NEAR EAST UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

Course Catalogue

CONTENTS

This course catalogue is developed to give information about the Computer Engineering programme to all who are interested in the Near East University, Department of Computer Engineering eg. future students, parents, academics, universities and institutions, bodies abroad.

The catalogue includes key information about the duration of the programme, mode of study, course description, credit and grading system etc. of the programme.

We hope you can find the necessary information to your questions about the Department of Computer Engineering and the course programme.

Sincerely

Prof. Dr. Rahib H.Abiyev

Chairperson

Computer Engineering (CE) Programme

1. General Information about the Department of Computer Engineering

Near East University, Department of Computer Engineering was founded in 1992. The Department of Computer Engineering operates under the administration of the Faculty of Engineering.

The aims of the Computer Engineering Department are; bringing up experienced and knowledgeable individuals equipped with theoretical and practical information related to the discipline, and at the same time, bring up competent individuals who are able to contribute to the developments and research studies in the field, and be managers and instructors to continue to bring up qualified people who can effectively serve in this field.

By providing high quality educational opportunities, the vision of the Department of Computer Engineering is to be the most prestigious department of engineering so far is existing within the geography It is positioned in by bringing up individuals having the ability to adapt to the changes upcoming throughout the world, achieving international success and thus becoming leading engineers.

Computer Engineering Department currently offers the following programs:

- BS Degree in Computer Engineering
- MS Degree in Computer Engineering
- PhD. Degree in Computer Engineering

The department has two sections: English and Turkish, thus, the language of instruction is English and Turkish.

Mode of Study and Type of program

The Bachelor's degree program is classified as a full time program. The Bachelor's degree program is aimed at Turkish, Cypriots and Foreign students, and teaching is given in English language. Studies in foreign universities can be included in the student's degree in NEU, if they are suitable to substitute studies in the NEU degree program. The Department of Computer Engineering also has foreign teachers and researchers, which makes it possible to widen both the educational and cultural perspective.

Website of the higher education institute - http://www.neu.edu.tr

2. Official length of programme:

Length of the program is 4 years (excluding one year of English preparatory class for English programme), 2 semesters per year, 16 weeks per semester

3. Profile of the Programme and Method of Education

Undergraduate curriculum according to Academic Regulation for Undergraduate Studies is arranged by the Computer Engineering Department and becomes effective upon the decision of the Engineering Faculty Board and approval of the University Senate.

The Computer Engineering Program takes four years and leads to a Bachelor's degree of Science in Computer Engineering. The Bachelor's degree requires the completion of 240 ECTS credits. The curriculum of the Bachelor's Degree in Computer Engineering was planned according to recommendations of ASIIN's subject-specific criteria (The Technical Committee 02, TC 02 and The Technical Committee 04, TC 04) and recommendations of The Association for Computing Machinery (ACM), and The Computer Society (IEEE-CS)[1]. The curriculum is classified into curricular categories represented in Table 1. A number of credits and a weight of a category in the program are indicated in Table 1. It includes studies of mathematics and science, studies of English and social science courses, studies of computer science and computer engineering obligatory courses, studies of computer engineering electives courses, bachelor's thesis and practical training.

Table 1: Curricular categories of the program

Category	Notation	Credit	Weight, %
Mathematics	MT	18	13.1
Basic Science	BS	12	8.8
English Composition & Social Science	ECS	18	13.1
Computer Science	CS	13	9.5
Obligatory Computer Engineering Courses	OCE	54	39.5
Elective Computer Engineering Courses	ECE	18	13.1
Bachelor's Thesis	BT	4	2.9
Summer Internship	SI	-	-
	Total	137	100

Each module of the program (Appendix E) is classified into curricular categories. Each module is assigned a number of semester credit hours, according to the number and types of formal activities within a given week. These are determined as follows:

- Lecture hours: presentation of material in a classroom setting
  - 3 credit hour = 4 "hour" of lecture per week
  - 2 credit hour = 2 "hour" of lecture per week
- Laboratory hours: formal experimentation in a laboratory setting
  - 1 credit hour = 2 "hour" laboratory session per week
- Recitation hours: problem-solving sessions, etc. in support of lecture material
  - 1 credit hour = 2 "hour" of recitation per week

The professional competence acquired in the required subject studies is further developed by elective subject choices. In the Bachelor's Degree Program the portion of elective studies is 13%. In exceptional cases, the elective subject can be chosen from other degree programs, if it is suitable for the degree. The application has to be approved by the Head of Computer

Engineering Department. With technical respect free electives on offer, students of the Bachelor's degree program may choose a certain specialization track to get a more distinguished qualifications profile.

Teaching methods: The Bachelor's program is full-time, on-campus program. The teaching methods applied in the Degree Program in Computer Engineering include lectures, classroom and laboratory exercises, computer training, different kinds of assignments, seminars, excursions, and Case-exercises. The courses also involve group and project work which train the social competences of the students.

The Department of Computer Engineering appreciates modern concepts and new methods in teaching and education methods that support educational objectives in addition to traditional methods. Traditional class attendance is compulsory for all courses except graduation projects. Problem solving sections of knowledge based courses are integrated with the theory sections.

The Department of Computer Engineering aims to reach its educational objectives by using several teaching methods. Both the traditional and modern teaching methods are employed at the department. Traditional teaching methods are face-to-face lectures and are class based, requiring all students to attend classes. At least 70% of class attendance is compulsory for all the courses. Lectures are conducted using standard computer based presentations in the form of pre-prepared slides. In addition, white boards and marker pens are used whenever necessary in order to explain difficult topics in greater detail, or to answer student questions. Students are encouraged to take notes during the presentations and ask questions if there are points that they are not clear about. Electronic copies of the slides are sent to students by e-mail after each class, and students are encouraged to go through the slides in their own time and make sure that they understand all presented information.

In addition to traditional teaching methods, a variety of other methods are used to support the teaching. Most computer based learning requires the use of computers as part of the learning process. Students use the departmental computer laboratories for their practical work in order to improve their practical skills. Students use computers in the laboratory under the supervision of either a teaching assistant or an instructor.

Educational methods used for the students can be classified into **teacher centered and student centered**. In **Teacher-Centered Approach**, the Teachers are the main authority figure. The primary role of the student is to passively receive information (via lectures and direct instruction) with an end goal of testing and assessment. It is the primary role of teachers to pass knowledge and information onto their students. In this model, teaching and assessment are viewed as two separate entities. Student learning is measured through objectively scored tests and assessments. In **Student-Centered Approach**, the teachers are an authority figure, teachers and students play an equally active role in the learning process. The teacher's primary role is to coach and facilitate student learning and overall comprehension of material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios, and class participation. Teaching and

assessments are connected; student learning is continuously measured during teacher instruction. Commonly used teaching methods may include class participation, demonstration, recitation, memorization, or combinations of these.

