Department of Electrical & Electronic Engineering

Eastern Mediterranean University

Information Systems Engineering (Undergraduate Program)

Spring 2021 - 2022

EASTERN MEDITERRANEAN UNIVERSITY
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Famagusta – North Cyprus, via Mersin 10 / 99628 -Turkey
Tel: +90 392 630 1301, Fax: +90 392 630 1648
URL: http://www.ee.emu.edu.tr, E-mail: eeinfo@emu.edu.tr

INFORMATION SYSTEMS ENGINEERING UNDERGRADUATE CATALOGUE

INTRODUCTION

The Information Systems Engineering is one of the undergraduate programs offered by the Department of Electrical and Electronic Engineering. The department was one of the first departments to be established in the University. It has its own site on the University campus, with modern buildings and well-equipped laboratories. The Department aims at providing contemporary training in various fields of Electrical and Electronic Engineering as well as Information Systems Engineering. It offers programs of study leading to degrees of Bachelor of Science (BS), in Electrical and Electronic Engineering, Biomedical Engineering, Information Systems Engineering, and Electronics and Communications Engineering, and also Master of Science (MS), and Doctor of Philosophy (PhD) in Electrical and Electronic Engineering.

The Information Systems Engineering undergraduate program is designed to train students in basic and engineering sciences, convey up-to-date professional knowledge, as well as to encourage individuals to develop confidence in engineering practice. Graduates of the program become a part of highly demanded class of professionals in their native countries or indeed the globally. Graduates of the Department may choose to continue their studies in the graduate programs of our department or other prominent international universities or pursue a broad range of careers in the field.

The Department offers a wide range of facilities for training and research in Electrical and Electronic Engineering and the Information Systems Engineering. The University Library provides the most recent publications as well as the classical textbooks and reference books. It has a good collection of the major international periodicals in almost all fields of Electrical, Electronic and Information Engineering.

Research interests of the department include: Network and system theory; mobile communications, indoor wireless local area networks, optimal and inverse optimal control, digital communications, digital signal processing, image processing, adaptive filtering; robotics and control systems, solar energy conversion; computer networks, wireless mobile multimedia systems, software engineering, distance learning; optoelectronics, laser theory, linear systems theory; circuits and systems; microwaves, antennas, numerical electromagnetics, satellite communication systems, modeling of physical systems, power electronics, power systems , renewable energy , robotics and artificial intelligence.

VISION STATEMENT

We envision a department that is one of the best in the region with a diverse and stimulating intellectual environment that provides leadership in the field through its education and research agenda.

MISSION STATEMENT

Our mission is to serve society through excellence in education, research, and public service. We aspire to instill in our students the attitudes, values, and vision that will prepare them for professionalism and life-long learning. We strive to generate new knowledge and technology and aim to educate our graduates for following technological and theoretical developments, and use them to serve the society.

EDUCATIONAL OBJECTIVES

The Educational Objectives of the Information Systems Engineering (INFE) Program represent major accomplishments that we expect our graduates to have achieved three to five years after graduation. More specifically our graduates are expected:

1. to excel in industrial or graduate work in information engineering and allied fields,
2. to practice their professions conforming to ethical values and environmentally friendly policies,
3. to work in international and multi-disciplinary environments,
4. to successfully adapt to evolving technologies and stay current with their professions.

STUDENT OUTCOMES

The students in the Information Systems Engineering (INFE) Program should attain the following outcomes:

1) Qualified knowledge of mathematics, science and related engineering discipline; ability to use theoretical and practical knowledge in these areas in complex engineering problems.
2) An ability to identify, formulate, and solve complex engineering problems; the ability to select and apply appropriate analysis and modeling methods for this purpose.
3) An ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; the ability to apply modern design methods for this purpose.
4) Ability to develop, select and use modern techniques and tools necessary for the analysis and solution of complex problems in engineering applications; ability to use information technologies effectively.
5) Ability to design, conduct experiments, collect data, analyze and interpret results to investigate complex engineering problems or discipline-specific research topics.
6) Ability to work effectively in disciplinary and multidisciplinary teams; self-study skills.

7) Ability to communicate effectively in verbal and written Turkish; knowledge of at least one foreign language; ability to write effective reports and understand written reports, to prepare design and production reports, to make effective presentations, to give clear and understandable instructions and receiving skills.
8) Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
9) To act in accordance with the ethical principles, professional and ethical responsibility awareness; information about standards used in engineering applications.
10) Information on business practices such as project management, risk management and change management; awareness about entrepreneurship and innovation; information on sustainable development.
11) Information about the effects of engineering applications on health, environment and safety in universal and social dimensions and the problems reflected in the engineering field of the age; awareness of the legal consequences of engineering solutions.

ACADEMIC STAFF MEMBERS

ABOU RAJAB Hasan, Assistant Professor, BSc, MSc, PhD, Middle East Technical University.
Ext. No: 1498, e-mail: hassan.rajab@emu.edu.tr

His current research interests are digital communication systems, coding theory and coded modulation techniques.

AMCA Hasan, Professor, BEng, Higher Technological Institute (EMU), MSc, University of Essex; PhD, Bradford University.
Ext. No: 1500, e-mail: hasan.amca@emu.edu.tr
Web Page: http://www.emu.edu.tr/amca
His research interests include indoor and outdoor mobile communications, telephony, multi user detection of CDMA, Multi-carrier systems, digital signal processing, adaptive equalization, radio and TV broadcasting, information technology.

AZIZI ALIKAMAR Shahla, Assistant Professor, BSc and MSc, Amirkabir University of Technology, PhD, Tehran University of Medical Science.
Ext. No: 1440, e-mail: shahla.alikamar@emu.edu.tr

Her current research interests are biomedical engineering, neuroscience, neurorehabilitation, signal and image processing.

DEMİREL Hasan, Professor [Vice Rector], BSc, Eastern Mediterranean University, MSc, King's College London, PhD and DIC Imperial College London.
Ext. No: 1580, e-mail: hasan.demirel@emu.edu.tr
Web Page: http://faraday.ee.emu.edu.tr/hdemirel
His current research interests include; resolution enhancement in images/video, facial expression recognition, pattern recognition, facial image processing, feature detection, tracking, segmentation and recognition.

