Manufacturing Technology	AC	4	1	0	**4**	MENG201 & MENG286	6
5	2A753	MENG331	Mechanical Vibrations	AC	4	1	0	**4**	MENG231 & MATH241	7
5	2A754	EENG115	Introduction to Digital Logic Design	AC	4	1	0	**4**		7
			5th Semester Total Credits					**18/95**		
6	2A760	MECT375	Machine Elements	AC	3	0	1	**3**	MENG222	6
6	2A761	MENG303	Computer Aided Engineering Design	AC	2	3	0	**3**	MENG104, MENG364	6
6	2A762	EENG320	Control Systems-I	AC	4	1	0	**4**	EENG226	7
6	2A763	EENG410	Microprocessors-I	AC	4	1	0	**4**	EENG115	7
6	2A764	MATH373	Numerical Methods for Engineers	AC	3	0	1	**3**	MATH241	5
			6th Semester Total Credits					**17/112**		
7	2A770	MECT400	Industrial Training	FC	0	0	0	**0**	MENG364	3
7	2A771	MECT410	Introduction To Capstone Design	FC	1	0	1	**1**	MENG303, D.C.	4
7	2A772	AE-01	Area Elective-I***	AE				**3/4**		7
7	2A773	AE-02	Area Elective-II ***	AE				**3/4**		7
7	2A774	IENG420	Fundamentals of Engineering Economy	AC	3	0	0	**3**		5
7	2A775	MATH322	Probability & Statistical Methods	FC	3	1	0	**3**	MATH151	5
			7th Semester Total Credits					**15/127**		
8	2A780	MECT411	Capstone Team Project	FC	1	4	0	**3**	MECT410	7
8	2A781	EENG428	Introduction to Robotics	AC	4	0	1	**4**	MATH241	4
8	2A782	AE-03	Area Elective-III***	AE				**3/4**		7
8	2A783	UE-02	University Elective II (Non-skill based)	UE				**3**		3
8	2A784	UE-03	University Elective III (Non-skill based)	UE				**3**		3
			8th Semester Total Credits					**17/144**		

* For foreign Students # For Turkish Students *** Departmental Consent

Mechatronics Engineering Students must take MECT444 as AE(01), the other two AEs should preferably be from EENG and CMPE coded courses i.e. from Electrical and Electronics Engineering, and Computer Engineering respectively.

Table 4.1 Prerequisite Flowchart for the Mechatronics Engineering Curriculum



4.2 Course Descriptions

Engineering Sciences and Design (Area Core Courses)

1. **MECT190 Introduction to Mechatronics Engineering**

This course aims to familiarize first year mechatronics engineering students by introducing them the fundamentals of discipli ne; program curriculum and faculty; job opportunities for mechatronics engineers; basic study skills; an overview of fundamentals laws and principle s of mechatronics engineering; introduction to problem layout and problem solving methods; simplified engineering modeling and analysis of mechatronic systems; collection and presentation of engineering data; Ethical issues; Occupational Health and Safety issue s; and the importance of computers and language skills for effective communication.

Credits: (1 / 0 / 1) 1 *Prerequisites: None* *ECTS credit:3*
Abbreviated Title: Int to Mechatronics Engineer *Category: Faculty Course* *Teaching Language: English*
Keywords: Introduction to Mechatronics Engineering, Standards, Ethics, Communication.

2. **MECT375 Machine Elements**

The course covers fundamentals of machine design which include: general design rules, load analysis, materials selection, str ess, strain and deflection analysis, failure theories, the concepts of reliability and safety, tolerances and fits; and introduces design guidelines.

Credits: (3 / 0 / 1) 3 *Prerequisites: MENG222* *ECTS credit: 6*
Abbreviated Title: Machine Elements *Category: Area Core Course* *Teaching Language: English*
Keywords: Design Of Machine Elements, Strength Of Materials, Stress, Deflection, Strength, Material Selection , Failure Theor ies, Reliability, Safety, Tolerance And Fits

3. **MECT361 Mechatronics Components and instrumentation**

Basic applied concepts in mechatronic components and instruments. Mechatronic components, systems, instrumentation, transduce rs and sensors. Cognitive systems.

Credits: (3 / 1 / 0) 3 *Prerequisites: None* *ECTS credit:6*
Abbreviated Title: Mechatronics Components and instrumentation *Category: Area Core Course* *Teaching Language: English*
Keywords: Mechatronics systems, transducers, sensors

4. **MECT410 Introduction to Capstone Design**

The objective of the capstone design course is to provide students with a realistic independent design experience that allows them to integrate and apply the basic disciplinary material they have learned during their engineering program to design a new product, device or process within multiple realistic constraints, while conforming to relevant standards, ethical issues and environmental polic ies. Research topics, may be principally experimental, theoretical, applied or simulation, will be chosen in consultation with a project supe rvisor.

Credits: (1 / 0 / 1) 1 *Prerequisites: MENG303 and D.C*** *ECTS credit: 2*
Abbreviated Title: Int to Capstone Design *Category: Faculty Core Course* *Teac hing Language: English*
Keywords: Design Process, Teamwork, Capstone Team Design Project, Senior Design Int roduction

5. **MECT400 Summer Practice**

This is a period comprising a minimum of 40 days' training to be completed in an industrial organization by all students who are effectively in their junior or senior year. Students should obtain approval of the Summe r Practice Committee before commencing training. Following this training, students will be required to write a formal report and present their work to the Summer Practice Committee. Th e aim of the training is to give students opportunity to observe real world engineering practices in a firm, to enhance the students' engineering knowledge acquired in class through field experience, to develop the students' job-related skills, to enable students to appreciate interdisciplinary team work, and to allow the students' to explore their career interests.

Credits: (0 / 0 / 0) 0 *Prerequisites: MENG364* *ECTS credit: 3*
Abbreviated Title :Summer Practice *Category: Faculty Core Course* *Teaching Language: English*
Keywords: Practical Training, Summer Practice, Industrial Organization, Summer Training

6. **MECT411 Capstone Team Project**

The objective of the capstone design course is to provide students with a realistic independent design and development experi ence that allows them to integrate and apply the basic disciplinary material they have learned during their engineering program to solv e practical design problems by synthesizing a new product, device or process within multiple realistic constraints. Projects are im plemented conforming to relevant standards, ethical issues and environmental policies. Research topics, may be principally experimental , theoretical, applied or simulation, will be chosen in consultation with a project supervisor.

Credits: (1 / 4 / 0) 3 *Prerequisites: MENG410* *ECTS credit: 7*
Abbreviated Title :Capstone Team Project *Category: Faculty Core Course* *Teac hing Language: English*
Keywords: Capstone Team Design, Special Project, Graduation Project

7. **MENG104 Engineering Graphics**

Principles of engineering graphics with the emphasis on laboratory use of AUTOCAD software. Plane Geometry, geometrical constructions, joining of arcs, Dimensioning principles, principles of orthographic projection, isometric and oblique drawing, principles of sectioning, reading engineering drawing from blueprints.

Credits: (2 /3 /0) 3 *Prerequisites: None* *ECTS credit: 7*
Abbreviated Title: Engineering Graphics *Category: Area Core Course* *Teaching Language: English*
Keywords: Acad, Orthographic, Sectioning, dimensioning

8. **EENG112 Introduction to Programming**

High-level programming environments. Variables, expressions and assignments. Introducing C programming. Structured programming; sequential, selective and repetitive structures. Function definition and function calls. Prototypes and header files. Recursive functions. Arrays and pointers. Dynamic memory management. Parameter passing conventions. Multi-dimensional arrays. Structures and unions. Conditional compilation, modular programming and multi-file programs. Exception handling. File processing. Formatted I/O. Random file access. Index structures and file organization.

Credits: (4/ 1 /0) 4 *Prerequisites: None*
Abbreviated Title: Int to Programming *Category: Area Core Course* *Teaching Language: English*
Keywords: High level programming, C programming, functions, file processing, index structures

9. **EENG212 Algorithms and Data Structures**

Storage structures and memory allocations. Primitive data structures. Data abstraction and Abstract Data Types. Array and record structures. Sorting algorithms and quick sort. Linear & binary search. Complexity of algorithms. String processing. Stacks & queues; stack operations, implementation of recursion, polish notation and arithmetic expressions. Queues and implementation methods. Dequeues & priority queues. Linked storage representation and linked-lists. Doubly linked lists and circular lists. Binary trees. Tree traversal algorithms. Tree searching. General trees. Graphs; terminology, operations on graphs and traversing algorithms.

Credits: (4 / 1 / 0) 4 *Prerequisites: EENG112*
Abbreviated Title: Algorithms and Data Structures *Category: Area Core Course* *Teaching Language: English*
Keywords: Storage structures, memory allocations, algorithms, queues, arithmetic expressions

10. **INFE221 Electrical Circuits**

Circuit variables and circuit elements. Some circuit simplification techniques. Techniques of circuit analysis. The operational amplifiers. The natural and step response of RL and RC circuits. Natural and step responses of RLC circuits. Sinusoidal steady-state analysis. Introduction to the Laplace Transform. The Laplace Transform in circuit analysis.

Credits: (4 / 0 / 1) 4 *Prerequisite: Math151*
Abbreviated Title: Electrical circuits *Category: Area Core Course* *Teaching Language: English*
Keywords: Circuit variables, elements, circuit analysis, RLC circuits, Laplace transform

11. **MENG286 Materials Science**

Crystal structure and crystal geometry phase diagrams of alloy systems, heat treatments applied to metallic materials and plain-carbon steels. Mechanical properties of metals stress-strain in metals, tensile test, hardness and hardness testing, fatigue and fracture of metals, impact test, creep of metals and creep test. Strengthening and plastic deformation of metals. Mechanical properties of ceramics, glasses, polymers and composites. Corrosion of metals. Material selection based on mechanical properties.

Credits: (3 / 1 / 0) 3 Prerequisites: CHEM101 ECTS credit: 6
Abbreviated Title: Materials Science Category: Area Core Course Teaching Language: English
Keywords: Crystal Structure, Mechanical Testing, Hardening of Steels, Heat Treatment

12. **EENG 226 Signals and Systems**

Continuous-time and discrete-time signals and systems. Linear time-invariant (LTI) systems: system properties, convolution sum and the convolution integral representation, system properties, LTI systems described by differential and difference equations. Fourier series: Representation of periodic continuous-time and discrete-time signals and filtering. Continuous time Fourier transform and its properties: Time and frequency shifting, conjugation, differentiation and integration, scaling, convolution, and the Parseval's relation. Representation of aperiodic signals and the Discrete-time Fourier transform. Properties of the discrete-time Fourier transform.