4. Qualification Awarded

Computer Engineer (CE) (Bachelor's Degree/ first cycle in Bologna System)

Level of Qualification: Qualifications Framework- European Higher Education Area (QF-EHEA): 1

5. Access requirement(s)

The admissions and entry requirements ensure that the students who are admitted to the degree program possess the required competences. Bachelor's degree modules are fully taught in English, and thus, good English skills are required.

Students admitted to the department come from three sources:

- Local students, who are citizens of the Turkish Republic of Northern Cyprus (TRNC)
- Students from Turkey, who are Turkish citizens
- Students from other countries (foreign students)

All students are admitted to the university after they complete their high school studies successfully and obtain high school graduation diplomas.

Local students must sit for the Near East University entrance examination and obtain a pass mark from this examination. Successful students are admitted to the university, but not necessarily to the Computer Engineering Department.

Students from Turkey must select the Near East University and the Computer Engineering Department as their choice, and they must obtain successful pass marks from the Turkish university entrance examinations (prepared and administered by the Higher Education Council of Turkey, YOK). Those who obtain the required marks are admitted to the university, but not necessarily to the Computer Engineering Department.

Students from other countries are admitted to the university based on the results of their high school graduation diplomas.

Because the medium of teaching is in English, the level of their English is assessed by the Faculty of English language. Those students who have certificates and who have already passed English Language proficiency examinations are exempt from the English preparation school and are admitted directly to the department where they are enrolled for the first year

and first semester of their studies. Those students whose levels of English writing and communication skills are below the required standards are admitted to the English preparatory school of the university. The English preparatory school offers concentrated teaching of the English language reading, writing, and communication skills. The duration of the preparatory school is one academic year. Successful students are admitted to the department at the end of their studies at the English preparatory school.

6. **Qualification Requirements**

137 Near East University Credits (Near East University Credit is contact hour based) which is total 240 ECTS credits must be completed after being successful in the courses to become a graduate of the Computer Engineering department.

ECTS is a credit system designed to make it easier for students to move between different countries. Since they are based on the learning achievements and workload of a course, a student can transfer their ECTS credits from one university to another so they are added up to contribute to an individual's degree programme or training. ECTS helps to make learning more student-centred. It is a central tool in the Bologna Process, which aims to make national systems more compatible.

ECTS also helps with the planning, delivery and evaluation of study programmes, and makes them more transparent (http://ec.europa.eu/education/ects/ects_en.htm) .

7. **Converting US College Credit Hours (semester credit hours-SCH) to ECTS**

ECTS is the most commonly used credit system in Europe. The major difference between the European Credit System ECTS and the US College Credit system is that the first is based on student workload and the second on contact hours. The ECTS is oriented towards the time required for a student to meet the intended study outcomes, while the U.S. system is more oriented towards the time a faculty member needs to teach.

Here is an example of conversion of credits from ECTS to Semester Credit Hours for a college or university in the U.S.: 1.67 ECTS = 1.00 US College Credit Hours

Conversion standards may vary between higher education institutions in the U.S.

(http://www.mastersportal.eu/articles/1110/what-you-need-to-know-about-academic-credit-systems-in-the-us.html)

A student is required to have minimum pass grade from each course and obtain minimum 2.00/4.00 cumulative Grade point Average (cumulative GPA) **.**

The students who have successfully completed the programme should be able to be science-based, skilled and competent **Computer Engineering specialist** prepared to meet the challenges of practicing computer engineering in the 21st century, and **researchers** who are prepared to conduct computer engineering research focused on bettering the human condition and advancing the fundamental understanding of computer engineering.

8. **Arrangements for transfer from another Computer Engineering department (Recognition of Prior Learning)**

A student wishing a transfer from another university: the student must prove her/his English Proficiency if s/he wishes to attend the English Section.. At the time of OSS examination the candidate's entrance score must not be less than the lowest score for admission to the Near East Computer Engineering Department. The transcript and course content of the applicant is examined by the department and the student is then accepted to the appropiate year of the programme.

For further details please contact:

Faculty of Engineering

Department of Computer Engineering,

Near East Boulevard, P.O. Box 92202

Nicosia, TRNC via Mersin 10-Turkey

Phone: +90 (392) 223 64 64 (ext. 291)

E-mail: info@neu.edu.tr

9. Examination Regulations, Assessment and Grading

The examinations are a way of finding out whether the module objectives have been accomplished. Every module in the degree programme has an examination. The type of examination to be held is laid down in each module description.

At the commencement of the teaching term, students are informed as to examination requirements. All the examinations are done during the examination week. The lectures are cancelled during the examination week. Every effort is made to ensure that no more than one examination is taken by a student on the same day.

The assessment procedures, marking criteria, and examination regulations are available for the students to examine if they wish so. The regulations cover the student absences due to illness, financial, or other reasons.

Written examinations are done for each module except the graduation projects. There are some modules that make oral examinations which are indicated in Project/Presentation/ Report activities of the module.

There are two written examinations for each module: mid-term examination, and final examination. The mid-term examinations are done around 6 weeks after the start of a new semester. The final examinations are done at the end of each semester. The examination dates are published in the university calendar at the beginning of each semester.

Students are allowed only to take one make-up exam. The date and time of the make-up exams are announced by the department.

Students who fail in exam are allowed to get re-sit exam at the end of any semester.

The graduation projects are completed in 2 semesters. Students are assigned supervisors for the duration of their graduation projects. Students can carry out their graduation project externally in the industry after approving their topic and supervisor by the department. Graduation project assessment consists of the preparation of a bound report by the student, and also an oral presentation to jury members. The jury members are selected from the departmental staff according to the topic of the presentation and there must be at least 2 members at the jury. Students are expected to prepare slides and present their projects orally. The presentation time is 10-15 minutes for each student. At the end of the presentation 5 minute time is allocated to questions. The assessment depends on the style of the presentation, command of the language, confidence of the student, the ability to answer the questions, and the content of the project. Each jury member fills in a separate assessment form. The final grading is taken to be the average grade given by all the jury members.