HOCANIN Aykut, Professor [Rector], BSEE, Rice University, MEng Texas A&M University, PhD Boğaziçi University.
Ext. No: 1201, e-mail: aykut.hocanin@emu.edu.tr
Web Page: http://faraday.ee.emu.edu.tr/hocanin
His current research interests include wireless communication, channel and source coding, detection and estimation theory, CDMA, multi-user detection, spectral estimation, adaptive filtering.

İNCE Erhan, Professor, BSc and MSc, University of Bucknell, PhD, University of Bradford.
Ext. No: 2778, e-mail: erhan.ince@emu.edu.tr
Web Page: http://faraday.ee.emu.edu.tr/eaince
His research interests include channel coding, multi-carrier techniques, WiMAX/LTE/LTE-A/LTE-Pro, image and video processing, and statistical signal processing.

KÜKRER Osman, Professor, BSc, MSc, PhD, Middle East Technical University.
Ext. No: 1304, e-mail: osman.kukrer@emu.edu.tr
His research interests include feedback control of single phase and three phase inverters, uninterruptible power supplies, PWM ac/dc converters, high power factor rectifiers, ac and dc drivers, adaptive filtering.

ÖZKARAMANLI Hüseyin, Professor [Dean], BSc, MSc, PhD, Tufts University.
Ext.No: 1381/2776, e-mail: huseyin.ozkaramanli@emu.edu.tr
In the area of Digital Signal Processing: Construction of M-Band wavelet basis, multiple wavelets, Sub-band transforms and their applications in data/image compression and signal denoising. In the area of VLSI: Signal integrity problems associated with the different interconnect technologies in ultra high speed integrated circuits.

RUNYI Yu, Professor, BSc, Shanxi University, MSc, PhD, Beijing University of Aeronautics and Astronautics.
Ext. No.: 1382, e-mail: runyi.yu@emu.edu.tr
His current research interests include singular systems, sampled-data control, filter bank theory and design, wavelet transforms and their applications in signal/image processing.

SIRJANI Reza, Associate Professor [Vice Chair]**,** BSc, KNToosi University of Technology, MSc, Tehran Science and Research Branch of Islamic Azad University, PhD, The National University of Malaysia.
Ext. No: 1436/2197, e-mail: reza.sirjani@emu.edu.tr
His research interests include electric power systems, optimization techniques, power transmission lines, reactive power compensation, renewable energy, power quality improvement.

SOLYALI Davut, Associate Professor [Vice Dean]**,** BSc, Eastern Mediterranean University, MSc, PhD, University of Bath.
Ext. No: 2855/1432, e-mail: davut.solyali@emu.edu.tr
His research interests include electrical demand, generation, transmission and its interaction with renewable energy technologies.

UYGUROĞLU Mustafa K., Professor, BEng, Higher Technical Institute (EMU), MS, PhD Eastern Mediterranean University.
Ext. No: 1433, e-mail: mustafa.uyguroglu@emu.edu.tr
He is conducting research in the field of robotics, mechatronics and mathematical modeling.

UYGUROĞLU Rasime, Associate Professor [Chair], BEng, Higher Technical Institute (EMU), MS, PhD, Eastern Mediterranean University.
Ext. No: 1300, e-mail: rasime.uyguroglu@emu.edu.tr
Her research interests are Computational methods in electromagnetics, FDTD analysis of microstrip antennas, Rotman Lens antennas, implantable and wearable antennas for biomedical applications

UYSAL Şener, Professor, BEng, Higher Technical Institute (EMU); MSc, PhD, University of London.
Ext. No:2772, e-mail: sener.uysal@emu.edu.tr
His research interests are microwave integrated circuits, design of microwave antennas, radar.

ADMINISTRATIVE STAFF MEMBERS

NAKIŞÇI Yeliz, Departmental Secretary	Ext.:1301	e-mail: yeliz.nakisci@emu.edu.tr
CENGİZ Cem, Lab. Technician	Ext.:2783	e-mail: cem.cengiz@emu.edu.tr

LABORATORIES

Basic Circuits Laboratory

Intended 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.

Instrumentation and Measurement Laboratory

Facilities for undergraduate education and training in electrical and electronic measurements and instrumentation.

Telecommunications Laboratory

Equipped with analogue and digital communication kits, measuring instruments, signal generators and analyzers for undergraduate courses. There are also many HF to UHF frequency range transmitters and receivers.

Control Systems 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.

Electronics Laboratory

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.

Electrical Machines and Power Electronics Laboratory

Equipped for experiments on all types of rotating AC and DC machines, stepper motors, universal motors and single and three-phase transformers. Facilities are available for testing and measuring motor characteristics. Several types of generalized machine sets are available for undergraduate and graduate research studies. This laboratory is also equipped with several sets and rectifier/inverter units suitable for undergraduate power electronics experiments.

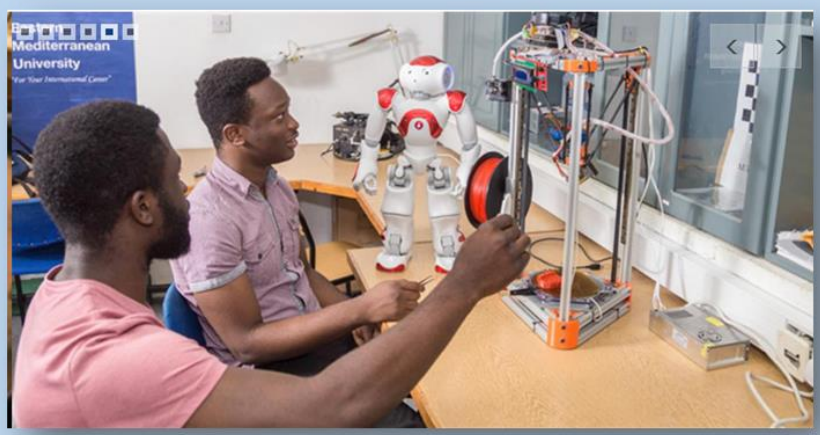
Microprocessor Laboratory

Provides facilities for performing experiments on microprocessors and single-board microcomputers. The equipments include microprocessor development and training sets based on the true 16-bit 8086 microprocessor. The training sets incorporate RS232 serial port, two programmable peripheral interface (PPI), programmable interval timer (PIT) and programmable interrupt controller (PIC) chips. Application boards can be connected to the microprocessor training boards to provide real time interfacing by using the following I/O units: optical fiber receiver/transmitter, optical speed/position

sensor, numerical keypad, heater/temperature sensor, dc motor, LED displays and speakers.