Credits (4 / 0 / 1) 4 *Prerequisites: INFE221*
Abbreviated Title: Signals and Systems *Category: Area Core Course* *Teaching Language: English*
Keywords: Continuous time signals, discrete time signals, LTI systems, Fourier transform, Parseval's relation

13. **INFE242 Electronics**

Semiconductor devices, basic amplifier concepts, diodes, P-N junction diodes, Schottky diodes, Bipolar Junction Transistors (BJTs), Field-Effect Transistors: MOSFETs, JFETs, transistor biasing.

Credits: (4 / 0 / 1) 4 *Prerequisite: INFE221*
Abbreviated Title: Electronics *Category: Area Core Course* *Teaching Language: English*
Keywords: Semiconductor devices, P-N junction diodes, Bipolar junction transistors, MOSFETs

14. **MENG201 Mechanical Workshop Practice**

This is to be conducted in the Mechanical Engineering Department's workshops by all Mechanical Engineering students who have completed a minimum of three semesters in the program. Students will perform various hand and machine tool operations under staff supervision. It includes introduction to engineering materials, and selected practices on laying-out and setting out a job, using measuring devices. At the end of the training students will be required to complete a report regarding their training.

Credits: (1 / 3 / 0) 2 *Prerequisites: None* *ECTS credit: 3*
Abbreviated Title: Workshop Practice-I *Category: Area Core Course* *Teaching Language: English*
Keywords: Workshop, hand tool operations, machine tool operations, measuring devices

15. **EENG 115 Introduction to Digital Logic Design**

Number systems, arithmetic operations, decimal codes, alphanumeric codes, Boolean algebra, Karnaugh maps, NAND and NOR gates,exclusive-OR gates, integrated circuits, combinational circuits, decoders, encoders, multiplexers, adders, subtractors, multipliers, sequential circuits, latches, flip-flops, sequential circuits analysis, registers, counters, RAM and ROM memories, programmable logic technologies (PLA, PLD, CPLD, FPGA).

Credits: (4 / 1 / 0) 4 *Prerequisites: None*
Abbreviated Title: Int. to Digital Logic Desg. *Category: Area Core Course* *Teaching Language: English*
Keywords: Number systems, arithmetic operations, Boolegan algebra, decoder, flip-flops, RAM, ROM

16. **MENG222 Strength of Materials**

Definition of stress, strain. Hook's law. Constitutive relations for uniaxial stresses. Shearing stress and strain. Torsion of circular members. Thin walled pressure vessels. Relations between bending moment, shearing force and distributed loads. Bending of beams with symmetrical sections. Bending of composite beams.

Credits: (4 / 1 / 0) 4 *Prerequisites: MENG231* *ECTS credit: 6*
Abbreviated Title: Strength of Materials *Category: Area Core Course* *Teaching Language: English*
Keywords: Axial stress, shear stress, torsion, bending, beams, buckling

17. **MENG231 Engineering Mechanics**

Review of vector algebra. Principle of mechanics. Static equilibrium of particles and rigid bodies. Distributed force systems. Elements of structures, beam, trusses, cables. Friction. Review of particle dynamics, force, energy and momentum methods. Planar kinematics and kinetics of rigid bodies. Energy methods. Particle and rigid body vibrations.

Credits: (3 / 0 / 1) 3 *Prerequisites: MATH151 and PHYS101* *ECTS credit: 6*
Abbreviated Title: Engineering Mechanics *Category: Area Core Course for IENG* *Teaching Language: English*
Keywords: Mechanics, statics, dynamics, Newton laws, Work, Energy, Momentum

18. **MENG244 Fundamentals of Thermodynamics**

Basic concepts of thermodynamics; Properties of pure substances; Energy transfer by heat, work and mass; The first law of thermodynamics; The second law of thermodynamics; Entropy; Power cycles; Refrigeration cycles.

Credits: (3 / 1 / 0) 3 *Prerequisites: None* *ECTS credit:5*
Abbreviated Title: Fundamentals of Thermodynamics *Category: Area Core Course* *Teaching Language: English*
Keywords: Basic Concepts, Properties, Laws Of Thermodynamics, close and open systems, gas power cycles and refrigeration cycle.

19. **MENG303 Computer Aided Engineering Design**

Design Process, Engineering Specifications, Project Planning, Concept Generation, Evaluation & Selection, Material and Manufacturing Process Selection, Design for Manufacturability and Assembly, Design for Cost, Design for Environment, Design for Reliability, Design for Test and Maintenance, Human Factors in Design, CAD Modeling and Analysis.

Credits: (2 /3/ 0) 3 *Prerequisites: MENG104 and MENG364* *ECTS credit: 6*
Abbreviated Title: Computer Aided Engineering Design *Category: Area Core Course* *Teaching Language: English*
Keywords: Mechanical Engineering Design, CAE, CAD, CAM

20. **MENG331 Mechanical Vibrations**

Discretized Lumped Parameter Modeling of systems. Free and forced vibrations of single degree-of-freedom systems. Multi degree-of-freedom systems. Determination of natural frequencies and Mode Shapes. Continuous systems. Finite Element Method. Vibration Measurement and Control. Balancing of rotating machinery and reciprocating engines.

Credits: (4 / 1 / 0) 4 *Prerequisites: MENG231 and MATH241* *ECTS credit: 7*
Abbreviated Title: Mechanical Vibrations *Category: Area Core Course* *Teaching Language: English*
Keywords: Vibration, Mechanisms, Modal Analysis

21.	**MENG364 Manufacturing Technology** Fundamentals and principles of major manufacturing processes: casting, bulk deformation, sheet metalworking, powder metallurgy. Processing of polymers, ceramics, glass, rubber and composites. Metal cutting: cutting conditions, forces, temperatures, tool life, surface finish, coolants. Cutting tool materials. Principles, tools and process capabilities of basic machining operations: turning, milling, drilling, planning, shaping, boring, broaching. Gear manufacturing. Abrasive operations: grinding, finishing operations. Non-traditional processes. Basics of joining and assembling. Fusion and solid-state welding. Essentials of computer numerical control. *Credits: (4 / 1 /0) 4* *Prerequisites: MENG201 and MENG286* *ECTS credit: 6* *Abbreviated Title: Manufacturing Technology* *Category: Area Core Course* *Teaching Language: English* *Keywords: Machining, Casting, Sheet Metal Forming, Bulk Forming, Plastics*
22.	**EENG 320 Control Systems-I** Introduction to control: open-loop and closed loop control. Modeling: transfer function, block diagram, signal flow graph, state equations. Feedback control system characteristics: sensitivity, disturbance rejection, steady-state error. Performance specifications: second-order system, dominant roots, steady-state error of feedback systems. Stability: Routh-Hurwitz criterion, relative stability. The root-locus method, Bode diagram, Nyquist stability criterion, gain margin and phase margin, Nichols chart. *Credits:(4 / 0 / 1) 4* *Prerequisites: EENG226* *Abbreviated Title: Control Systems* *Category: Area Core Course* *Teaching Language: English* *Keywords: Control, open-loop, closed loop, modelling, transfer function, block diagram, feedback, signal*
23.	**EENG 410 Microprocessors-I** Representation of numbers. Two's complement. Sign-magnitude notations. Fixed-length binary arithmetic. Floating-point arithmetic. Introductory microprocessor architecture. Instructions and micro-operations. Machine cycles. Instruction and data fetching. Addressing modes. Inherent, immediate, direct, relative and indexed addressing. Microprocessor interfacing. Data, address and control buses. Memory interfacing. Basic I/O interfacing. *Credits: (4 / 0 / 1) 4* *Prerequisites: EENG115* *Abbreviated Title: Microprocessors* *Category: Area Core Course* *Teaching Language: English* *Keywords: Sign magnitude notations, arithmetic, microprocessor architecture, data, memory interfacing*
24.	**IENG420 Fundamentals of Engineering Economy** An introduction to the basics of economic analysis for decisions in engineering design, in manufacturing, in manufacturing equipment, and in industrial projects. Time value of money. Cash flow analysis. Cost of capital. Return on investment. Elements of cost and cost estimation. Break-even analysis. Decision making among alternatives. Effects of depreciation. Taxes. Replacement analysis. Inflation. *Credits: (3 / 0 / 0) 3* *Prerequisites: None* *Abbreviated Title: Fundamentals of Eng. Economy* *Category: Area Core Course* *Teaching Language: English* *Keywords: Economic analysis, engineering design, manufacturing, industrial projects, cash flow analysis, cost of capital*
25.	**EENG428 Introduction to Robotics** Basic components of robot systems; coordinate frames, homogeneous transformations, kinematics for manipulator, inverse kinematics; manipulator dynamics, Jacobians: velocities and static forces, trajectory planning, Actuators, Sensors, Vision, Fuzzy logic control of manipulator and robotic programming. *Credits: (4 / 0 / 0) 4* *Prerequisites: MATH241* *Abbreviated Title: Int to Robotics* *Category: Area Core Course* *Teaching Language: English* *Keywords: Robot systems, transformations, manipulator, fuzz logic, actuators, programming*

**** Departmental Consent**

Engineering Sciences and Design (Area Elective Courses)

In order to register for the Area Elective Courses with no Pre-requisites (i.e., Pre-requisites: None), minimum number of attended semesters is required to be 6. Mechatronics Engineering Students must take MECT444 as AE(01), the other two AEs should preferably be from EENG and CMPE coded courses i.e. from Electrical and Electronics Engineering, and Computer Engineering respectively..