10. Grading Scheme and Grades

PERCENTAGE	COURSE GRADE	GRADE POINTS	
90-100	AA	4.00	(Excellent)
85-89	BA	3,30-3,95	(Excellent)
80-84	BB	3,00-3,45	(Very Good)
75-79	CB	2,50-2,95	(Very Good)
70-74	CC	2,00-2,45	(Good)
65-69	DC	1,50-1,90	(Good)
60-64	DD	1,00-1,40	(Good)
50-59	FD	0,50-0,90	(Failed)
0-49	FF	0,00	(Failed)

11. Occupational Profiles of Graduaotes

Graduates of the Department of Computer Engineering have an opportunity to be employed as system engineers, computer engineers and specialists in this field, system programmers,

design engineers, programmers, information technology specialists, communication network engineers, and in a variety of private and public establishments.

The Department of Computer Engineering has good relations with the governmental and private organizations and companies in North Cyprus and Turkey, thereby ensuring up to date study program in regard to scientific expertise and regional industrial needs. Curriculum of the department is kept up to date by offering new core/ elective courses upon the regional requirements, the demand of employers, international organizations and job market representatives.

The graduates can find the job in the governmental and private organizations and companies where they can work as

- Network systems and data communication analysts
- Software engineers
- Information technology specialists
- Computer hardware engineers
- Trainers for application support
- Assistants in high education units

The modules in the degree structure are also closely linked to the research conducted in the department and provide a path to post graduate studies. Moreover, a large majority of Bachelor's projects are completed in cooperation with industry in various projects either at the university or in companies, and thus provide a link to the professional field and a path to future employment in specialist tasks in these research areas.

Practical relevance of the program is achieved by:

- lectures given by professionals from various fields;
- laboratory lessons;
- renewing course contents periodically based on the job market needs;
- implementing new courses based on the job market needs;
- guest lecturers delivered by engineering practitioners;
- providing project based learning in courses with term projects;
- providing graduation projects that involve practical applications both in manufacturing and service sectors;
- organizing international and domestic academic seminars and workshops;
- a summer practice (internship) in order to integrate knowledge and theory to practice in the fields of Computer Engineering.

A summer practice is included in the Bachelor's degree. A summer practice is lasted 40 working days.

12. Programme Director

Prof. Dr. Rahib H.Abiyev (Chairperson)
Phone: 00 90 392 223 64 64
E-mail: rahib.abiyev@neu.edu.tr

13. Key Learning Outcomes

Learning outcomes of the BSc program include development of:

1. Ability to understand and apply knowledge of mathematics, science, and engineering
2. Ability to analyze a problem, identify and define the computing requirements appropriate to its solution.
3. Ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems.
4. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects
5. Planning and carrying out experiments, as well as to analyze and interpret data
6. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice
7. Understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering
8. Ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills
9. Ability to communicate effectively with a range of audiences
10. A recognition of the need for, and an ability to engage in life-long learning

14. Courses List with Near East University credits and ECTS

List of courses of taken each year are given below.

BSc in Computer Engineering

FRESHMAN

First Year, Fall Semester (19/19 credits, 30/30 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
AIT101/	Atatürk's Principles Reforms/	(2,0) 0	1	ECS	
TUR100	Turkish for Foreigners*				
COM100	Computer Engineering Orientation	(2,0) 0	1	OCE	

COM141	Introduction to Programming	(4,2) 4	6	OCE	
CHEM101	General Chemistry	(4,2) 4	6	BS	
ENG101	English I	(4,0) 3	4	ECS	
MAT101	Calculus I	(4,2) 4	6	MT	
PHY101	General Physics I	(4,2) 4	6	BS	

First Year, Spring Semester (21/40 credits, 30/60 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM121	Discrete Structures	(4,0) 3	4	CS	
COM162	Programming &Problem Solving	(4,2) 4	6	OCE	COM141
ENG102	English II	(4,0) 3	4	ECS	ENG101
MAT102	Calculus II	(4,2) 4	6	MT	MAT101
MAT112	Linear Algebra	(4,0) 3	4	MT	MAT101
PHY102	General Physics II	(4,2) 4	6	BS	PHY101

SOPHOMORE

Second Year, Fall Semester (18/58 credits, 30/90 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM211	Logic Design	(4,2) 4	6	OCE	COM121
COM201	Data Structures& Algorithms	(4,2) 4	6	OCE	COM162
EE207	Electrical Circuits	(4,0) 3	6	OCE	PHY102
MAT201	Differential Equations	(4,2) 4	6	MT	MAT102
ENG210	English Communication Skills	(4,0) 3	6	ECS	ENG102

Second Year, Spring Semester (18/76 credits, 30/120 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM210	Object Oriented Programming I	(4,2) 4	6	CS	COM141
COM242	Database Management Systems	(4,2) 4	6	OCE	COM201
COM254	Computer Organisation	(4,0) 3	6	OCE	COM211
EE208	Basic Electronics	(4,2) 4	6	OCE	EE207

NTE	Non-Technical Elective	(4,0) 3	5	ECS	
COM200	Summer Training I	-	1	SI	

JUNIOR

Third Year, Fall Semester (17/93 credits, 30/150 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM301	Microprocessors	(4,2) 4	6	OCE	COM254
COM360	Signals and Systems	(4,2) 4	6	OCE	EE207
COM339	Programming Language Concepts	(4,0) 3	6	CS	COM210
MAT350	Probability and Statistics	(4,0) 3	6	MT	MAT102
RTE	Restricted Technical Elective	(4,0) 3	6	ECE	

Third Year, Spring Semester (16/109 credits, 30/180 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM312	Operating Systems	(4,0) 3	6	OCE	COM254
COM322	Data Communications and Networking	(4,2) 4	6	OCE	
COM321	System Simulation	(4,0) 3	6	OCE	MAT350
COM333	Operational Research	(4,0) 3	5	CS	COM201
COM382	Real Time Systems	(4,0) 3	6	OCE	MAT201
COM300	Summer Training II	-	1	SI	

SENIOR

Fourth Year, Fall Semester (14/123 credits, 30/210 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM490	Engineering Design I	(2,2) 2	6	BT	
COM411	Software Engineering	(4,0) 3	6	OCE	COM339
TE	Technical Elective	(4,0) 3	6	ECE	
TE	Technical Elective	(4,0) 3	6	ECE	
TE	Technical Elective	(4,0) 3	6	ECE	

Fourth Year, Spring Semester (14/137 credits, 30/240 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
COM491	Engineering Design II	(2,2) 2	6	BT	COM490
ECON431	Economics For Engineers	(4,0) 3	6	ECS	
FE	Free Elective	(4,0) 3	6	ECS	
TE	Technical Elective	(4,0) 3	6	ECE	
TE	Technical Elective	(4,0) 3	6	ECE	

* AIT101 is a module for Turkish students.