Logic Circuit Design Laboratory

Intended 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.



Microwave and Antenna Laboratory

Equipped with microwave and antenna training sets including gun oscillators, waveguide and wave propagation equipment sets, waveguide matching, lecher lines, transmitting antenna, receiving antenna and complex antenna systems for undergraduate courses.

Undergraduate Computer Laboratories

There are two general purpose undergraduate computer labs housing a total of 50 PC based networked systems. These workstations allow access to the Departmental Lab and student server machine. A variety of engineering software is accessible from these workstations. Internet access is available from all workstations. A networked printing facility is also available. Lab classes or individual student study are available using these facilities. Late opening of these facilities is provided.

Computer Networks Research and UNIX Laboratory

A laboratory/research facility intended to support graduate computer network studies and provide a platform for research and development in these areas. Several networking simulation software including OPNET is available in this laboratory for teaching and research. It also has 10 PC based Linux systems for UNIX and networking undergraduate laboratory studies.

Simulation Computer Laboratory

A separate computer based simulation laboratory is provided which provides a platform consisting of 25 networked PCs for student based term projects as well as formal teaching of Integrated Circuit Design courses. A number of engineering software is available including the Xilinx Software for VLSI Design.

Multimedia Enabled Teaching Laboratories (MMETL)

There are two general-purpose multimedia enabled teaching laboratories with a total of 52 networked multimedia PCs. A platform for Internet access and data projection system is available for technology based teaching to undergraduate and graduate classes.

Undergraduate Project Laboratory

This is a new facility made available for student graduation projects. It houses number of equipment including testing, measurement, prototyping (breadboards) and PC based interfacing for project implementation.

Graduate Computer Research Laboratory

Housing the departmental local area network servers and the Unix server, this laboratory is intended to provide a general purpose research center with wider computational facilities. It also incorporates 3 Unix workstations, 10 fast Pentium and other PCs including some with CD-ROM devices and two laser printers.

DSP and Multimedia Laboratory

The DSP laboratory is intended to serve the undergraduate students in their courses and project related work. The lab is designed to provide services to students in three groups. These are the Signals and Systems course, which is a core course, Introduction to Digital Signal Processing, which is a technical elective and any multimedia systems related technical electives. The Lab will enable the students in these classes to acquire data (image, speech etc.) in digital format and provide them with the means to process their data using software tools such as MATLAB ® or C programming language. TI based TMS320 DSP hardware platforms are also available for practical implementations.

High Voltage Laboratory

High Voltage Laboratory serves as independent, non-industrial, university center for high voltage engineering. The mission of the Laboratory includes research, evaluation, testing and education activities. The laboratory is equipped with 100 kV, 5 kVA test transformer, 100 kV, 5 kVA, 50 Hz AC test set, 140 kV, 20 mA DC test set.

OTHER FACILITIES

IEEE Student Branch

IEEE EMU student branch was established in January 1995 and currently has approximately 100 members from the Departments of Electrical and Electronic Engineering and Department of Computer Engineering as well as other related disciplines. It is the center of the information exchange between members of the Institute of Electrical and Electronics Engineering students in Eastern Mediterranean University.

Electronic Club

The electronic club is established by the students in the department in order to share knowledge, experience and enthusiasm. The club has a dedicated office, which contains books, electronic parts and testing and monitoring equipment for the practical works of the students. The club creates an environment where the students can get together to talk about their profession and exchange views on different projects.

EESTEC (Electrical Engineering Students' European Association)

The Electrical Engineering STudents' European assoCiation (EESTEC) is an organization of and for electrical engineering and computer science students from

universities, institutes or technical schools in Europe that award an engineering degree. It was founded in Eindhoven, the Netherlands in 1986. Since 1995 it is a recognized association seated in Zürich, Switzerland. From year 2002 the EESTEC seat returned to the Netherlands, but now in Delft. A Local Committee is a local branch of EESTEC International. Currently there are 39 LCs in more than 20 countries with over 1700 members.

Student Representatives Office

Through a democratic election system the students elect their representatives in the department. The student representatives are given opportunities to reflect the problems and requests of the students to the departmental administration. The student representations' Office is allocated for the use of the student representatives and all the students.

Departmental Library

This is a Departmental Library is managed by the IEEE Student Branch in collaboration with the department and houses IEEE periodicals as well as a limited number of books. It has a photo copying facility and an internet enabled PC for Library search operations. It also provides a quiet area for individual study.

Multimedia Enabled Classrooms (MMEC)

The department has 5 MMECs that use the latest instructional technology.

EEE Amphitheater (Seminar/Conference Hall)

A fully equipped modern amphitheater is available within the departmental building. This facility seats 150 people and is used mainly in seminar courses as well as seminar/conferences.

THE BACHELOR OF SCIENCE (BS) PROGRAM IN INFORMATION SYSTEMS ENGINEERING

The curriculum and the courses offered in the department are divided into four main categories: Basic sciences cover about one fourth, fundamental engineering sciences cover almost one fourth, humanities and social sciences cover about one eight and professional sciences about three eighth of the program. More than one quarter of the professional science courses are offered as technical electives during the final year to enable students to advance their knowledge in specific fields of engineering. These fields are Computer Hardware, Software and Networks, Communication Systems, Information Theory, Digital Signal Processing, VLSI design, Wireless Communications, Microwave Theory and Applications, Antennas.

Students are required to successfully complete forty three courses including compulsory Graduation Design Project Proposal (INFE405) and Graduation Design Project (INFE406) in their last two semesters. Furthermore, they are required to complete at least forty working days of summer training in industry. The courses are distributed in eight semesters through four academic years, and core courses are taught at the rate of seventy hours per course, where about a quarter of this time is spent in laboratories. Successful candidates are awarded the degree of Bachelor of Science (BS) in Information Systems Engineering.