1.	**MECT444 Industrial Automation** Programmable controllers used in industrial automation: microcontrollers, embedded systems, programmable logic controller (PLC) and programmable automation controller (PAC). Advantages of using PLC in automation. PLC architecture. PLC ladder programming, integration of industrial sensors and actuators with PLCs, PLC timers and counters, real world application examples and automation applications. Introduction to SCADA *Credits: (4/ 1 / 0) 4* *Prerequisites: EENG320 or MENG332* *ECTS credit: 7* *Abbreviated Title: Industrial Automation* *Category: Area Elective* *Teaching Language: English* *Keywords: Programmable Logic Controllers, Automation*

2.	**MENG422 Automotive Engines** Internal combustion engines; two stroke and four stroke engines; spark ignition engines; compression ignition engines; basic engine parts; valve trains and timing diagrams; lubrication systems; cooling systems; fuel injection systems and ignition systems; advanced engineering- materials in automotive field. *Credits: (4 / 1/ 0) 4* *Prerequisites: MENG246 or MENG244* *Abbreviated Title : Automotive Engines* *Category: Area Elective Course* *Teaching Language: English* *Keywords: Engine, piston, valve, spark plug*
3.	**MENG424 Reliability Engineering** Introduction to Reliability. Failure data. Reliability, Availability, Maintenance, and Safety (RAMS). Reliability Prediction & Modelling, Reliability Block Diagrams, Redundancy, Fault tree analysis. Failure Mode and Effect Analysis (FMEA). Risk Management. Design for Reliability. Standards, codes and regulations on reliability. *Credits: (4 / 1/ 0) 4* *Prerequisites: MATH322 and MENG364 and MENG375 (or MECT375)* *ECTS credit: 7* *Abbreviated Title : Reliability Engineering* *Category: Area Elective Course* *Teaching Language: English* *Keywords: Probability, Reliability, Risk*
4.	**MENG471 Mechanisms** Introduction to Mechanisms, Kinematics Fundamentals, Draw kinematic diagrams, Calculate the mobility of Mechanisms, Position analysis of mechanisms, Velocity Analysis of Mechanisms, Acceleration Analysis of Mechanisms, Kinematic analysis of mechanisms, Kinematic analysis of gear mechanisms, Kinematic analysis of Belt and Chain Drives, Kinematic analysis of Screw Mechanisms, Use the techniques learned to design a mechanism. *Credits: (4 / 1/ 0) 4* *Prerequisites: MENG233 (or MENG231) and MENG375 (or MECT375)* *ECTS credit: 7* *Abbreviated Title : Mechanisms* *Category: Area Elective Course* *Teaching Language: English* *Keywords: Linkages, Mechanisms, Kinematics*
5.	**MENG473 Vibration Analysis and Design** Undamped and damped free vibration; forced vibrations with harmonic excitation; transient vibrations; systems with two degrees of freedom; vibration of continuous systems and Modal Analysis. Vibration Measurement & Control, Finite Element Method, Nonlinear and Random Vibrations. *Credits: (4 / 1/ 0) 4* *Prerequisites: MENG331 and MATH373* *ECTS credit: 7* *Abbreviated Title : Vibration Analysis and Design* *Category: Area Elective Course* *Teaching Language: English* *Keywords: Vibration, excitation, Modal Analysis*
6.	**MENG475 Biomechanics** Introduction to Mechanics and Biomechanics. Statics, Kinematics and Dynamics. Coordinate Systems. Musculoskeletal Tissues and Biomaterials. Stress-Strain Analysis and Joint Contact Problems. Software for Biomechanical Analysis. *Credits: (4 / 0 / 1) 4* *Prerequisites: (MENG233 or MENG231) and (*MENG286 or CIVL283) *Abbreviated Title: Biomechanics* *Category:* Area Elective Course *Teaching Language: English* *Keywords: Musculoskeletal, Biomechanics, Material, Tissue*
7.	**MENG464 Computer Integrated Manufacturing** Manufacturing Systems, Automation Technologies for Manufacturing Systems, Computer Numerical Control (CNC), Industrial Robotics; Integrated Manufacturing Systems, Material Handling, Fundamentals of Production Lines, Cellular Manufacturing, Flexible Manufacturing Systems, Computer Integrated Manufacturing (CIM); Production Planning and Control, Just-In-Time Delivery Systems, Lean Production, Quality Control and Inspection Technologies; Smart Factory and Industry 4.0 *Credits: (4 / 1/ 0) 4* *Prerequisites: IENG263 or MENG364 and MATH322* *ECTS credit: 7* *Abbreviated Title : Computer Integrated Manufacturing* *Category: Area Elective Course* *Teaching Language: English* *Keywords: CIM, Manufacturing, CAD/CAM*
8.	**CMPE 312 Software Engineering** The software life cycle and the phases in software development: Project scheduling, feasibility study, analysis, specification, design, implementation, testing, quality assurance, documentation, maintenance. Management issues: Planning, organization, control. Also included are formal specification techniques, structured programming, modular system design and other current issues. *Credits: (4/ 1 / 0) 4* *Prerequisites: EENG212* *ECTS credit: 7* *Abbreviated Title: Software Engineering* *Category: Area Elective* *Teaching Language: English* *Keywords: XXX*

9.	**CMPE428 Data Science** Introduction to data science process and its lifecycle. The role of data scientist, problem definition, data preparation, model planning and building, delivery of the results. Introduction to R and Rstudio. Graphical user interfaces, data import from different sources such as csv, xls, JSON, SPSS, SAS, ARFF and online sources (URLs). Attributes and their types. Vectors, matrices, lists and classes in R. Data frames and operations on data frames. Data Exploration and wrangling using R. Cleaning data. Data Visualization using ggplot2. Supervised versus unsupervised learning from data. Clustering for unsupervised learning. Supervised learning for regression and evaluation of the models in terms of degree of fit. Logistic regression models. Classification models. Decision trees and naïve Bayes classifier. Implementation of the classifiers and their evaluation. Performance metrics. Extraction and selection of attributes. Dimensionality reduction using principal component analysis and exploratory factor analysis. Selecting most discriminative attributes using forward and backward selection methods. Visualization of high-dimensional data using principal components. *Credits: (4/ 1 / 0) 4* *Prerequisites: MATH322* *ECTS credit: 7* *Abbreviated Title: Data Science* *Category: Area Elective* *Teaching Language: English*
10.	**CMPE 461 Artificial Intelligence** Definitions of AI from different point of views , intelligent agents and agent architectures, rational intelligent agents, ho w agents should act and environments of intelligent agents. Problem solving agents, formulating problems, and searching for solutions. Uninformed search strategies: BFS, DFS, DLFS, IDFS. Informed search methods: Greedy algorithms, uniform cost search, heuristic functions, A*-search, memory-bounded search, iterative improvement algorithms. Constraint satisfaction problems (CSPs): Definitions, Backtracking search for CSPs, The structure of SCPs. Adversarial search: Games, Optimal decisions in games. Alpha-Beta pruning. Agents that reason logically: knowledge-based agents, representation of knowledge, reasoning, logic, and inference in propositional logic. First-order logic: syntax and semantics, extensions and notational variations, elements of first order logic, and inference in first-order logic. *Credits: (4/ 1 / 0) 4* *Prerequisites: EENG212* *ECTS credit: 7* *Abbreviated Title: Artificial Intelligence* *Category: Area Elective* *Teaching Language: English*
11.	**CMPE 476 System Simulation** General concepts of systems. Discrete and continuous systems. State variables. Models, modeling and simulation of systems. Principles and techniques for system modeling and simulation. Comparison of analytical modeling and simulation modeling techniques. General structure of a simulation system. Probability aspects of simulation. Techniques and methods of generation of random numbers and random variates with the desired probability distribution. Simulation languages and packages. Transaction-oriented and event-oriented simulation. Queuing systems in simulation. Validation and verification of simulation models. Output (statistical) analysis and representation of simulation results. *Credits: (4/ 1 / 0) 4* *Prerequisites: MATH322* *ECTS credit: 7* *Abbreviated Title: System Simulation* *Category: Area Elective* *Teaching Language: English*
12.	**EENG350 Electromechanical Energy Conversion** Magnetic circuits and materials; Single-phase transformers, auto-transformers, measurement transformers, three-phase transformers; Electromechanical energy conversion principles; Synchronous motors and generators; Dc motors and generators; Induction motors; Speed control principles. *Credits: (4/ 1 / 0) 4* *Prerequisites: ???* *ECTS credit: 7* *Abbreviated Title: Electromechanical Energy Conversion* *Category: Area Elective* *Teaching Language: English*
13.	**EENG471 Information Management** Database systems; components of database systems, DBMS functions, database architecture and data independence, hypertext, hypermedia and multimedia. Data modelling. Entity-relationship model. Object-oriented model. Relational data model. Entity and referential integrity. Relational algebra and relational calculus. Relational database design. Functional dependency and normal forms. Transaction processing. Distributed databases. Physical database design; storage and file structures, indexed files, hashed files, B-trees, files with dense index, files with variable length records. *Credits: (4/ 1 / 0) 4* *Prerequisites: EENG212* *ECTS credit: 7* *Abbreviated Title: Information Management* *Category: Area Elective* *Teaching Language: English*
14.	**EENG473 Computer Simulation** Introduction to simulation as an important modelling and decision tool in order to design and analyse complicated real-life systems for which there is no analytical solution. Simulation methodology and model building. Simulation languages. Continuous, Monte-Carlo and Discrete Event simulation. Basic issues in the design, verification and validation of simulation models. Statistical analysis of simulation output data. Use of simulation for estimation and optimization of performance. Application to queuing systems and computer networks. *Credits: (4/ 1 / 0) 4* *Prerequisites: MATH322, EENG212* *ECTS credit: 7* *Abbreviated Title: Computer Simulation* *Category: Area Elective* *Teaching Language: English*

15. **EENG474 Software Engineering**

The software life cycle. Requirements analysis and specification of requirements. Software design and selection. Initial design, modularity, structure charts and partitioning. Detailed design and notations. Data modelling and design. The Relational database model. Software testing, documentation and maintenance. Object modelling and principles of OO analysis.(Prerequisite: EENG212)

Credits: (4/ 1 / 0) 4 *Prerequisites: EENG212* *ECTS credit: 7*
Abbreviated Title: Software Engineering *Category: Area Elective* *Teaching Language: English*

16. **EENG476 Computing Systems**

Machine level representation of data. Assembly level machine organization. Memory system organization. I/O and communication. CPU implementation. Operating system principles. Concurrency. Scheduling and dispatch; preemptive and non-preemptive scheduling. Process and threads. Physical memory and memory management hardware. Virtual memory; paging and segmentation. Memory mapped files. Device management. Characteristics of serial or parallel devices. Buffering strategies. Servers and interrupts. Security and protection; security methods and devices. Protection, access and authentication. Encryption.

Credits: (4/ 1 / 0) 4 *Prerequisites: EENG115, EENG212* *ECTS credit: 7*
Abbreviated Title: Computing Systems *Category: Area Elective* *Teaching Language: English*

17. **IENG409 Occupational Safety and Health**

This course is designed to introduce the engineering student with the basic principles of occupational safety and health management in industry. Development of safety and health function, concepts of hazard avoidance, impact of regulations, toxic substances, environmental control, noise, explosive materials, fire protection, personal protection and first aid will be introduced.