TUR100 is a module for foreign students
In first semester AIT101 Atatürk's Principles Reforms course is designated for the students of Turkish nationality, the course TUR100 Turkish for Foreigners – for oversee students (foreigners).
MT: Mathematics, BS: Basic Science, ECS: English Composition and Social Sciences, CS: Computer Science, OCE: Obligatory Computer Engineering Courses, ECE: Elective Computer Engineering Courses, BT: Bachelor's Thesis, SI: Summer Internship.

.

Restricted Technical Elective

- COM320 Computer Hardware 3 Credits
- COM330 Programming Languages I 3 Credits
- COM344 Automata Theory 3 Credits

Free Elective

- MAN402 Management for Engineers 3 Credits

Technical Electives (Category I)

Code	Title	Credits
COM 401	Microprocessor Systems	3
COM 402	Computer Graphics	3
COM 410	Parallel Computer Architecture	3
COM414	Digital Control Systems	3
COM420	Neural Networks	3
COM424	System Programming	3
COM432	Programming Languages II	3
COM 434	Internet Programming	3
COM 441	Advanced Object Oriented Programming	3
COM 442	Object Oriented Programming II	3
COM447	Advanced Operating System	3
COM449	Digital Signal Processing	3
COM450	Database Applications	3

COM451	Introduction to Artificial Intelligence	3
COM452	Introduction to Parallel Computing	3
COM453	Decision Making	3
COM454	Advanced Computer Architecture	3
COM463	Digital Image Processing	3
COM473	Hardware Design using FPGAs	3
COM481	Web Design and Programming	3
COM488	Multimedia Systems	3

Technical Electives (Category 2)

Category 2 technical electives are the courses offered by other departments. These courses have been carefully selected and pre-approved by the Department.

Code	Name	Credits
EE 411	Telecommunications	3
EE 429	Mobile Communication Systems	3
EE 430	Wireless and Personnel Communications Systems	3
EE 435	Mechatronics	3
EE 457	Robotic Systems	3
EE 470	Programmable Logic Controllers	3

15. Objectıves and contents of the course:

The educational objectives of the Degree Program in Computer Engineering reflect the mission of Near East University. The Bachelor of Science program in Computer Engineering prepares the students to achieve the following career and professional objectives.

- To acquire a strong foundation in Computer Engineering area relevant to the current needs of industry to allow them to successfully compete for demanding and high quality jobs
- Analyze problems, propose algorithmic solutions, and implement them correctly and efficiently by applying their knowledge of mathematics, computing, systems and development tools.
- Propose engineering solutions using the information and communication technologies for the related problems of industry and government.
- To acquire clear communication abilities, ethical and social responsibilities for teamwork.
- Make positive contributions to their community and society by applying skills and abilities learned during their undergraduate program in computer engineering
- Improve knowledge and skills through lifelong learning and graduate studies.

The individual courses are described below. These courses are offered by the Computer Engineering Department together with the objective of each module.

FIRST YEAR

COM100 Computer Engineering Orientation
Objectives of the Course:
Learn more about your academic program, Learn about why Computer Engineering and how to be familiar with that since, Schedule your first set of classes, Meet faculty, advisors, and current State students, Interact with fellow incoming students, Lear how to Ask Questions!
Course description:
An introduction to fundamental concepts, construction of digital computer system hardware and software. Machine language concepts and internal data representations, integer, real and character data types. Algorithms and flowcharts as tools of program design process. Basic program structure: sequencing, alteration and iteration methods. Parts of a PC, motherborad, memory, graphics card, sound card, memory, hard disk, floppy disk, network card.

COM141 Introduction to Programming
Objectives of the Course:
To familiarize the students with computers and computing fundamentals.To be able to analyze and design a solution to a given problem. To enable the students to write structured programs using C programming Language.
Course description:
Algorithm development. Elements of C. Structure of a C program, data types, constants, input and output of integer numbers, real numbers. Variables, expressions and assignments. Input and output functions. Control Structures. Selection- If statement, multiple selection- switch statement. Iteration- while, do-while, for operators. User-defined functions, arrays and subscripted variables, single and multi dimensional arrays. Array and functions. Pointers, pointers and strings. Structures, creating structures. Structure as function argument. Subprograms. Files. File operations.Application programs will be developed in a laboratory environment using the C language.

MAT 101 Calculus I 4 Credits
Objectives of the Course:
Learn more about your academic program, Learn about limits, derivatives. Study integrals, definite integrals. To introduce the basic properties of determinants and some of their applications
Course description:
Functions, 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.

PHY 101 General Physics I 4 Credits
Objectives of the Course:
Be able to know the basic laws of mechanics.To apply those laws for solving problems. To be able to us his/her knowledge in the fields of other sciences and/or engineering. Understanding how physics approach and solve problems in mechanics.
Course Description
Measurement, vectors, kinematics, force, mass. Newton's laws, applications of Newton's laws. Work and kinetic energy. Conservation of linear momentum. Impulse, collisions, rotation, moments of inertia. Torque, angular momentum, conservation of angular momentum, static equilibrium.

CHEM 101 General Chemistry 4 credits
Objectives of the Course:

Develop fundamental principles of theoretical and applied chemistry, Develop scientific inquiry, complexity, critical thinking, mathematical and quantitative reasoning. Explain phenomena observed in the natural world. Develop basic laboratory skills

Course Description

A basic course with emphasizing the metric system. Matter and measurement; atoms, molecules and ions; mass relations in chemistry, stoichiometry; gases; electronic structure and the periodic table; covalent bonding; thermochemistry; acids and bases.atoms. Chemical bonding.

ENG 101 English I 3 Credits

Objectives of the Course:

To develop students' language skills and capacity to conduct writing task through the vocabulary, listening and speaking skills.To develop their level of knowledge, communicative capacity, and ability to analyze and reflect on the language. To give learners the language they need for real-life, hands-on task like explaining a process or analyzing risk and to put into practice the academic skills that they will need to use during their educations.

Course Descriptions.