Credit Rating: Each course is assigned a credit rating, e.g. (4,1) 4; where the first digit represent the weekly number of lecture hours, the second digit the weekly number of laboratory or tutorial hours the course entails and the final digit the number of credit hours allocated to the course for the semester.

CURRICULUM

The **INF**ormation Systems **E**ngineering (INFE) curriculum is based on the sound foundations of the ABET accreditation obtained by the Electrical and Electronic Engineering curriculum in its basic engineering approach. The INFE curriculum is designed for anyone desiring to qualify in the field of Information Systems Engineering. The INFE curriculum, which is prepared in accordance with the ABET criteria, is given in the proceeding section.

INFORMATION SYSTEMS ENGINEERING CURRICULUM

First Year: Fall Semester					
R. Code	**Crs.Code**	**English Course Name**	**Lect.**	**Lab/Tut**	**Cr**
28711	INFE115	Introduction to Logic Design	4	1	4
28712	ENGL181	Academic English – I	5	1	3
	ENGL191	Communication in English - I	3	1	
28713	PHYS101	Physics – I	4	1	4
28714	MATH151	Calculus – I	4	1	4
28715	MATH163	Discrete Mathematics	3	1	3
			Sem. Cr. Total:		**18**

First Year: Spring Semester					
28720	INFE102	Intro. to Information Systems Engineering	1	0	0
28721	INFE112	Introduction to Programming	4	1	4
28722	PHYS102	Physics – II	4	1	4
28723	MATH106	Linear Algebra	3	1	3
28724	MATH152	Calculus – II	4	1	4
28725	ENGL182	Academic English – II	5	1	3
	ENGL192	Communication in English II	3	1	
			Sem. Cr. Total:		**18**

Second Year: Fall Semester					
28731	INFE212	Algorithms and Data Structures	4	1	4
28732	INFE221	Electrical Circuits	4	1	4
28733	UE01	University Elective – I	3	0	3
28734	MATH207	Differential Equations	4	1	4
28735	TUSL181	Turkish as a Second Language	2	0	2
	HIST280	Atatürk`s Principles and History of Turkish Reforms			
			Sem. Cr. Total:		**17**

Second Year: Spring Semester					
28741	INFE213	Object Oriented Programming	4	1	4
28742	INFE226	Signals and Systems	4	1	4
28743	INFE242	Electronics	4	1	4
28744	MATH252	Mathematical Methods for Engineers	4	1	4
28745	UE02	University Elective – II	3	0	3
			Sem. Cr. Total:		**19**

Third Year: Fall Semester					
28751	INFE214	Software Engineering	4	1	4
28752	INFE360	Communication Systems - I	4	1	4
28753	INFE410	Microprocessors – I	4	1	4
28754	INFE420	Digital Signal Processing	4	1	4
28755	MATH322	Probability and Statistical Methods	3	1	3
			Sem. Cr. Total:		**19**

Third Year: Spring Semester					
28761	INFE216	Computing Systems	4	1	4
28762	INFE312	Information Management	4	1	4
28763	INFE320	Data Communications and Computer Networks	4	1	4
28764	INFE362	Digital Communication	4	1	4
28765	ENGL201	Communication Skills	3	1	3
			Sem. Cr. Total:		**19**

Fourth Year: Fall Semester					
28771	INFE405	Graduate Design Project Proposal	1	0	1
28772	INFE403	Summer Training	0	0	0
28773	INFE421	Client Server Computing	4	1	4
28774	INFE467	Information Theory	4	1	4
28775	AE01 †	Area Elective – I	3	0	¾
28776	AE02 †	Area Elective – II	3	0	¾
28777	ECON101	Introduction to Economics - I	3	1	3
	IENG420	Engineering Economy	3	0	
	IENG450	Industrial Management	3	0	
			Sem. Cr. Total:		**18/19/20**

Fourth Year: Spring Semester					
28781	INFE406	Graduate Design Project	3	0	3
28782	AE03 †	Area Elective – III	3	0	¾
28783	AE04 †	Area Elective – IV	3	0	¾
28784	UE03	Uni. Elective – IV	3	0	3
28785	PHIL401	Ethics in Professional Life	3	0	3
	IENG355	Ethics in Engineering			
			Sem. Cr. Total:		**15/16/17**
			Cum. Cr. Total:		**143-147**

† : Area Elective Courses (AE). There are 4 AE courses, which are technical electives offered by the Information Systems Engineering Program or Computer Engineering Department.

A. Electives

i. University Elective (UE) Courses

The INFE Program requires students to take four University Elective courses, which are Humanities/Art/Social Sciences Electives. These courses may be chosen based on the student's personal interests. The courses are chosen from the global list of University Electives according to the ABET guidelines satisfying the humanities and/or arts, and social sciences requirements. The list of available UE courses which are within the ABET guidelines is declared at the beginning of each registration period. One of the UE courses (UE03) is selected among the Economics, Finance, and Management courses offered by the departments of Business, Economy and Industrial Engineering.

ii. Area Elective Courses (AE)

The Area Elective Courses are grouped for various areas of specialized study. Further specialized courses may be added as required. The Department generally announces which courses will be offered at the beginning of each semester. Students are expected to take Technical Elective Courses in the fields of Computers (Hardware and Software), Computer Networks, Information Engineering, Communications, and Electronics. However, they can also take courses offered in the Electrical and Electronic Engineering, Computer Engineering and other related engineering programs. The table below gives the list of the AE courses available.