Credits: (3/ 1 / 0) 3 *Prerequisites: -* *ECTS credit: 7*
Abbreviated Title: Occupational Safety and Health *Category: Area Elective* *Teaching Language: English*

18. **IENG450 Industrial Management**

This is a service course offered to non-IE engineering students. The aim is to prepare the students to assume positions in industry as engineering managers. The topics covered include the historical development of industrial management, introductory operations management, functions of technology management, managing technological change, managing engineering projects, and managing the engineering career**.**

Credits: (3/ 1 / 0) 3 *Prerequisites: -* *ECTS credit: 7*
Abbreviated Title: Industrial Management *Category: Area Elective* *Teaching Language: English*

19. **IENG461 Systems Modeling and Simulation**

The aim of this course is to give our students a decision tool in order to design and analyze complicated real life systems for which there is no well formulated solution. Emphasis is primarily on applications in the areas of production management through the analysis of respective computer simulation models. Use and misuse of simulation as a decision tool. Simulation methodology and model building. Modeling with a simulation language. Random variate generation. Basic issues in the design, verification and validation of computer simulation models. Statistical analysis of simulation output data. Use of simulation for estimation and comparison of alternatives.

Credits: (3/ 1 / 0) 3 *Prerequisites: MATH322* *ECTS credit: 7*
Abbreviated Title: System Modeling *Category: Area Elective* *Teaching Language: English*

20. **IENG 484 Quality Engineering**

The purpose of the course is to make an introduction and lay the foundations of modern methods of statistical quality control and improvements that are used in the manufacturing and service industries. The course also introduces basics of experimental design in determining quality products and reliability models. The students will first be introduced to some of the philosophies of quality control experts and their impact on quality. After a quick review of normal probability distribution, a few graphical methods used to monitor quality improvement will be given. Control charts for variables and attributes will be given with examples. Acceptance sampling plans for variables and attributes are to follow. Principles of design of experiments along with Taguchi method will be presented. Finally reliability of systems like series, parallel, series – parallel and parallel – series systems and their design will be discussed.

Credits: (3/ 1 / 0) 3 *Prerequisites: MATH322* *ECTS credit: 7*
Abbreviated Title: Quality Engineering *Category: Area Elective* *Teaching Language: English*

Mathematics and Basic Sciences Courses

1. **MATH151 Calculus – I**
Limits and continuity. Derivatives. Rules of differentiation. Higher order derivatives. Chain rule. related rates. Rolle's and the mean value theorem. Critical Points. Asymptotes. Curve sketching. Integrals. Fundamental Theorem. Techniques of integration. Definite integrals. Application to geometry and science. Indeterminate forms. L'Hospital's Rule. Improper integrals. Infinite series. Geometric series. Power series. Taylor series and binomial series.
Credits: (4 / 0 / 1) 4 *Prerequisites: None*
Abbreviated Title: Calculus -I *Category: Faculty Core Course* *Teaching Language: English*
Keywords: Limits, Continuity, Derivatives, Differentiation, Chain Rule, Rolle's Theorem, Mean Value, Integrals, Taylor Series
Department offering the course: 41 – Department of Applied Mathematics & Computer Science

2. **MATH152 Calculus-II**
Vectors in R3. Lines and Planes. Functions of several variables. Limit and continuity. Partial differentiation. Chain rule. Tangent plane. Critical Points. Global and local extrema. Lagrange multipliers. Directional derivative. Gradient, Divergence and Curl. Multiple integrals with applications. Triple integrals with applications. Triple integral in cylindrical and spherical coordinates. Line, surface and volume integrals. Independence of path. Green's Theorem. Conservative vector fields. Divergence Theorem. Stokes' Theorem.

Credits: (4 / 0 / 1) 4 *Prerequisites:MATH151*
Abbreviated Title: Calculus-II *Category: Faculty Core Course* *Teaching Language: English*
Keywords: Vectors, Planes, Lagrange Multipliers, Gradient, Volume, Greene's Theorem, Divergence, Stoke's Theorem
Department offering the course: 41 – Department of Applied Mathematics & Computer Science

3. **MATH163 Discrete Mathematics**
Set theory, functions and relations; introduction to set theory, functions and relations, inductive proofs and recursive definitions. Combinatorics; basic counting rules, permutations, combinations, allocation problems, selection problems, the pigeonhole principle, the principle of inclusion and exclusion. Generating functions; ordinary generating functions and their applications. Recurrence relations; homogeneous recurrence relations, inhomogeneous recurrence relations, recurrence relations and generating functions, analysis of algorithms. Propositional calculus and boolean algebra; basic boolean functions, digital logic gates, minterm and maxterm expansions, the basic theorems of boolean algebra, simplifying boolean function with karnaugh maps. Graphs and trees; adjacency matrices, incidence matrices, eulerian graphs, hamiltonian graphs, colored graphs, planar graphs, spanning trees, minimal spanning trees, Prim's algorithm, shortest path problems, Dijkstra's algorithms.

Credits: (3 / 0 / 1) 3 *Prerequisites: None*
Abbreviated Title: Discrete Mathematics *Category: Area Core Course* *Teaching Language: English*
Keywords: Set Theory, recurrence relations, Graphs, Trees, Matrices;
Department offering the course: Mathematics

4. **MATH241 Ordinary Differential Equations and Linear Algebra**
Systems of linear equations, elementary row operations, echelon form, Gaussian elimination method; Matrices; Determinants, adjoint and inverse matrices, Cramer's rule; Vector spaces, linear independence, bases and dimension, eigenvalue problem. First-order differential equations, separable differential equations, change of variables, exact differential equations; Second-order differential equations, the method of undetermined coefficients, the variation of parameters method; General results of first-order linear systems, homogeneous constant coefficient vector differential equations, variations of parameters for linear systems; Laplace transform method.

Credits: (4 / 0 / 1) 4 *Prerequisites: MATH151*
Abbreviated Title: Int to Mechatronics Engineer *Category: Area Core Course* *Teaching Language: English*
Keywords: Introduction to Mechatronics engineering, standards, ethics, communication.

5. **MATH322 Probability and Statistical Methods**
Introduction to probability and statistics. Operations on sets. Counting problems. Conditional probability and total probability formula, Bayes' theorem. Introduction to random variables, density and distribution functions. Expectation, variance and covariance. Basic distributions. Joint density and distribution function. Descriptive statistics. Estimation of parameters, maximum likelihood estimator. Hypothesis testing.

Credits: (3 / 0 / 1) 3 *Prerequisites: MATH151*
Abbreviated Title: Prob & Statistical Methods *Category: Faculty Core Course* *Teaching Language: English*
Keywords: Probability, Statistics, Bayes' Theorem, Hypothesis Testing
Department offering the course: 41 – Department of Applied Mathematics & Computer Science

6. **PHYS101 Physics I**
Families of physical quantities having different dimensions, units and rules of mathematics. Vector mathematics and calculus, their applications to motion. Newton's laws. Integrals of the second law, work-energy, impulse-momentum, conservation of energy and momentum, applications. Rotations. Static equilibrium.
Credits: (4 / 1 / 0) 4 *Prerequisites: None* *ECTS credit: 6*
Abbreviated Title: Physics I *Category: Faculty Core Course* *Teaching Language: English*
Keywords: Physical Quantities, Vectors, Motion, Second Law, Work, Energy, Impulse, Momentum, Rotations
Department offering the course: 42 – Department of Physics

7. **PHYS102 Physics-II**
Kinetic theory of ideal gases. Equipartition of energy. Heat, heat transfer and heat conduction. Laws of thermodynamics, applications to engine cycles. Coulombs law and electrostatic fields. Gauss's law. Electric potential. Magnetic field. Amperes law. Faradays law.
Credits: (4 / 1 / 0) 4 *Prerequisites: PHYS101* *ECTS credit: 6*
Abbreviated Title: Physics-II *Category: Faculty Core Course* *Teaching Language: English*
Keywords: Charge, Electromagnetic Induction
Department offering the course: 42 – Department of Physics

8.	**CHEM101 General Chemistry** Atoms, molecules and ions; Mass relations in chemistry, stoichiometry; Gasses, the ideal gas law, partial pressures, mole fractions, kinetic theory of gases; Electronic structure and the periodic table; Thermo chemistry, calorimetry, enthalpy, the first law of thermodynamics; Liquids and Solids; Solutions; Acids and Bases; Organic Chemistry. *Credits: (4 / 0 / 1) 4* *Prerequisites: None* *ECTS credit: 6* *Abbreviated Title: General Chemistry* *Category: Area Core Course* *Teaching Language: English* *Keywords: chemical terms, nomenclature, chemical bonds, polarity, states of matter, chemical formulas, measurements, natural science,basic science* *Department offering the course: 43 – Department of Chemistry*
9.	**MATH373 Numerical Analysis for Engineers** Numerical error. Solution of nonlinear equations, and linear systems of equations. Interpolation and extrapolation. Curve fitting. Numerical differentiation and integration. Numerical solution of ordinary differential equations. *Credits: (3 / 0 / 1) 3* *Prerequisites: MATH207 or MATH241 or MATH203* *ECTS credit: 5* *Abbreviated Title: Numerical Analysis for Eng* *Category: Faculty Core Course* *Teaching Language: English* *Keywords: Numerical Analysis, Interpolation, Extrapolation,* *Department offering the course: 41 – Department of Applied Mathematics & Computer Science*