This course offers intermediate levels include wide range of grammatical structures and vocabulary of English in order to built onto the foundation established at the Preparatory School. This course aims to bring the students to a level that will enable them fulfill the requirements of main courses of their departments. Students will be encouraged to read a variety of texts as well as chapters from textbooks so that they can pursue their undergraduate studies at the university without major difficulty. ENG 101 is designed to improve the students' presentation ability. Students are expected to do an oral presentation. At the end of the course they submitted their written projects.

MAT 102 Calculus II 4 Credits

Sequences and Infinite Series; The integral test, comparison test, geometric series, ratio test, alternating series. Power series, Taylor series. Parametric equations and Polar coordinates. Functions of several variables, limits, continuity, partial derivatives, chain rule, extreme of functions of several variables. Multiple integrals: Double integrals, Area, volume, double integral in polar coordinates, surface area, triple integrals, spherical and cylindrical coordinates.

PHY 102 General Physics II 4 Credits

Objectives of the Course:

Be able to know the basic laws of electricity and magnetism. To apply those laws for solving problems. To be able to use his/her knowledge in the fields of other sciences and/or engineering. Understanding how physics approach and solve problems in electricity and magnetism.

Course Descriptions.

Electrical charges. Coulomb's law. Electrical fields. Gauss's law. Electrical potential. Capacitance and dielectrics. Current and resistance. Direct current circuits. Magnetic fields. Sources of the magnetic field. Faraday's law of induction. Inductance and inductors.

Prerequisite: PHY 101

ENG 102 English II 3 Credits

Objectives of the Course:

to develop the students' capacity to conduct writing task through the vocabulary, listening and speaking skills ; to reinforce and consolidate the language and skills that the students have learned from earlier courses ; to develop their level of knowledge, communicative capacity, and ability to analyze and reflect on the language; to develop students' language skills to prepare them for their future professional life

Course Descriptions.

This course offers the students a wide range of grammatical structures and key language and vocabulary of English in the technical, industrial, and scientific sectors at intermediate level for everyday communication at work. This course aims to bring the students to a level that will enable

them to fulfill the requirements of the main courses of their departments. The ability to evaluate, analyze and synthesize information in written discourse will be highlighted. Documentation in writing will be introduced at the beginning of the course, in order to solidly establish the skill by the end. Students will learn the discourse patterns and structures to be used in different essay types that they need for real life, hands-on tasks like explaining process, organizing schedules, reporting or progress, or analyzing risk.

MAT 112 Linear Algebra 3 Credits
Objectives of the Course:
To provide a student with methods for solving systems of linear equations .To introduce the basic properties of determinants and some of their applications. To show that the notion of a finite-dimensional, real vector space is not as remote as it may have seemed when first introduced . To deal with magnitude and direction in inner product spaces .To study linear transformations. To consider eigenvalues and eigenvectors and solve the diagonalization problem for symmetric matrices
Course Description
System of linear equations: elementary row operations, echelon forms, Gaussian elimination method. Matrices: elementary matrices, invertible matrices. Determinants: adjoint and inverse matrices, Crammer's rule. Vector spaces: linear independents, basis, dimension. Linear mapping. Inner product spaces: Gram-Schmit ortogonalization. Eigenvalues and eigenvectors, Cayley-Hamilton theorem, diagonalization.

COM 121 Discrete Structures 3 Credits
Objectives of the Course:
Apply mathematical reasoning and combinatorial analysis and design discrete structures for computations, Apply algorithmic thinking and formulate problems using mathematical structure,
Course Description
Set theory: basic operations on sets, finite sets and mathematical induction. The theory of counting: multiplication rule, ordered and unordered samples, permutations and principle of inclusion and exclusion. Graphs and algorithms: Euler cycles, minimal spanning trees, Prim's algorithm, division algorithm, recursion, Euclidian algorithm, binary trees and tree searching, the matching problem and the Hungarian algorithm. Proposition calculus and Boolean algebra. Introduction to Turing machine. Formal languages and decision algorithms.

COM 162 Programming and Problem Solving 4 Credits
Objectives of the Course:
To provide the student with the most essential programming and related skills, including the use of the GNU/Linux environment to develop programs and powerful text editors that are available on multiple platforms. To equip the student with the philosophy of high-level programming by taking advantage of existing data structures and modules in solving problems. To teach the student that almost all resources required for successful programming are readily available and to teach the student how to access those resources. To teach the student the importance of algorithm design, iterative development, testing, and documentation
Course Description
Introduction, Types and Operations. Python language. Statements and Syntax, Input/Output. Functions, Modules, Classes and Object Oriented Programming, Exceptions and Tools, Advanced Topics. The students are expected to work within a GNU/Linux environment. The course provides a basic introduction into object-oriented programming.

SECOND YEAR

COM200 Summer Practice I Noncredit
The minimum time for this practice in an organization is four weeks (20 working days). The main objective is to observe a company in an original setting and answer questions on the fundamental areas

of Computer Engineering and Information Science. A written report summarizing the training experience is required.

MAT 201 Differential Equations 3 Credits
Objectives of the Course:
Introducing first, second and higher order differential equations, and the methods of solving these equations.
Emphasizing the important of differential equations and its engineering application. Introducing the Laplace transform and its applications in solving differential equations and other engineering applications. Introducing the series method in solving differential equations.
Course Description
Ordinary and partial differential equations. Explicit solutions, Implicit Solution. First-order differential equations, separable, homogenous differential equations, exact differential equations. Ordinary linear differential equations. Bernoulli differential equations. Cauchy-differential equations. High-order ordinary differential equations. Introduction to Laplace transforms. Introduction to series method for solving differential equations

EE 207 Electrical Circuits 3 Credits
Objectives of the Course:
Conceptual overview of law and methods in engineering. Teaching Methods of Circuit theory.
Teaching Power in circuits
Course Description
This course is designed for provide an understanding of the fundamentals and analysis of electric circuits. The course encompasses the fundamental concepts of electric circuits, such as Ohm's and Kirchhoff's laws. It develops into the circuit analysis techniques such as nodal and mesh analyses and the equivalent circuits. Energy storage elements and first order transient circuits are included in the course. The course also covers the analysis of sinusoidal circuits, including the power calculation.
Prerequisite: PHY 102

EE 208 Basic Electronics 3 Credits
Objectives of the Course:
To provide a general background of semiconductors to the students. To provide physical and electrical properties of basic electronic devices; diodes, transistors, operational amplifiers. To provide the analysis of basic diode, transistor and operational amplifier circuits
Course Description
Semiconductors. The P-N junction diode, equivalent models, diode circuits, switching, rectification, DC power supplies, Zener diodes. The bipolar junction transistor, large-signal model. DC transistor circuit analysis, biasing. Common-emitter, common-collector and common-base configurations. JFET operation and biasing.
Prerequisite: EE 207

ENG 210 English Communication Skills 3 Credits
Objectives of the Course:
Reading: to develop the skill of reading for information from a wide variety of authentic Engineering texts. These include longer specialist reading texts to provide challenging reading for students already proficient in this field, and gain the ability to read and understand vacancy announcements and write an appropriate cover letter/letter of intent, CV to deliver a academic presentation in English.
Speaking: to develop the ability to participate in exchanges of information and opinions in the context of IT and Engineering, provide explanations of features of Mechanical, Computer, Electronics, Biomedical, Food and Automotive Engineering. To develop communication skills for the job market which is becoming increasingly common to have give presentation in English.
Writing: to write instructions, descriptions and explanations about topics in Engineering. Write a cover letter and interview winning C.V.