Semesters 7-8: Area Electives (4 courses)

C .code	Course name	C. hour	Prerequisite
EENG428	Introduction to Robotics	(4,1)4	Math 106
EENG444	CMOS Integrated Circuits and Sys.	(4,1)4	INFE115, INFE242
EENG464	Wireless Communications	(4,1)4	INFE360 MATH322
EENG468	Source Compression for Mobile Communications	(4,1)4	INFE360 MATH322
EENG469	Introduction to Image Processing	(4,1)4	EENG226
EENG411	Microprocessors II	(4,1)4	INFE410
EENG473	Computer Simulation	(4,1)4	MATH322, INFE212
EENG475	Object Oriented Mod. & Design	(4,1)4	EENG212
CMPE415	Visual Programming	(4,1)4	CMPE 354
CMPE447	Fiber Optic Computer Communication	(4,1)4	CMPE344
CMPE424	Speech and Image Processing	(4,1)4	CMPE321
CMSE322	Software Design	(4,1)4	CMSE321
CMPE471	Automata Theory	(4,1)4	MATH163
CMPE474	Performance Analysis of Computer Systems and Networks	(4,1)4	MATH322
CMSE323	Human/Computer Interaction	(4,1)4	CMSE201
CMSE326	Software Quality Assurance & Testing	(4,1)4	CMSE201

B. Final Year Project (INFE405/406)

Students are required to do a practical design project in their final year of study. INFE405 and INFE406 are two consecutive courses that involve the introductory study, the practical implementation, testing and analysis of the project. The projects are assessed on the bases of a project proposal submitted to project supervisor, project report and the presentation of the project before a departmental jury.

i. INFE405: Graduation Design Project Proposal

This is a one-credit course that can be taken in the 7th academic semester. It forms a preparation phase for the INFE406. Students are expected to familiarize with their projects, carry out literature survey and prepare materials, study components and relevant standards before the implementation phase in the following semester.

ii. INFE406: Graduation Design Project

Design and practical works oriented projects will be given to students with an aim to stimulate application of theoretical knowledge to practical situations. INFE406 can be taken in the 8th academic semester. It provides experience in designing and implementing systems within multiple realistic constraints using conventional materials, components, equipments and software. Projects should be implemented conforming to relevant standards, ethical issues and environmental policies. (Prerequisite: INFE405)

C. Additional Requirements

Further academic rules and regulations can be obtained through the departmental web page (http://www.ee.emu.edu.tr) and university's "Rules and Regulations" web page (http://mevzuat.emu.edu.tr/).

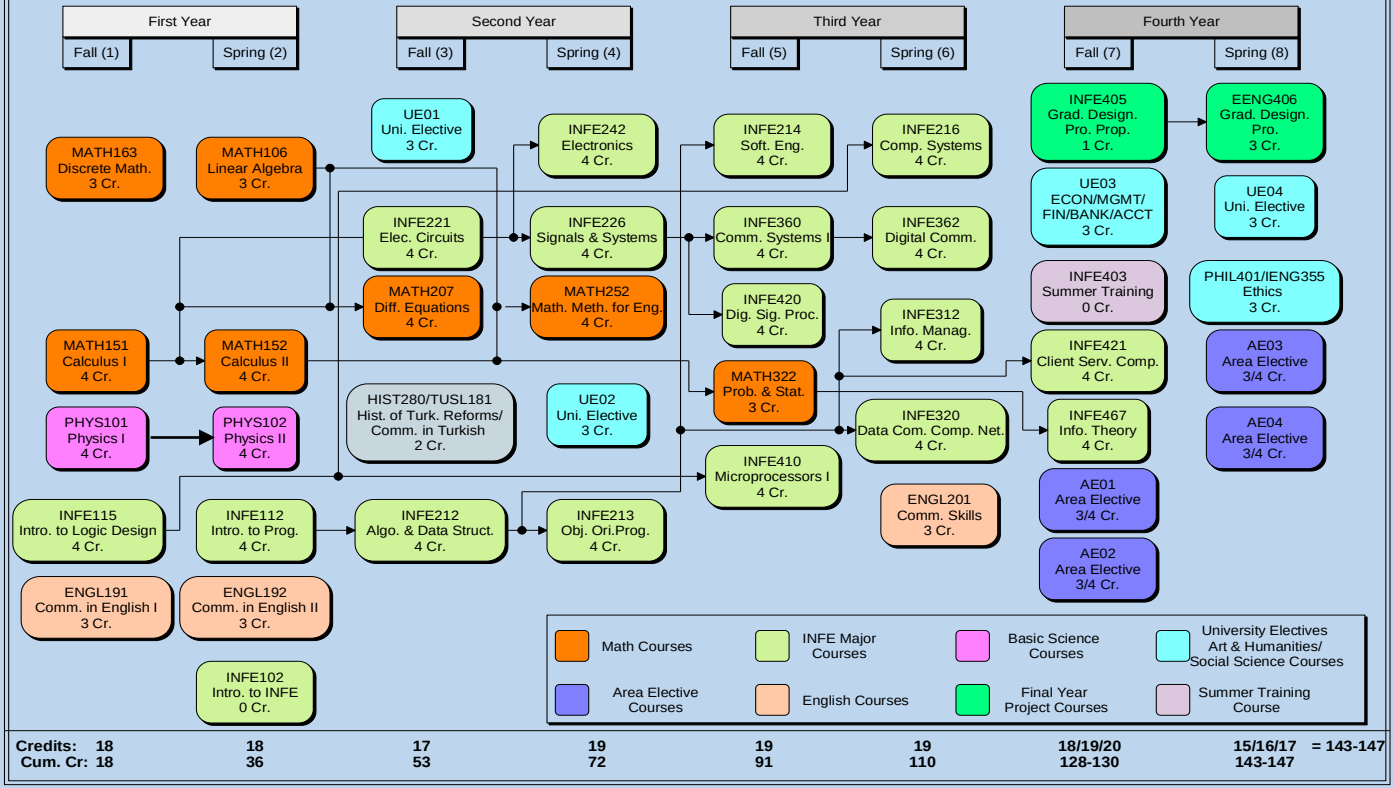
D. Summer Training (INFE403)

In partial fulfillment of graduation requirements, each student is required to complete 40 working days of training during the summer vacations, normally at the end of the junior year, in accordance with rules and regulations set by the Department. Summer training involves full-time work experience in industry in the area of student career interest. A formal report and evaluation by work supervisor required. Prerequisite: Junior standing and consent of department

E. Transfer

Students may transfer to the department from other universities (external transfer) or from other departments within the EMU (internal transfer). Transfer applications are made to the Transfer Committee of the department through the EMU Registrar's Office.