General Education Courses

1.	**ENGL191 Communication in English I** ENGL 191 is a first semester freshman academic English course The purpose of this course is to consolidate and develop students' knowledge and awareness of academic discourse, language structures and lexis. The prime focus will be on the further development of writing, reading, speaking and listening skills in academic settings, and on improving study skills in general. *Credits: (3 / 1 / 0) **3*** *Prerequisites: None* *Abbreviated Title: Communication in English I* *Category: University Core Course* *Teaching Language: English* *Keywords: Language, English, Reading, Writing, Speaking; Department offering the course: Department of General Education*
2.	**ENGL192 Communication in English II** ENGL 192 is a second semester freshman academic English course The purpose of this course is to further consolidate and develop students' knowledge and awareness of academic discourse, language structures and lexis. The prime focus will be on the further development of writing, reading, speaking and listening skills in academic settings, and on improving study skills in general. *Credits: (3/ 1/ 0) **3*** *Prerequisites: ENGL191* *Abbreviated Title: Communication in English II* *Category: University Core Course* *Teaching Language: English* *Keywords: Language, English, Reading, Writing, Speaking; Department offering the course: Department of General Education*
3.	**TUSL181 Turkish as a Second Language** TUSL181 is a Basic Turkish course introducing the Turkish language. It incorporates all four language skills and provides an introduction to basic grammar structures. Students will be encouraged to develop their writing skills through a variety of tasks. The aim of this course is for students to be able to understand and communicate in everyday situations, both in the classroom and in a Turkish-speaking environment. *Credits: : (2 / 0 / 0) **2*** *Prerequisites: None* *Abbreviated Title: Turkish as a second Language* *Category: University Core Course* *Teaching Language: Turkish* *Keywords: Turkish, grammar, writing, speaking; Department offering the course: Department of General Education*
4.	**HIST280 History of Turkish Reforms** 19. century state of the Ottoman Empire (Constitutional Period), Tripoli and the Balkan Wars, World War II and the results, the Guilds, the War of Independence, Cease Fire Ant., Lausanne, Ant. *Credits: (2 / 0 / 0) **2*** *Prerequisites: None* *Abbreviated Title: General Education VI* *Category: University Core Course* *Teaching Language: Turkish* *Keywords: History, Ottoman Empire, Wars; Department offering the course: HC – ATATÜRK Research Center*
5.	**ENGL201 Communication Skills** ENGL 201 is a second year Mainstream Communication Skills course for students at the Faculty of Engineering. The course aims to introduce a range of skills, including effective written and oral communication, research skills and study skills. Throughout the course the students will be involved in project work intended to help them in their immediate and future academic and professional life. This will include library research, technical report writing and an oral presentation. By investigating a topic of their own choice, students will develop their understanding of independent research skills. During the report writing process, students will improve their writing and develop the ability to produce organized, cohesive work. The oral presentation aims to enhance spoken fluency and accuracy and provide training in the components of a good presentation. *Credits:(3 / 0 / 0) **3*** *Prerequisites: ENGL192* *Abbreviated Title: Communication Skills* *Category: Faculty Core Course* *Teaching Language: English* *Keywords: Communication Skills, Report Writing, Oral Presentation, Independent Research,; Department offering the course: Department of General Education*

University Elective Courses (Non-Technical Courses Offered by other Departments)

	A list of non-technical electives is announced at the beginning of each semester by the Department. This list contains courses offered by the Faculty of Business and Economics, the School of Tourism and Hospitality Management, Departments of Communication and Media Studies etc. University elective courses taken by Mechanical and Mechatronics Engineering students must satisfy the ABET criteria. Out of the total three one of the University elective courses should be selected as Engineering Ethics.
1.	**IENG355 Ethics in Engineering** This course is designed to introduce moral rights and responsibilities of engineers in relation to society, employers, colleagues and clients. Analysis of ethical and value conflict in modern engineering practice. Importance of intellectual property rights and conflicting interests. Ethical aspects in engineering design, manufacturing, and operations. Cost-benefit-risk analysis and safety and occupational hazard considerations. *Credits: (3 / 0 / 0) 3* *Prerequisites: None* *Abbreviated Title: Ethics in Engineering* *Category: Area Core Course* *Teaching Language: English* *Keywords: Moral rights, value conflict, engineering practice, intellectual property rights, safety, hazard*

5- UNIVERSITY and ACADEMIC REGULATIONS

Academic Regulations have been laid down by the Northern Cyprus Educational Trust to govern and guide the functioning of Eastern Mediterranean University. The rules and regulations are available at **http://mevzuat.emu.edu.tr/.** Students should refer to the given internet address for the Regulations for Students. **In case of any conflict, the regulations in Turkish will supersede**. Some regulations are presented below.

5.1. Conditions for Taking Courses from Another Institution

a) Department and/or Faculty/School board determines whether the student can take courses outside the university or not and/or whether the courses to be taken outside the University are the equivalents of courses in the student's own program in terms of content and credits.
b) Duration of studies at another institution is included in the period of study specified in the Eastern Mediterranean University Education, Examinations and Success By-law, regardless of the difference of the institution and the number of courses to be taken.
c) Total credits of courses taken from another institution of higher education cannot exceed 25% of the course credits the student has to take during the school/undergraduate specified program period.
d) The student keeps his/her student rights in EMU, however, s/he cannot benefit from the student rights regarding diploma or student status in the higher education institution s/he takes course from.
e) A student who wishes to take courses from another higher education institution should apply to the relevant department head in writing and attach a formal and certified document summarizing the titles, credits and content of the courses to be taken as well as the weekly course timetable no later than the relevant semester or summer school registration renewal period.
f) Equivalency of the grades obtained at another higher education institution is determined by the faculty/school board decisions based on the Senate decisions and relevant by-laws.
g) Students who take courses at another higher education institution continue to pay full tuition fee or the course(s) fees in EMU. However, if the student needs to pay for the courses to be taken at another institution of higher education, fees to be paid in EMU are determined by the University Executive Board.
h) In order to be eligible to take courses from another higher education institution, a student should attend the registered program in EMU for at least one academic year and should have a minimum CGPA of 2.00.
i) Those who do not meet the requirements of article (h) can take courses from another institution of higher education with the approval of the University Executive Board and positive views of the department and faculty boards.

5.2. Student Advisor

For each registered student, a student advisor who is a member of the academic staff is appointed by the Department Chair. The student advisor has the obligation of guiding the student in course registration, or in other academic, administrative and social matters. Students must obtain their advisors' approval for the following transactions: registration, selection of core and elective courses, adding courses to their schedules, dropping courses from their schedules, and/or withdrawing from a course. Students are encouraged to meet regularly with their advisors to review their academic performance and progress, discuss problems or get scholarly advice.

5.3 Course Registration

A student registration is done according to his/her academic status as follows:

a) Registration of students with "Honor and High Honor Status": Students who are in "High Honor" or "Honor" status can optionally register for one more course in addition to the normal course load of the semester.
b) Registration of students with "Successful Status": Students who are in "Successful" status can register for at most the normal course load of the semester.
c) Registration of students with "on Probation Status": Students who are "on probation" are obliged to repeat failed courses before registering for the new ones. The students are allowed to register for two new courses at most, on the condition that they do not exceed normal course load. A student who receives "on probation" status will remain in this status until his CGPA is raised above the limits indicated in Table 5.4. In the semester following the on probation, the student is not allowed to register for more than two new courses. The student will be asked to repeat some of the courses which he had already taken in previous semesters with priority given to courses with grades F, NG and D-.
d) Registration of students with "Unsuccessful Status": Students who are in "unsatisfactory" status are not allowed to register for any new course. These students will be asked to repeat courses already taken in the previous semesters, with priority given to the grades F, NG and D-. However, in the case that the courses from which (F), (NG) or (D-) grades were obtained are not offered, or the student's course load being under the specified limit, the student can repeat courses from which a (D), (D+) or (C-) grade was obtained until the normal course load is met.
e) Registration of students with "Graduating Status": Students who are in "Successful" status are considered to be in "Graduating Status" if and only if the remaining credited courses for their graduation is less than or equal to 7 courses (including courses with F, NG and D- grades). Such students are allowed to register for the whole remaining courses provided that they fulfil the prerequisite rules.

5.4 Registration Procedure

Immediately prior to the commencement of classes for each semester, certain days are designated for formal registration, as indicated on the academic calendar. At this time, all newly admitted students are advised and given class schedules. Students must register for all mandatory courses offered in the regular semesters (Fall and Spring) of the first (freshmen) year. All registration activities must be performed by the students concerned. Registration by proxy or mail is not accepted.

a) After making the payment the students can select courses online through their student portal.
b) The student must visit his /her Advisor`s Office in order to confirm the registration. The advisor helps the students in selecting appropriate courses, and finalizes their weekly class schedule/time table for that semester based on the vacancy availability in groups.
c) After the advisor finishes the registration process, the students can see their courses registered and weekly class schedule.
d) Two days are dedicated for registration at the start of every semester.

5.5 Academic Term

Academic term" of a student refers to total number of registered courses in relation to the number of listed courses in the department's published program of study (curriculum). Non-credit courses and courses that are not included in the normal course load upon Senate's decision are not taken into account in determining a student's academic term.

5.6 Course Load

For every semester, the number of specified credit courses of a registered program makes up the semester course load. Non-credit courses are not taken into account in the computation of the course load. However, upon the recommendation of the student advisor and the approval of the Department Chair:

a) a maximum of two courses can be reduced from the normal course load of a semester. In this case, the student must register for the untaken courses at the nearest next semester the courses are offered.
b) a student's semester course load can be increased by one course at most. In order to do this,
   1. The student's Cumulative Grade Point Average (CGPA) should not be below 3.00, or
   2. The student has to be designated a 'High Honor' or an 'Honor' at the end of the previous academic term.
c) Course load of graduating students with no academic warnings can be increased by two courses. A student at the graduation semester is the student who is given the right to graduate upon the successful completion of all projected courses at the end of the last semester of an academic program in addition to at most two remaining courses in all other programs (except LAW). Non- credit courses and courses that are not included in the normal course load upon Senate's decision are not taken into account in determining course load.

5.7 Prerequisite Courses

a) In order to register for a course that has a pre-requisite, a student must have obtained at least a D- grade from the related pre-requisite course.
b) Graduating students are allowed to register for courses with pre-requisites even if they score a F grade from the pre-requisite course.
c) At all semesters (including the graduation semester), a prerequisite course and the course following it cannot be taken within the same semester if the prerequisite course has never been taken before or if the student obtained an (NG) or a (W) grade from it.
d) Faculty or School Councils have the authority to take decisions concerning the requirements for prerequisite courses.

5.8 Repeating a Course

The following provisions are applied in repeating a course:

a) A student who obtains a (W), (D-), (F), (NG) or (U) grade from a course must register for the course at the first available opportunity.
b) If the course to be repeated is Area Elective of Engineering courses, University Elective of General Education courses or has been excluded from the program, the student is required to take another appropriate course specified by the Department.
c) If a student wishes to improve his/her previously obtained grades, s/he can repeat a course in which s/he previously passed in the last 2 years.

The grade obtained from the repeated course takes the place of the previous grade. However, the first grade still appears on the transcript.