Language : to consolidate and extend the student's understanding and use of structures and function common to Engineering at intermediate and advanced levels. Through the chosen texts they can learn also the vocabulary and expression that need when giving oral presentation. Giving a presentation in a foreign language is real challenge, even for those who have a good knowledge of the language.

Course Description

To reinforces and consolidates the language and 4 skills that students have learned from earlier courses, as well as developing their level of knowledge, communicative capacity, and ability to analyse and reflect on language. Course on upper -intermediate AND ADVANCED levels include interesting and up-to-date topics, encouraging students to recognize the importance of acquiring a foreign language in a modern context, prepare them to for their future professional life. Prerequisite: ENG 102

COM 201 Data Structures and Algorithms 3 Credits

Objectives of the Course:

To provide the student with the most essential skills for analyzing a programming problem, choosing the most appropriate data structure and algorithm for implementation. To convey the fundamental tradeoff between space and time. To provide the student with the opportunity to gain ample experience in implementing solutions using user-defined classes. To equip the student with the knowledge required to analyze the performance of a given algorithmic To enable the student to learn to develop efficient algorithms for each given problem. To convey to the student the importance of choosing the "right" data structure for a problem

Course Description

Foundational Data Structures, Data Types and Abstraction, Stacks-Queues, and Deques, Ordered Lists and Sorted Lists, Hashing- Hash Tables and Scatter Tables, Trees, Search Trees, Heaps and Priority Queues, Sets-Multisets and Partitions, Garbage Collection and the Other Kind of Heap, Algorithm Analysis, Asymptotic Notation, Algorithmic Patterns and Problem Solvers, Sorting Algorithms, Searching Algorithms, Graphs and Graph Algorithms.

Prerequisite: COM 141

COM 210 Object Oriented Programming 4 Credits

Objectives of the Course:

Teaching the basic of Object-oriented programming. To develop students' skills and dispositions regarding problem analysis and object oriented program development. To understand encapsulation, information hiding, abstract data type.To teach inheritance, multiple inheritance, polymorphism, operator overloading. To provide an understanding of a object oriented program development To develop different program using classes, dynamic objects, inheritance, multiple inheritance, aggregation, polymorphism, overloading..

Course Description

Fundamental ideas, object-oriented concept, meaning of modeling the real world. Encapsulatıon, Information hiding. Abstraction, Classes, Constructors, Default, parameterized, copy constructors. Metaclass, Object lifetimes, Dynamic objects, Inheritance, Single and Multiply inheritance, Inheriting constructor, Associations and Aggregations, Polymorphism, Operator overloading, Virtual Function, Friend functions, Streams and files, File organisation. Class templates.

Prerequisite: COM 141

COM 211 Digital Logic Systems 4 Credits

Objectives of the Course:

To develop a thorough understanding on combinational digital circuit design using logic gates. To develop a thorough understanding on sequential digital circuit design using flip flops. Simplify logic functions using Boolean algebra methods. Simplify logic functions using Karnaugh maps. Design of digital building blocks such as adders, multiplexers and decoders. Analysis of number systems

Course Description

Introduction to number systems and codes. Boolean algebra and logic gates. Simplification of switching functions. Combinational logic. Combinational circuit design with programmable devices.

Introduction to sequential devices. Modular sequential logic. Analysis and synthesis of synchronous sequential circuits. Sequential circuits with programmable logic devices. Introduction to microprocessors programming.
Prerequisite: COM 121

COM 242 Database Management Systems 4 Credits
Objectives of the Course:
To examine the problems with file-based systems and the advantages of the database approach. Distinguish between the three levels in the architecture of a typical database management system.
Practice conceptual database design through entity-relationship(ER), enhanced ER models. Describe models of historical interest such as Network and Hierarchical model. Design and model a database application using the relational model. Design by ER and EER to relational mapping. Define and apply integrity constraints and triggers; Tune design using functional dependencies and normal forms. Use Structured Query Language to perform queries and to perform relational operations. Understand emerging database technologies and applications.
Course Description
Database architecture, comparison to file-based systems, historical data models, conceptual model; integrity constraints and triggers; functional dependencies and normal forms; relational model, algebra, database processing and Structured Query Language (SQL), Dynamic SQL, Stored Procedures. Emerging trends, O.O. Database Model. Internet & Databases. Study of Oracle, MsSql and MySql as popular DBMS.
Prerequisite: COM 201

COM 254 Computer Organization 3 Credits
Objectives of the Course:
To give the fundamental organization of the computers and their main blocks**.** To teach the MIPS assembly language programming
Course Description
Introduction to computers. Micro-programming control. Memory organization. Input/output system. Non-standard computer architectures, pipeline, RISC and vector computers.
Prerequisite: COM 211

THIRD YEAR

COM300 Summer Practice II Noncredit
A minimum of four weeks (20 working days) of training in companies involving observation of the computer system and the software. The main objective is to observe a company in an original setting and answer questions on the fundamental areas of Computer Engineering and Information Science. A written report summarizing the training experience is required.