Eastern Mediterranean University
Information Systems Engineering
Program Course Flowchart



Credits:	**18**	**18**	**17**	**19**	**19**	**19**	**18/19/20**	**15/16/17** = **143-147**
Cum. Cr:	**18**	**36**	**53**	**72**	**91**	**110**	**128-130**	**143-147**

F. Short Course Descriptions

INFE102: Introduction to Information Systems Eng. (1,0)0

A series of seminars are held in current topics and areas of specialization in Electrical, Electronic, and Information Systems Engineering. Speakers are invited from different departments of EMU or other International Universities, Industry and Consulting firms, to deliver seminars in all aspects of engineering that are not normally covered in the lecture courses. These include, safety at work, standards, quality control, engineering ethics, etc

INFE115: Introduction to Logic Design (4,1)4

Variables and functions. Boolean algebra and truth tables. Logic gates, Karnaugh maps. Incompletely specified functions, Multilevel logic circuits. Tabular minimization. Number representation. Arithmetic circuits. Binary codes. Programmable logic devices. Multiplexers, decoders and encoders. Synchronous sequential circuits, flip-flops, synchronous counters. . (Prerequisite: None)

INFE112: Introduction to Programming (4,1) 4

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. (Prerequisite: None)

INFE212: Algorithms and Data Structures (4,1) 4

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.(Prerequisite: INFE112)

INFE213: Object Oriented Programming (4,1) 4

Object oriented concepts. Data typing, data encapsulation and the abstract data type. Object identity, inheritance, reusability, polymorphism. Object oriented programming languages. Classes, functions references. Object declarations and data types. Expressions and statements. Dynamic storage management. Operators, overloading and friends. Derived classes, initialization, inheritance, I/O libraries. Building generic libraries. Error handling in libraries. (Prerequisite: INFE212)

INFE214: Software Engineering (4,1) 4

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 modeling and design. The Relational database model. Software testing, documentation and maintenance. Object modeling and principles of OO analysis (Prerequisite: INFE212)

INFE216: Computing Systems (4,1) 4

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.(Prerequisite: INFE115)

INFE221: Electrical Circuits (4,1) 4

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.

INFE226: Signals and Systems (4,1) 4

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.(Prerequisite: INFE221)

INFE242: Electronics (4,1) 4

Semiconductor devices, basic amplifier concepts, diodes, P-N junction diodes, Schottky diodes, Bipolar Junction Transistors (BJTs), Field-Effect Transistors: MOSFETs, JFETs, transistor biasing.(Prerequisite: INFE221)

INFE312: Information Management (4,1) 4

Database systems; components of database systems, DBMS functions, database architecture and data independence, hypertext, hypermedia and multimedia. Data modeling. 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.(Prerequisite: INFE212)

INFE320: Data Communication & Computer Networks (4,1) 4

Principles of data communications; information transfer, computer networks and their applications. Network structures, architectures and protocols. Open systems and the OSI reference model; services and network standardization. Communication systems: transmission media, analog and digital transmission. PSTN, modems, PCM, encoding and digital interface. Transmission and switching: FDM, TDM, modulation, circuit, packet and message switching. The store and forward concept. Networking characteristics. Storage, delay, multiplexing, bandwidth sharing and dynamic bandwidth management, QoS. Channel organization, framing, channel access control. PSPDN and integrated digital network concept: ISDN. LANs, MANs and WANs. ATM and gigabit networking. Communication models. De-facto standards. The Internet open architecture and the protocol suite. Modern applications of networking. (Prerequisite: INFE212)

INFE360: Communication Systems I (4,1) 4

Review of Fourier transform and its properties. Transmission of signals through linear systems. Power spectral density and autocorrelation function. The sampling theorem and the Nyquist rate, aliasing distortion. Non-ideal sampling: Pulse amplitude modulation (PAM) and flat-top PAM and equalization. Digital signaling: quantization, encoding and pulse code modulation (PCM), line codes and their spectra, regenerative repeaters. Pulse transmission: Intersymbol interference (ISI), Nyquist method for zero ISI, time division multiplexing (TDM), pulse-time modulation techniques. Complex envelope representation of bandpass and modulated signals. RF circuits: limiters, converters, multipliers, detectors, PLL circuits and etc. Analog modulation techniques: AM, DSB-SC, SSB etc. Binary modulation techniques: ASK, BPSK, FSK.(Prerequisite: INFE226)

INFE362: Digital Communications (4,1) 4

Review of probability and random variables. Random processes, stationarity, correlation, covariance and ergodicity concepts. Transmission of random processes through linear filters, power spectral density. Gaussian random processes, white noise, filtered noise and narrowband noise. Baseband pulse transmission and optimal (matched filter) receiver. Probability of error for pulse transmission. Nyquist criterion for distortionless binary transmission, partial response signaling, multi-level signaling and tapped delay line equalization. Geometric interpretation of signals, coherent detection of signals in noise. Digital modulation techniques such as PSK, FSK, QPSK and etc. Detection of the digitally modulated signals.(Prerequisite: INFE360)

INFE405: Graduation Design Project Proposal (0,1)1

This is a one-credit course that can be taken in the 7th academic semester. It forms a preparation phase for the INFE406. Students are expected to familiarize with their projects, carry out literature survey and prepare materials, study components and relevant standards before the implementation phase in the following semester. (Prerequisite: Departmental Consent)

INFE406: Graduation Design Project (0,3) 3

Design and practical works oriented projects will be given to students with an aim to stimulate application of theoretical knowledge to practical situations. EENG406 can be taken in the 8th academic semester. It provides experience in designing and implementing systems within multiple realistic constraints using conventional materials, components,

equipments and software. Projects should be implemented conforming to relevant standards, ethical issues and environmental policies. (Prerequisite: INFE405)

INFE403: Summer Training (0,0)0

In partial fulfillment of graduation requirements, each student is required to complete 40 continuous working days of training during the summer vacations, normally at the end of the junior year, in accordance with rules and regulations set by the Department. Special attention should be given to most but not necessarily all of the following areas of training: production, operation, maintenance, management and safety. A formal report describing the projects the student was involved in is to be submitted.(Prerequisite: DC)