5.9 Course Selection

Priorities in course selection are as follows:

a) Courses with (W), (F), (NG), (U) or (D-) grades.
b) Courses of previous semesters that have not been taken yet.
c) Courses of the current semester that have not been registered yet.
d) Other appropriate courses.

5.10 Course Times / Hours

In order to enable the students to attend classes regularly, course hour clashes are avoided. The advisor may approve if there is a maximum of a two-hour clash. However, in special and mandatory conditions, upon Department Chair's consent, clashes exceeding two hours may be approved, if the student accepts the clashes.

5.11 Late Registration

Late registration is possible during the period specified in the academic calendar. Late registration penalty are determined by the Rectors' office in accordance with the principles set concerning this issue.

5.12 Adding or Dropping Courses

From the first day of the commencement of the classes until the deadline specified on the academic calendar, students are allowed to change their course schedule by adding a new course or dropping a registered course. These changes must be made upon the recommendation of the student's advisor.

5.13 Course Withdrawal

a) In a semester, a student is allowed to withdraw from two registered courses at most, provided that the student does not get into part-time status. Course withdrawal should be done between the set dates specified on the academic calendar through using online application in student portal. Online approval of the Advisor and Department Chair is necessary. A student who withdraws from a course will receive the grade 'W'. This grade is not taken into consideration during the calculation of the CGPA and the GPA, but appears on the transcript.

b) A student cannot withdraw from a course that was withdrawn before, a course that is repeated (a different course with the same reference code) or a course that has no credit.

c) Full time students can not withdraw from courses which may change the status "Part-Time".

5.14 Course Evaluation

Student course performance is evaluated by using continuous assessment mechanisms that include midterm and final examination(s), quizzes, homework, laboratory study, and course projects etc. These mechanisms are organized in order to check the students' ability in meeting the Course Learning Outcomes (CLO) and Student Outcomes (SO). During the evaluation process, the students are given a mark which is typically out of 100 and then at the end of the semester the cumulative average mark of the student is converted to a letter grade by the course instructor.

The letter grades are organized on a 4.00 point grading scale. The letter grades, their grade point equivalence and respective descriptions are given in Table 5.1.

Table 5.1 The Letter Grades

Grade	Grade Point Equivalent	Description
A	**4.0**	Superior **Pass** in a credit-course
A-	**3.7**	Superior **Pass** in a credit-course
B+	**3.3**	Very Good **Pass** in a credit-course
B	**3.0**	Very Good **Pass** in a credit-course
B-	**2.7**	Very Good **Pass** in a credit-course
C+	**2.3**	**Pass** in a credit-course
C	**2.0**	**Pass** in a credit-course
C-	**1.7**	**Conditional Pass** in a credit-course
D+	**1.3**	**Conditional Pass** in a credit-course
D	**1.0**	**Conditional Pass** in a credit-course
D-	**0.7**	**Failure** in a credit-course
F	**0.0**	**Failure** in a credit-course
NG	**0.0**	**Failure** in a credit-course due to disinterest of the student
S	**-**	**Satisfactory** (Pass in a non-credit-course)
U	**-**	**Unsatisfactory** (Failure in a non-credit-course)
I	**-**	**Incomplete** (work with excuse, grade to be given later)
W	**-**	**Withdrawal** from a course

Grades A, A-, B+, B, B-, C+, and C are issued to indicate varying levels of unconditional "Pass" status for the successful scores. Grades C-, D+, and D indicate the "Conditional Pass" status, where the students with these grades are regarded as successful given that the Cumulative Grade Point Average (CGPA) is above or equal to 2.00. Grades D- and F indicate "Failure" and the students with these grades have to repeat the course in the proceeding semester. Students who do not comply with the required level attendance and/or not fulfilling the requirements for the evaluation of the course are given the "NG" (Nill-Grade) grade by the Instructor of the Course based on the criteria determined by the Faculty/School Academic Council.

The grades "S" or "U" are given to students who are registered to non-credit courses. "S" indicates satisfactory and "U" indicates unsatisfactory completion of the non-credit course. "I" grade is given to students who have not sat the end of semester exam and/or has not completed some of

the projects/ laboratory work which contributes to the end-of-semester grade because of a valid reason that can officially be proved if required. Such students are obliged to sit for the missed exam and/or complete the project/laboratory work at least one week before the registration period of the following semester. Failure to comply with this will result in an automatic F grade being given for the concerned course. However, students whose reason for absenteeism continues at the end of the above indicated deadline, must apply to the Department with official certification indicating the continuation of the reason for absenteeism. The Mechanical Engineering Department Chair then takes the issue to the Faculty Academic Council where a decision will be taken on the period for the completion of the "I" grade. The period of completion requirement mentioned above is not valid for graduating students. Faculty Academic Councils determine these students' situations. An "I" grade is not taken into account in the computation of the Grade Point Average (GPA) or Cumulative Grade Point Average (CGPA). A student who thinks is eligible for "I" grade, must apply to the Course Instructor together with official documentation supporting the case, at most 3 working days following the final examination date of the course. The grade "W" is given to students who were allowed to withdraw from a registered course between the 3rd and 11th weeks of the semester. The "W" grade is shown on the transcript of the student.

5.15 Mid-term Examinations

In every academic semester, a minimum of 1 and a maximum of 3 mid-term exams are given to students in each course. No mid-term examinations can be administered during the final week of the semester or the week before the end-of-classes.

5.16 Final Examinations

Final examinations are administered on the dates specified in the Academic Calendar.
Letter grades are announced by the Registrar's Office at a date determined by the Rector's Office.

5.17 Other Criteria to be Considered for Assessment

a. Quizzes which are prepared and evaluated by the course instructor can be administered without prior notice.
b. In applied courses, evaluation can be based on projects, workshops, laboratory reports, presentations and /or examinations. Examinations can have written or oral format. Either the course instructor or another academic member of the staff assigned by the Course Coordinator is entitled to make the workshop/lab evaluations.
c. Homework prepared during the term can be included in the overall evaluations. Homework is assessed by the course instructor or a faculty member assigned by the course instructor.

5.18 Make-up Examinations

a. A student who fails to sit for an examination for a valid reason is given a make-up exam. Within **three working days** after the examination, students who wish to take a make-up must submit a written statement to the course instructor or the course coordinator explaining the reason(s) for his/her request. Student must secure a "Make-Up Exam Form" from the department Office and must secure the approval from the instructor for taking the Make-Up Exam.
b. Make-up exams for the mid-term and final exams may take place after the final exam.
c. If the cause of the student's absence persists during the time allocated for the make-up examination, a new make-up is given. However, if the make-up examination is not taken by the student ten days before the registration period for the new term begins, the situation is brought to the attention of the Faculty/School Academic Council and decided on accordingly.

5.19 Resit Examinations

a. RESIT EXAMINATION is an additional examination right granted to students studying at undergraduate and associate programs.
   • It is administered at the end of each term (excluding the summer term) following the announcement of the letter grades.
   • Taking a resit examination requires online registration (no fees are applied for online registration).
   • No Resit Examinations are available for application/practice courses.
   • No Resit Examinations are applied for the courses of the English/Turkish Preparatory School.
   • No Resit Examinations are applied for graduate courses (even if registered by a student studying at an undergraduate/associate program).
   • There is no Resit Examination for students studying at graduate programs (including registered deficiency courses, language support courses and undergraduate courses)

b. Resit Examination covers all topics of that course (all topics included in midterm and final examinations.)
   • Online registration is required.
   • Online registration will be carried out via the Student's Portal, after the final exams.
   • Weight of the Resit Examination will be equal to the total weight of mid-term and final examinations of a specific course.
   • The letter grade of the course will be assigned according to the RESIT score (if there are any other scores obtained from other forms of assessment than midterm and final examinations, they will also be considered in the letter grade calculation)
   • There is NO MAKE-UP examination for the RESIT EXAMINATION

c. The following are the conditions for registering for the resit examination of a course:
   • Students, may register for the RESIT EXAMINATION of the courses with "D-" or "F" grades obtained within that term,
   • Students with a "WARNING", "UNSATISFACTORY" or "ON PROBATION" status may register for the RESIT EXAMINATIONS of all (possible) courses, excluding those with "NG" grades, at the end of the relevant term.
   In the event of not sitting for a registered resit examination, students will be assigned "0".

5.20 Graduation Make-up

Any student who is at the graduation semester but fails to fulfill all requirements is eligible to take the graduation make-up examination under the following circumstances:

a. Students who fail to meet the graduation requirements due to F and/or D- grades are allowed to sit the exam for up to 2 courses with previously obtained grades of F and/or D- provided that these courses were taken within the last two semesters.
b. Students who fail to meet the graduation criteria due to low CGPA (less than 2.00) are allowed to take the graduation make-up examination for up to 2 courses with D, D+, C- grades.
c. A student who fails a graduation make-up of a specific course must register for that course again. A graduation make-up cannot be given for courses with NG grades. Grades obtained from the graduation make-ups are evaluated as term letter grades.

5.21 Appeals

a. A student has the right to ask the relevant academic staff member to see all documents involved in the determination of the semester grade no later than a week following the publication of the letter grades.
b. Any appeal against the marks of a mid-term examination or any other assessment components must be made to the course instructor within one week following the announcement of the marks. The relevant course instructor is required to evaluate the appeal within one week. If the student is not satisfied with the instructor's evaluation, s/he has the right to appeal in writing to the relevant department chair within 3 days following the instructor's evaluation date. The department chair will form a committee of instructors to finalize the student's appeal within one week. The decision of the committee is final.
c. Any appeal concerning a letter grade must be made to the relevant course instructor no later than the end of the registration period of the following semester. Appeals against semester grades are finalized based on the principles laid out in 'b'.
d. In cases where the letter grades have been assigned inaccurately and/or an administrative/calculation mistake has been made, taking the relevant course instructor's application for a grade change into consideration, the relevant grade change takes place with the decision of the Department Council, Faculty Council and the University Executive Board, on the condition that the mistake has been supported by evidence, the relevant student has not graduated and/or the period between the announcement of the end of semester letter grades and the application for a grade change has not exceeded one calendar year.

5.22 Semester Evaluation by GPA

A student's academic achievement for each term is expressed numerically by an index referred to as the "Grade Point Average" (GPA). When calculating the GPA, mid-term exam(s), the final exam, lab/workshop reports and/or exams (if applicable), tests, projects, and/or homework are taken into consideration. Credit received from a course is found by multiplying the credit hours by the coefficient corresponding to the grade received. The GPA is then found by dividing the sum of the credits received from all courses registered during the semester by the total credit hours of the same courses. All grades from A to NG are included in the calculation of the Grade Point Average (GPA). An example of GPA calculation is illustrated in Table 5.2 below.