MAT 301 Numerical Analysis 3 Credits
Approximations and errors. Accuracy and precision. Finite divided difference and numerical differentiation. Roots of equations, bracketing methods and open methods, systems of nonlinear equations. Systems of linear algebraic equations. Curve fitting, interpolation. Numerical integration. Ordinary differential equations.
Prerequisite: MAT 205

COM 301 Microprocessors 4 Credits
Objectives of the Course:
Teaching the microprocessor as a programmable digital system element. To illustrate some basic concepts of microprocessors through the use of assembly language programming. To give the principles of hardware design; To provide an understanding of a microprocessor based system as a combination of hardware and software subsystems and their interactions
Course Description

Introduction to microprocessors. Architecture of microprocessors and instruction sets. Interrupts. Memories. Parallel and serial input/output programming. Microprocessor based system design. Microprocessors applications.
Prerequisite: COM 254

COM 312 Operating Systems 3 Credits
Objectives of the Course:
Be able to distinguish different styles of operating system design. Understand device and I/O management functions in operating systems as part of a uniform device abstraction. Have an understanding of disk organisation and file system structure. Be able to give the rationale for virtual memory abstractions in operating systems. Understand the main principles and techniques used to implement processes and threads as well as the different algorithms for process scheduling. Understand the main mechanisms used for inter-process communication. Understand the main problems related to concurrency and the different synchronization mechanisms available. Have the ability to evaluate security risks in operating systems and understand the role operating systems can and should play in establishing security.
Course Description
Principles of operating systems. Memory management. Multiprocessing. Virtual memory concepts. Memory protection. Scheduling. Process management. Time-slicing and priorities, deadlocks and process synchronization. Peripheral control. Filing system management. Resource control and monitoring. Linux and Windows Operating Systems.
Prerequisite: COM 254

COM 322 Data Communications and Networking 4 Credits
Objectives of the Course:
Build an understanding of the fundamental concepts of computer networking. Familiarize the student with the basic taxonomy and terminology of the computer Networking area. Introduce the student to advanced networking concepts, preparing the student for Entry Advanced courses in computer networking. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.
Course Description
Basic elements of data communication systems. Reference models. ISO OSI reference model. Serial networks & protocols. Analogue networks, modems and multiplexors. PSTN and leased line (2 and 4 wire). Permanent digital networks. ISDN network and equipment. Packet switched networks & X.25. Frame relay. ATM & SMDS. Introduction to LANs. LAN physical layer. Network connection concepts. Introduction to IPX, IP. Analogue and digital signalling: analog (A/F/PSK, QAM), digital (RZ, NRZ, NRZi, manchester), analogue over digital (PCM, ADPCM, CVSD, CELP). LAN frames. LAN protocols over serial networks
Prerequisite: COM360

COM 320 Computer Hardware 3 Credits
Objectives of the Course:
Identify the major hardware components of a computer system. Describe the design and functioning of the central processing unit. Discuss the relationships between microprocessor component designs and performance. Describe the main types of primary and secondary Storage. Distinguish between primary and secondary storage along the dimensions of speed, cost, and capacity.
Course Description
Parts of a PC. The CPU organisation. The BIOS. Motherboard, memory organisation, display card, disk controller card, floppy disk controller. CDROM and the sound card. Serial and parallel ports. Keyboard and mouse interface. The real time clock. ISA bus and PCI bus specifications. Power supply specifications and parts of a PC power supply.
Prerequisite: COM 254

COM 321 System Simulation Techniques 3 Credits

Objectives of the Course:

Understand the basic principles of modeling. Be able to select and use appropriate performance metrics when modeling a system. Understand the basics of queueing theory including Little's Law, the M/M/1 queue, and the Erlang equations. Know how to collect and characterize performance measurement data. Know how to generate workload using probability distributions and using a trace. Understand the basic concepts of a discrete event simulation model including model components, flowchart, and event list. Learn how to design and implement simulation models. Understand the modeling and analysis process from a project perspective and how to define experiments and present results.

Course Description

Introduction to simulation as a problem solving tool . Methodology of simulation . The use of computers. Classification of simulation . Planing of a computer simulation experiment. Introduction to simulation programming languages.

Prerequisite: MAT 350

COM 330 Programming Languages I 4 Credits

Objectives of the Course:

Identify and describe the purpose of various components of the VB integrated development environment (IDE). Build and run small application using Visual Basic. Understand the basic problem-solving techniques. Write conditional and repetition statements and other control structures. Declare variables and constants using the data types available in VB. Examine and discuss Sub and Function procedures. Understand the array structure and its usage. Use strings in addition to their built-in functions. Create GUI applications using standard controls. Understand and create multiple document interface (MDI) applications. Develop a single document interface (SDI) application. Understand the use of Databases.

Course Description

Introduction to Visual Basic. Components of Visual Basic projects. Labels, text boxes, command buttons, list boxes, combo boxes, timers, image boxes, picture boxes. Organization of Forms and units. Properties of components and the available options. Events and event triggering. File structure of a Visual Basic project. Small Visual Basic application programs.

Prerequisite: COM 210

COM 333 Operations Research 3 Credits

Objectives of the Course:

Students should have the ability to model and solve real-life problems using linear programming techniques and analyze results obtained with such models. Students should be able to use software to solve a variety of models.

Course Description

Engineering decisions; principles of decision theory; generation and evaluation of alternatives; Linear Programming, unconstrained and constrained optimization; duality and sensitivity analysis; application of LP; network models; Transportation, assignment, and transhipment problems.

Prerequisite: COM201

COM339 Programming Languages Concepts 3 Credits

Objectives of the Course:

To provide a student with the necessary tools for the critical evaluation of existing and future programming languages. To investigate the imperative and declarative paradigms and languages. To teach the concepts and principles of constructions of different programming languages. To assess of a programming language as a tool for software construction, enable a student to evaluate and choose a language to match the problem. To study a declarative paradigm by teaching fundamentals of Lisp programming language

Course Description

Classification of programming languages. Syntactic and semantic description of programming languages. Imperative programming languages: data objects, data types, control structures, sub-programs, principles of implementation. Procedural programming languages. Object-oriented programming languages. Declarative programming languages: logic programming, functional programming, structure-query language programming.
Prerequisite: COM 210

COM 344 Automat Theory 3 Credits
Objectives of the Course:
Introduce concepts in automata theory and theory of computation. Discussing the applications of finite automata to problem solutions. Identify different formal language classes and their relationships
Develop an understanding of computation through Turing Machines
Course Description
The course introduces some fundamental concepts in automata theory including regular expressions, finite automata, (non-)regular languages, context-free grammars, regular grammars, Chomsky normal forms, pushdown automata, (non-)context-free languages, parsing and Turing machines. Not only do they form basic models of computation, they are also the foundation of many branches of computer science, e.g. compilers, software engineering, concurrent systems, etc. The properties of these models will be studied and various rigorous techniques for analyzing and comparing them will be discussed, by using both formalism and examples
Prerequisite: COM 121