INFE410: Microprocessors I (4,1) 4

Basic computer organization and introductory microprocessor architecture. Introduction to assembly language programming: basic instructions, program segments, registers and memory. Control transfer instructions; arithmetic, logic instructions; rotate instructions and bitwise operations in assembly language. Basic computer architecture: pin definitions and supporting chips. Memory and memory interfacing. Basic I/O and device interfacing: I/O programming in assembly and programmable peripheral interface (PPI). Interfacing the parallel and serial ports.(Prerequisite: INFE211)

INFE420: Digital Signal Processing (4,1) 4

Overview of digital signals and systems. Frequency and time representation of sampling, decimation, interpolation. Z-transform: Evaluation, region of convergence (ROC) and properties. Discrete time system structures: tapped delay line and lattice structures. Fast Fourier Transform (FFT). Digital filter design: Finite impulse response (FIR), infinite impulse response (IIR), windowing, Hilbert transform. (Prerequisite: INFE226)

INFE421: Client-Server Computing (4,1) 4

The seven-layer reference model; physical, data link, network, transport, session, presentation and application. Host name resolution and the domain name service. Public-key cryptography. The WEB as an example client server computing; designing clients and servers. Technologies of the web; URLs, HTML, HTTP, applets etc. Communication and networking; protocol suites, streams and datagrams, remote procedure calls, internetworking and routing. Distributed object systems; serializing objects, distributed object frameworks. COM and DCOM. Collaboration technology and groupware. Distributed operating systems.(Prerequisite: INFE212)

INFE467: Information Theory (4,1) 4

Modeling of information sources and measure of information. Joint and conditional entropy. Source Coding: Huffman, Lempel Ziv coding and arithmetic coding. The Rate distortion theory. Modeling of communication channel and the Channel Capacity Theorem. Scalar and vector quantization and Transform coding. Coding of discrete information sources: Block codes, cyclic codes, convolutional codes. Combined modulation and coding, trellis coded modulation (TCM) .(Prerequisite: MATH322)

CMPE415: Visual Programming (4,1) 4

The main concern of this course is to teach Graphical User Interface, event-driven programming and object-oriented programming for Windows and Internet environments with a visual programming language. Windows Presentation Foundation (WPF) Graphical

User Interface, WPF Graphics and Multimedia, XML and XAML, Strings, and Database and Web Application development will also be introduced. (Prerequisites: CMPE354)

CMPE424: Speech and Image Processing (4,1) 4

Signal definition and processing, time and frequency representation, Fourier representation of signals, discrete-time systems, linear time invariant systems, digital processing of speech and image signals, speech production mechanism, representation of speech and image signals as discrete-time sequences, basic properties of speech and image signals, auto- and cross-correlation in speech and image signals, voiced unvoiced classification of speech, linear prediction and pitch extraction of speech, applications of speech processing, coding of speech signal, representation of colors, histogram operations, image transformations, edge detection, image interpolation, image compression, warping and morphing. (Prerequisites: CMPE321)

CMPE471: Automata Theory (4,1) 4

Mathematical preliminaries and basic concepts. Strings, Languages and Grammars. Chomsky hierarchy of grammars. Deterministic and nondeterministic finite automata. Equivalence of deterministic and nondeterministic finite automata. Minimization of finite automata. Regular grammars and regular expressions. Pushdown automata. Context free grammars. Chomsky normal form. Greibach normal form. Correspondence of pushdown automata and context free grammars. Introduction to Parsing. (Prerequisites: MATH163)

CMPE474: Performance Analysis of Comp. Sys. and Networks (4,1) 4

Queuing models of computer systems and networks and applications of queuing theory to computer network modeling. Bounds on system performance. Mean-value analysis of computer systems. Modeling specific subsystems. Queuing models for analysis. Limitations of queueing models. Analysis of transaction processors, terminal-oriented systems, and batch processing. (Prerequisites: MATH322)

CMSE201: Fundamentals of Software Engineering (4,1) 4

Phases of the software development process. Estimation, system modeling, requirements analysis. Project management, modular software design, object-oriented analysis and design techniques. Design documentation using symbolic representations, UML diagrams. Software testing, quality issues. (Prerequisites: INFE112/CMPE112)

CMSE322: Software Design (4,1) 4

Modular software design. Different architectural design styles for software. UML diagrams, Client/server paradigm. Choice of appropriatesoftware and hardware system capabilities. Dealing with timing constraints. Formal software design specification techniques. Configuration management. Software design for distributed systems. Reusability and commercial off-the-shelf software modules. (Perquisite: CMSE321)

CMSE323: Human/Computer Interaction (4,1) 4

Human factors in computing. Cognitive modeling, user interfaces. Usability engineering. Task analysis, user-centered design, and prototyping. Design of windows, menus, and commands. Voice and natural language I/O. Multimedia systems. User interface

architectures and API's. (This course involves case studies and a term project.) (Prerequisites: CMSE201)

CMSE326: Software Quality Assurance and Testing (4,1) 4

Software metrics. Quality planning and quality control. Inspections and formal technical reviews. Black-box and white-box testing, problem analysis and reporting techniques. Verification and validation techniques. Process and product quality assessment. Process measurement. Software quality assurance standards. (Prerequisites: CMSE201)

CMPE447: Fiber Optic Computer Communication (4,1) 4

This course will describe the basic principles of fiber optics, light propagation theories, attenuation of optical fibers, dispersion and dispersion compensation of fiber optics. In addition, optical fiber transmitters, receivers and fiber optic system design are also discussed. Finally, an introduction to fiber optic network is considered. (Prerequisites: CMPE344)

ENGL191: English I (3,1) 3

ENGL191 is a first semester Basic Academic English course for students at the Faculty of Engineering. The purpose of the course is to introduce students to writing, reading, speaking and listening in academic settings as well as provide an introduction to appropriate study skills.

ENGL192: English II (3,1) 3

ENGL192 is a second semester Basic Academic English course for students at the Faculty of Engineering. The purpose of the course is to further develop students' writing, reading, speaking and listening skills in academic settings and to improve their study skills.