Table 5.2 GPA Calculation

Course Code	Letter Grade Received	Grade Point Equivalent		Credit Hours		Total Credits
MLDE118	B-	2.70	x	3	=	8.10
MATH106	C	2.00	x	3	=	6.00
ENGL191	B	3.00	x	3	=	9.00
PHYS101	A	4.00	x	4	=	16.00
MATH151	D-	0.70	x	4	=	2.80
				TOTAL=17		41.90

GPA = (41.90/17) = 2.46

5.23 Overall Evaluation by CGPA

A Student's overall academic achievement is expressed by a real number called the "Cumulative Grade Point Average" (CGPA). The CGPA is calculated by dividing the total credits received from all courses the student has completed since joining the program by the sum of the credit hours of these courses. In cases when a course is repeated, the last grade is included in the CGPA computations. In this case, the student whose GPA is given as an example above will have the following calculation for his/her GPA and CGPA for the following semester (Table 5.3).

Table 5.3 CGPA Calculation

Course Code	Letter Grade Received	Grade Point Equivalent		Credit Hours		Total Credits
MENG233	B+	3.30	x	4	=	13.20
ENGL192	C	2.00	x	3	=	6.00
MATH151	C	2.00	x	4	=	8.00
PHYS102	A	4.00	x	4	=	16.00
HIST280	B	3.00	x	2	=	6.00
				TOTAL=17		49.20

GPA = (49.20/17) = 2.89

CGPA = ((41.90+49.20-2.80) / (17+17)-4)

CGPA = 88.30 / 30 = 2.94

In Table 5.3, as MATH 151 course is repeated, the last grade obtained is calculated instead of the previous grade given in Table 5.2. Therefore, the 4 credits and the 2.80 credit-hour value belonging to the previous term are not included to calculation of the CGPA.

5.24 Scholastic Standing

a) Satisfactory Students: A student is considered successful if the required CGPA for a particular semester is achieved as given in Table 5.4.

b) Honor and High Honor Students: Students who (with a full course load, and with maximum number of course) obtain a GPA between 3.00 and 3.49 are designated an "Honor Student". Students who obtain a GPA between 3.50 and 4.00 are designated a "High Honor Student" status.

c) Success for Undergraduate Programs (registered after 2007-08): Academic standing of the students is monitored and regulated according to the Table 5.4 which relates End of Academic Term (EAT) with the obtained CGPA. Students enrolled in an undergraduate program whose CGPA's are specified in Table 5.4 are considered to be "successful", "on probation" or "unsuccessful".

Table 5.4 The Acting Standing

End of Academic Term (EAT)	Successful Student	Students On Probation	Unsuccessful Student
1st EAT	-	-	-
2nd EAT	CGPA ≥1.50	1.00 ≤ CGPA< 1.50	CGPA< 1.00
3nd EAT	CGPA ≥1.50	1.00 ≤ CGPA< 1.50	CGPA< 1.00
4th EAT	CGPA ≥1.50	1.00 ≤ CGPA< 1.50	***
5th EAT	CGPA ≥1.80	1.50 ≤ CGPA< 1.80	CGPA< 1.50
6th EAT	CGPA ≥1.80	1.50 ≤ CGPA< 1.80	CGPA< 1.50
7th EAT	CGPA ≥1.80	1.50 ≤ CGPA< 1.80	CGPA< 1.50
8th and more EAT	CGPA ≥2.00	1.80 ≤ CGPA< 2.00	CGPA< 1.80

*** Students who completed a minimum of 4 academic semesters (if the fourth semester is Spring Semester, then at the end of the Summer School) and who have a CGPA below 1.00 are dismissed from the program.

The starting semester of students transferring from one program to another internally or externally is accepted as an Academic Term. However, transfer students are considered as successful at the new program at the end of the first semester of the transferred program. Based on the Student Exchange Program framework, every semester spent out of the University is considered as an Academic Term. Unless there is a valid reason specified in By-Laws and Regulations, students are required to finish four-year programs at most in 8 years. Periods of leave of absence are not taken into consideration in the specified periods above. Students who fail to graduate within the specified period are dismissed from the University. However, graduating students who meet specific requirements may be given an additional time period. Requirements, additional time period and rules concerning graduating students are regulated by the 'Course Registration By-Law'.

5.25 Leave of Absence

a. Students may request online for a leave of absence on the understanding that they will return to the program of study and subject to permission being granted by the University.
b. Application for leave of absence should be made in writing to the Registrar's office. Such applications made from abroad must be certified by a Commissioner of Oaths.
c. Students can apply for leave of absence with a valid reason within the first 5 weeks of the semester starting from the first day of the commencement of classes. Decision on these applications is given, by the Rector, upon the proposal of the Dean who has considered the advice of the Department Chair.
d. Students can apply for leave of absence only with the report of an official Health Council certifying the nature of illness or other official documentation certifying the reason put forward in the application. Such applications must be submitted within the first 5 weeks of the semester starting from the first day of the commencement of classes. In overseas applications the date of official certification is taken into consideration. Decision on all such applications is given, by the Rector upon the proposal of the Dean based on **the recommendation of the Department Academic Council.**

5.26 Returning from Leave of Absence

At the end of the 'leave of absence' period, students can simply continue their education by following the routine registration procedure. Students, who were granted 'leave of absence' on health grounds, must provide a certificate approved by the Health Council indicating their fitness for co1ntinuing their studies. Students granted two semesters of 'leave of absence' and who wish to return to their studies at the end of the first semester, should apply in writing to the Registrar's Office. Each such application is considered according to the procedure followed in the evaluation of applications for leave of absence.

5.27 Cancelling Registration from the University and Refunding

A student can cancel registration from the University by applying in writing to the Registrars' Office and completing the necessary process. Following the completion of the process, the student will be entitled to a refund of the tuition fee based on the principles determined by the Board.

5.28 Attendance Requirements

Students are required to attend the registered courses, laboratory, studio, tutorial, practice, other academic studies and examinations required by the related course instructor. Student attendance is monitored and assessed by the course instructor. A student who fails to meet the requirements of a course or who is absent more than the limit specified by the Faculty or School is considered to be unsuccessful in that course.

5.29 Student Status

Students can be categorized as *full-time*, *part-time*, *special* and *visiting*.

a. Students have the full-time status provided that they take 3/5 or more of the total credit hours per semester at an undergraduate or school program.
b. Students who take less than 3/5 of the total credit hours per semester upon the recommendation of the student advisor and consent of the department head/school director are considered as part-time at an undergraduate or school program.
c. A student who is not registered to any program, but who is permitted to attend the lectures of some courses, is given the status of Special Student. No diploma or degree is conferred upon such students, but a certificate showing the courses completed and student performance is prepared by the Registrar's Office. Applications for Special Student status are evaluated and decided on by the Department Chair or the School Director. Registration of accepted special students is carried out by the Registrar's Office according to the rules stated in these regulations. Such students are required to possess at least a Secondary School Diploma.
d. Students who receive undergraduate or postgraduate education at an institution within the country or abroad and, upon their institution's consent, who take courses at the Eastern Mediterranean University with the aim of credit transfer are considered as visiting students. No diploma or degree is conferred upon such students, but a transcript summarizing the courses taken and credits earned is issued.

5.30 Student Portal Service

A student portal service is provided by the university Registration Office to help the students follow their letter grades for the respective courses, grade point average (GPA) of the respective semester and cumulative GPA (CGPA) for all of the completed semesters. The portal provides a solid foundation for students and their advisors in following the students' progress through their degree study. The student performance and progress are continuously monitored and managed with the student advising system.

5.31 Summer School

Summer school is organized mainly to help students with low scholastic achievement, and may be registered to for credit with the approval of the Department. These sessions are normally held before the Fall semester and form periods of intensive study which last for eight weeks. Any number of courses may be offered, although this is based on student demand, as reflected by pre-registration procedures. A student may register for a maximum of two courses offered during the summer school through the registration procedure outlined above for a normal term. The scholastic achievement is graded in the same way and included in the CGPA calculations at the end of the summer session.

6- CODE OF ETHICS for STUDENTS

Students are expected to adhere to and practice the following Code of Ethics

Honest and Respectful Representation

Every student of the department is expected to represent him or herself honestly and respectfully in all situations, whether orally or in written statements. Honest and respectful representation includes, but is not limited to:

- Providing only truthful material information on all University applications, financial aid forms, waivers, and any other official document.
- Students are also expected to behave respectfully to all administrators, faculty, staff, students, and visitors within the Department or campus environment and to behave respectfully when representing the Department or EMU at on- or off-campus events.

Acting with Academic Honesty

Students are expected to maintain the highest standards of academic integrity.

- Work that is not of the student's own creation will receive no credit. If a student is uncertain of what these standards are, he or she may consult his or her instructor for appropriate counsel, but a student's ignorance is no legitimate defense for academic dishonesty.
- Academic dishonesty includes lying, cheating, stealing, and using unauthorized materials on any assignment, quiz or exam.
- The act of lying is to intentionally provide false information or a false statement with the purpose of misleading or with irresponsible regard of the truth. Lying, in both academic and non-academic activities, is impermissible.
- Cheating is acting dishonestly in order to gain an unfair advantage. Cheating includes giving or receiving unauthorized aid on any assignment, quiz, or exam. Instructors must be consulted regarding which materials are acceptable for students to use on any assignment, quiz, or exam.
- Cheating also includes using the same material of work previously used for another course unless the student has permission from the instructor to do so.
- Cheating furthermore includes plagiarism, which is when a student uses the ideas of another and declares it as his or her own.
- Students are required to properly cite the original source of the ideas and information used in his or her work.
- Stealing is the act of taking without permission and without intention to return. The prohibition of stealing includes property of any nature as well as academic work.

Respect for University Rules and Regulations

Students of the EMU are expected to adhere to the rules and regulations set by the University.

Respect and Care for University Property

- Damaging of University property is unacceptable and a violation of EMU Rules and Regulations. Students shall be responsible for the costs of the damages resulting from their behavior.
- Students are also expected to report instances of any damage to University property immediately; as well as consciously account for or dispose properly of their belongings.

Avoiding the Use of Illegal Substances

- The use of illegal drugs and alcohol is not permitted on Campus as well as the abuse or misuse of prescription drugs.