ENGL201: Communications Skills (3,0) 3

ENGL201 is a second year English course for students at the Faculty of Engineering. This course is intended for students with an upper intermediate level of English. The course aims to enhance 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 an 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. In addition to the project work, students will work on their job search skills by writing a curriculum vitae (CV) and an application cover letter.

PHYS101: Physics I (4,1) 4

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.

PHYS102: Physics II (4,1) 4

Heat, heat transfer and heat conduction. Kinetic theory of ideal gases, equipartition of energy. The laws of thermodynamics, applications to engine cycles, Coulombs law and electrostatic fields. Gauss's law, symmetry. Electric potential. Magnetic fields. Amperes law. Faradays law.

MATH106: Linear Algebra (3,0) 3

Systems of linear equations: elementary row operations, echelon forms, Gaussian elimination method; Matrices: elementary matrices, invertible matrices, symmetric matrices, quadratic forms and Law of Inertia; Determinants: adjoint and inverse matrices, Cramer's rule. Vector spaces: linear independence, basis and dimensions, Euclidean spaces. Linear mappings: matrix representations, changes of bases; Inner product spaces: Cauchy-Schwarz inequality, Gram-Schmidt orthogonalization; Eigenvalues and eigenvectors: characteristic polynomials, Cayley-Hamilton Theorem, Diagonalizations, basic ideas of Jordan forms.

MATH151: Calculus I (4,1) 4

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.

MATH152: Calculus II (4,1) 4

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 (Prerequisite: Math 150/151).

MATH207: Ordinary Differential Equations (4,1) 4

First order ordinary differential equations. Higher order homogeneous linear differential equations. Solution space. Linear differential equations with constant coefficients. Non - homogeneous linear equations; variation of parameters, operator methods. Systems of linear differential equations with constant coefficients. Laplace Transforms. Power series solutions. Orthogonal functions and Fourier expansions. Introduction to partial differential equations. First and second order linear partial differential equations. Separation of variables. Heat and wave equations. (Prerequisite: Math 106 and Math 151).

MATH252: Mathematical Methods for Engineers (4,0) 4

Complex numbers. Algebra of complex numbers. Polar representation. Complex functions. Limits and continuity. Analyticity. Analytic functions. Cauchy-Riemann equations. Line integrals. Cauchy integral formula. Isolated singularities. Residue theorem. Numerical error. Solution of nonlinear equations. Convergence. Solution of linear systems of equations: direct and iterative methods. Interpolation. Curve fitting. Numerical differentiation and integration (Prerequisite: Math 106 and Math 152).

MATH322: Probability and Statistical Methods (3,1) 3

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 (Prerequisite: Math 152).

TUSL181: Communication in Turkish (2,0) 2

This course is a course aims to develop students' ability to use the Turkish language to an intermediate level. The course emphasizes development of vocabulary, grammar and sentence structure, through intensive drills and practice in writing as well as conversation.

HIST280: History of Turkish Reforms (2,0) 2

The aim of this course is to teach students under what conditions the Republic of Turkey was established; to make students understand the principles of Ataturk's reforms; the phases of the Reforms; Ataturk as a military hero and a statesman; Ataturk's concept of nationalism that defies racism; Ataturk's attempts to maintain global peace based on causes and effects; the relations between the Turkish Republic and the establishment of the Turkish Republic of Northern Cyprus; Turkish Cypriot years of national strife. This is a general education course

IENG420: Engineering Economy (3,0) 3

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. Prerequisite: senior standing, [Offered only to non-IE Engineering students]

IENG450: Industrial Management (3,0) 3

This is a service course offered to senior non-IE engineering students. The aim is to prepare the engineering graduates to assume positions in industry as engineering managers. The topics covered include the historical development of industrial management, functions of technology management, managing technological change, managing engineering projects, and managing the engineering career. Prerequisite: senior standing, [Offered only to non-IE engineering students]

IENG350: Ethics (3,1) 3

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. Prerequisite: consent of instructor [Offered also as a service course to non-IE engineering students]

G. Scholastic Status

(a) Satisfactory Students

A student is considered successful at the end of a semester, if the Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) are at least 2.00 out of 4.00.

(b) Honor and High Honor Students

Students registered to the normal course load of a program in a department and scores a GPA between 3.00 and 3.49 is designated an 'Honor', if the GPA is between 3.50 and 4.00 is designated a 'High Honor'.

(c) Success for Undergraduate Programs (registered after 2007-08)

Students enrolled in an undergraduate program whose CGPA's are specified below are considered as 'successful', 'on probation' or 'unsuccessful'.

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.

(d) Registration of Students on "Probation"

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. (Students who wish to register in summer school or who have the part-time status are allowed to register only for one new course).

(e) Registration of "Unsuccessful" Students

Students who are with "unsatisfactory" status are not allowed to register for a new course. During registration, these students must first register in the courses from which they received the grades: F, NG or 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. Courses with (W) grades are considered as new and cannot be registered.

(f) Course Withdrawal

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. The course instructor should be informed and recommendation of the academic advisor and the approval of the Department Chair or School Director are 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.

(g) The Letter Grades

Performance of a student for each course registered, is evaluated by the Course Instructor as a letter grade given below.

Grade	Grade Point Equivalent	Description
A	4.0	Pass
A-	3.7	Pass
B+	3.3	Pass
B	3.0	Pass
B-	2.7	Pass
C+	2.3	Pass
C	2.0	Pass
C-	1.7	Conditional Pass
D+	1.3	Conditional Pass
D	1.0	Conditional Pass
D-	0.7	Failure
F	0.0	Failure
NG	0.0	Nil Grade
S	-	Satisfactory
U	-	Unsatisfactory
I	-	Incomplete
W	-	Withdrawal

A student who receives A, A-, B+, B, B-, C+, C, C-, D+, D or S from a course is considered to have succeeded in that course.

E. Double Measure Programs

Eastern Mediterranean bylaws allow the outstanding Information Systems Engineering students to get a second undergraduate diploma by applying to the Double Measure Programs, http://mevzuat.emu.edu.tr/5-1-7-Rules-Doublemajorprgs.htm.

Double Measure Programs for the Information Systems Engineering Program students:

i. Information Systems Engineering-Electrical and Electronic Engineering

ii. Information Systems Engineering-Computer Engineering