Refraining from any Assault and Harassment

- Students shall refrain from using language or acting in a manner that is disrespectful or inappropriate towards other students and members of the EMU community.
- Sexual assault and harassment is inexcusable and shall result in disciplinary action in accordance with the University policy.

Respectful Classroom Conduct

- Students must behave respectfully toward their peers and professors.
- In the classroom setting, students may not interrupt their classmates or professor, make fun of them or their expressed views, or disrupt the learning environment.
- It is important to maintain the best learning environment for all students and professors.
- Not complying with the restrictions of the instructor will result in appropriate discipline, as decided by the instructor or department.

Respect for the Open Exchange of Ideas

- Students shall be guaranteed that their right of Freedom of Speech will be observed by all faculty and EMU members, including other students.
- Students are encouraged to engage others in thoughtful and meaningful dialogue while refraining from acting or using language with malicious intent.

7- DEPARTMENTAL COMMITTEES

Departmental council establishes working committees and assigns faculty members to the committees. Each committee is responsible for one subject and carries out necessary work regarding the subject.

8- APPENDIX: CAPSTONE TEAM PROJECTS

Capstone Team Projects

Every student in Mechatronics Engineering Program must take MECT410 and MECT411 courses for Capstone Team Project. These courses are designed as the 'capstone' of the educational program for mechatronics engineering students, allowing seniors to integrate their acquired knowledge and apply it to a real world problem. In solving such a problem, students are required: to utilize creative processes and inductive reasoning in one or more departmental areas of specialization; to develop, evaluate and recommend alternative solutions to an open-ended problem; to satisfy realistic constraints, such as time, cost, availability, and ethical; and to demonstrate capabilities to cooperate in a small project team. Project topics may be principally experimental, theoretical or applied, and will be authorized by the project supervisor.

Project Team

Senior students will be part of a project team for the semester. Project teams will typically consist of two or three individuals. Teams will be formed by the course coordinator, in conjunction with the supervisors during the first week of the semester. Individuals will be assigned to teams taking into account their common technical interests, skills and abilities, and expressed personal preferences. A team assignment form is filled in by the supervisor and passed on to the course coordinator. Each team will select a project (either from the industry or from the ones announced by the faculty members) and operate as an engineering group that has been organized specifically to solve that particular problem. The team will be responsible for the design of its internal organization, establishment of internal responsibilities, determination of project goals and objectives, overall management of project activities, performance analysis, achievement of results, development of recommendations, and preparation of all oral and written reports. In addition, project teams are expected to consult relevant books, standards, technical journals, websites, vendor catalogues, and any other media as dictated by the project. The communications component of this course, both written and oral, represents a significant proportion of the learning experience. Student teams will be asked to present current and final project results in both a written and oral format and to have frequent interaction with the faculty project supervisor regarding the status of project progress. The format of the reports can be seen on the department website. me.emu.edu.tr

Project Supervisor

Each team will be assigned a project supervisor among the faculty members of the department. Team will report to the project supervisor on a regular basis according to the course semester schedule.

Learning Outcomes:

1. Learn how to establish team and team work
2. Learning how to deal with a design problem
3. Making detailed research about certain topics
4. Learning the importance of standards and applications
5. Learning the planning stages of design procedure

Requirements for project approval:

1. Engineering analysis (mathematical or experimental)
2. Design on paper (using technical drawing tools)
3. Fabrication (preferably in the workshop)
4. Operation and testing
5. Technical Report, Presentation and Demonstration

The details are available on Capstone Design and Projects page https://me.emu.edu.tr/en/students/capstone-design-and-projects

Table A1. List of Some Capstone Team Projects

Gr. No.	Supervisor	Project Title	Pre-Requisites
1	**Prof. Dr. Hasan Hacisevki**	**3 Axis small scale router -** A small scale 50 cm x 50 cm x 4 cm small scale router will be designed and manufactured. The system will be compatible with Solid Works ® and other softwares.	**MENG303, MENG364, MENG376, Group members must be min 40% Mechatronics students.**
2	**Prof. Dr. Hasan Hacisevki**	**Drag forced measuring apparatus for wind tunnel experiments -** A Drag force measuring device will be designed and maufactured for drag for mesuring experiments performed in department wind tunnel.	**MENG104, MENG353, At least one member should be from Mechatronics program.**
3	**Prof. Dr. Uğur Atikol**	**Solar Air Heater Demonstration Unit** – Previously manufactured solar air heater is to be used as a part of a demonstration unit for training technicians and architects. It is required to mount the whole apparatus on the roof of the solar lab and have controls and digital displays of temperature, flow rate and pressure.	**MENG345, MENG353, MECT361, MENG364**
4	**Prof. Dr. Uğur Atikol**	**Ice Thermal Storage Tank** – Ice thermal storage is now more and more interesting as multi tariff system is in force in N: Cyprus. In this project it is required to design the storage tank of the ice thermal storage system.	**MENG246, MENG345, MENG364,MENG443**
5	**Assoc. Prof. Dr. Murat Özdenefe**	**Heat Pipe Integrated Evacuated Tube Solar Air Heater:** The objective of this project is: To design and manufacture a novel type of solar air heater which employs heat pipe integrated evacuated tubes as absorber. The system will involve heat pipes to convey the absorbed radiation to a heat exchanger where the air will be heated. The evacuated tubes will help to minimize the thermal losses.	**Prerequisites:** MENG303, MENG353, MENG345, **Corequisites:** MENG442
6	**Assoc. Prof. Dr. Murat Özdenefe**	**Parabolic Trough Solar Collector with U-Tube Integrated Evacuated Cylinder:** The objective of this project is: To design and manufacture a parabolic trough solar thermal collector which employs U-tube integrated evacuated tube as a receiver. The structure will made up from two main portions, concentrator and receiver. The concentrator will be a parabolic trough type, whereas the receiver will involve a U-tube with thermally decoupled absorber surface as conduit which will be placed in an evacuated glass cylinder in order to minimize thermal losses.	**Prerequisites:** MENG303, MENG353, MENG345, **Corequisites:** MENG442
7	**Assst. Prof. Dr. Devrim Aydin**	**Continuous type desiccant dehumidifier:** The objective of this project is: To design, manufacture, simulate and experiment a novel type of air dehumidifier where the desiccant material will be recirculated in vertical direction and passed through regeneration and air dehumidification stages continuously. *This project requires substantial amount of work for manufacturing and testing the unit therefore all group members should be located in Cyprus.	**Prerequisites: MENG303, MENG353, MENG345, Corequisites: MENG442**
8	**Assst. Prof. Dr. Devrim Aydin**	**Rotary endo-hydration cooler:** The objective of this project is: To design, manufacture, simulate and experiment an air cooling system consisting of a rotary wheel filled with composite salts capable of producing cooling effect through the endo-hydration process. Part of the wheel will receive regeneration hot air, whereas the other half will be used for cooling the air. With the rotation of the wheel, continuous cooling effect will be obtained. *This project requires substantial amount of work for manufacturing and testing the unit therefore all group members should be located in Cyprus.	**Prerequisites: MENG303, MENG353, MENG345, Corequisites: MENG442**
9	**Assist. Prof. Dr. Mohammad Asmael**	**Microhardness Testing Machine**	MENG303, MENG364, MENG376,
10	**Assist. Prof. Dr. Mohammad Asmael**	**Quenching Machine**	MENG303, MENG364, MENG376,
11	**Assist. Prof. Dr. Babak Safaei**	**PORTABLE SHAKER / VIBRATION EXCITER :** A set of equipment capable of producing vibration, of required amplitude and frequency. Portable shaker (or exciter) capable of delivering peak sine forces up to. The ideal solution for vibration testing of small articles and for experimental modal analysis in the field. Useful for vibration studies, endurance testing and modal testing. The setup consists of vibration exciter, Power Amplifier and vibration exciter control. Utility: 1. Vibration testing. 2. Natural frequency identification. 3. Vibration modes shape assessment.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428 SPECIAL REQUIREMENT: At least 2 team member should be from the Mechatronics Program Software: Solidworks, MATLAB, Simulink, ARDUINO
12	**Assist. Prof. Dr. Babak Safaei**	**Portable 3D Printer :** A compact, mini printer that is quite easy to set up and use. The printer must be designed with designed on the plug-and-play approach, which makes it easy to use. More than that, the Wi-Fi connection enables online printing – with the availability of offline printing through USB. Other requirements are : Strong, sturdy body, Compact size, Wi-Fi available, USB connectivity, and Paired with the onboard camera, you can easily monitor the status of your print job from afar.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428. SPECIAL REQUIREMENT: At least 2 team member should be from the Mechatronics Program. Software: Solidworks, MATLAB, Simulink, ARDUINO
13	**Assoc. Prof. Dr. Qasim Zeeshan**	**EXOSKELETON:** Exoskeletons (which may also be referred to as exosuits, exosystems, industrial human augmentation, or simply exos) are mechanical devices worn by a user that provide passive or powered assistance to support or augment human performance. An exoskeleton may include rigid or soft components, or both. The augmented activity may be static or dynamic. Exoskeleton robotics has ushered in a new era of modern neuromuscular rehabilitation engineering and assistive technology research. This project focuses on the design, development and working of a full body exoskeleton using motors, and sensors to improve the user's movements and strength within the cost, manufacturing, availability, reliability and safety constraints. In addition to deliver a design that meets all customer's needs and engineering requirements.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428. SPECIAL REQUIREMENT: At least 2 team member should be from the Mechatronics Program. Software: Solidworks, MATLAB, Simulink, ARDUINO
14	**Assoc. Prof. Dr. Qasim Zeeshan**	**Digitization of Universal Vibration Apparatus – TM16** - TM16 series is a range of products that teach different aspects of vibrations and oscillations in mechanical systems. These include pendulums, mass-springs systems and shafts and beams. The TM16 series is a modular system, based around a Frame and Cupboard. The aim of the project is to digitize the apparatus by integrating it with digital sensors and a digital display unit with data transmission to a PC. The work will cover several key areas of mechanical and mechatronics engineering.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428. SPECIAL REQUIREMENT: At least 2 team members should be from the Mechatronics Program. Software: Solidworks, MATLAB, Simulink, ARDUINO, PLC
15	**Sn. Lec. Cafer Kızılörs**	**Redesign the red pepper grinding machine**	MENG303, MENG364
16	**Sn. Lec. Cafer Kızılörs**	**Digitizing the shear machine**	MENG303, MENG364, MECT361, MECT444, EENG320, EENG410