COM 360 Signals and Systems 4 Credits
Objectives of the Course:
Teaching the basic of Signals and Systems. To understand mathematical descriptions and representations of continuous and discreet time signals and systems.To develop input-output relationships for Linear Time Invariant Systems (LTIS). To understand the impulse response of a system and the convolution operator.To teach analysis of the signals in time domain, z domain and frequency domain. To teach Fourier and Laplace Transform analysis for continuous-time LTIS. To teach z-Transform analysis for discrete time systems. To understand sampling theory; To teach the basic of filtering, the basic of feedback concepts. To provide a modeling of the systems in time domain, z domain and frequency domain using software programs
Course Description
Properties of continuous and discrete-time signals and systems. Basic signal modifications. Memory, causal, stable, linear and time-invariant systems. Stochastic processes and noise. Impulse response, transfer function. Convolution. Fourier series and transforms. Laplace transform. Sampling and modulation. Interpolation methods. Filtering. Sampling. Analysis of discrete time systems. Time domain analysis. Difference equation models. Frequency domain analysis. Orthogonal expansion of signals. Z domain analysis, Z- transform. Mapping s-plane into z-plane. Inverse Z-transform. Properties of z transform. Z plane. Discrete time LTI system .Frequency domain analysis. Discrete and fast Fourier transforms. Filtering. Digital filters.
Prerequisite: MAT201

MAT 350 Probability and Statistics 3 Credits
Objectives of the Course:
Understanding the concept of data analysis. Understanding the concept of probability and the concept of random variables. Understanding the difference between discrete and continuous random variables. Understanding the concepts of expectation, variance and standard deviation. Understanding the concepts of probability mass functions and cumulative distribution function for discrete, continuous and joint distributions. Understanding and learning the different types of discrete and continuous distributions.
Course Description
Definition of probability. Sample space and events. Permutations and combinations. Conditional probability and Bayers theorem. Random variables. Discrete and continuous distrubutions. Moment

generating function. Expectation, variance, covariance and correlation. Condition densities and regression and transformation of variables. Descriptive statistics.
Prerequisite: MAT 102

COM 382 Real Time Systems 3 Credits
Objectives of the Course:
To study issues related to the design and analysis of systems with real-time constraints. Digital control algorithms and their implementations, review of discrete-time signal, sampling, difference equation, discrete transfer function, z-transform. Block diagrams. Concepts of control, classes of industrial process control systems, sequence control, loop control, open control, feedback control. Design of Real-Time, basic control action and industrial automatic controllers
Course Description
This course is designed for Introduction to study issues related to the design and analysis of systems with real-time constraints. Modeling of the system. The main characteristics of second order system. Transfer function, impulse an transient functions, Modeling of electrical systems, Block diagram and Signal flow graph representation of systems. Analysis of the real time and industrial automatic controller.
Prerequisite: MAT 205

FOURTH YEAR

COM 490 Engineering Design 1 Credits
Objectives of the Course:
The purpose of the Engineering Design I is to assure/ascertain that the students have acquired the skills, knowledge and concepts necessary to perform well when they leave the university. Each student will use educational tools to broaden his/her knowledge about a particular, self-selected topic. Students are also expected to show how proficient they are in solving real world problems with certain constraints for the outcome-based evaluation by the review board. Students are expected to show their abilities on designing, developing, orally presenting and documenting a project.
Course Description
Graduation project leading to B.S. degree, arranged between a student and the faculty member. Analysis, requirement specification and design phases of a computer system. Issues related to project design and presentation. Engineering ethics. Projects will be inspired from real life hardware/ software problems and students are expected to come up with a professional quality design solution by applying computer and software engineering methods. At the end of the semester, the students are expected to complete the requirement specification, analysis and design phases of a reallife computer engineering problem as a team and present their work. They are expected to get familiar to ethical problems of the profession.

COM 491 Engineering Design 2 Credits
Course description:
Continuation of their research that start in COM491 course. Application of new scientific methods for solving different engineering problems and their modelling, development different software packages, analysis and investigation of new research areas in computer engineering fields. Students prepare (write) the graduation project.
Course Description
Continuation of their research that start in COM491 course. Application of new scientific methods for solving different engineering problems and their modelling, development different software packages, analysis and investigation of new research areas in computer engineering fields. Students prepare (write) the graduation project.

COM 401 Microprocessor Systems 3 Credits
Objectives of the Course:

Teaching the microprocessor systems architectures, instruction set, addressing modes. To use of assembly language programming for Input/output devices, processing and interfacing. To give the principles of hardware design. To provide an understanding of a microprocessor system as a combination of hardware and software subsystems and their interactions

Course Description

Microprocessor architecture, The Intel x86 family architecture. The Intel 80386 microprocessor: Addressing and memory, segmentation, and protection mechanisms. Tasking, virtual memory, and exceptions. I/O programming, . Memory paging mechanism, Special instructions of 80386 and 80486, Pentium, Architectural features, data acquisition systems. Advanced CISC and RISC microprocessors. Microcontrollers. Microcontroller program development. Using microcontrollers in embedded applications.

Prerequisite: COM 301

COM 402 Computer Graphics 3 Credits

Objectives of the Course:

Teaching the Fundamentals of computer graphics algorithms. Gaining the experience in interactive computer graphics using the OpenGL API. To study the basics of real-time rendering and graphics hardware

Course Description

Overview of graphic systems. Colour. Images, quantisation and sampling. Image manipulations. Components of graphics system. Software standards, introduction to GKS and PHIGS. Raster graphics. Coordinate systems and transformations. The viewing frustum. The graphics pipeline and toolkits. Clipping and culling. Visibility. Lighting and shadows. Transparency and blending. Texture mapping. Local shading models. Environment mapping techniques. Multi-pass rendering. Shaders. Animation and particles. Level of detail. Scene graphs and implementation efficiency.

MAN 402 Management for Engineers 3 Credits

Objectives of the Course:

Discuss principles of management, Discuss functions of managers, Discuss organization and environment, Discuss marketing, production and personnel management, Discuss marketing control, Discuss accounting and financial reports, Discuss budgeting and overall control,

Course Description

Principles of management. Functions of managers. Organisation and environment. Marketing management. Production management. Personnel management. Managerial control. Accounting and financial reports. Budgeting and overall control.

COM 410 Parallel Computer Architecture 3 credits

Objectives of the Course:

Teaching the fundamentals of parallel computer architectures; To study parallelization methodologies and paradigms; To study programming with parallel structures

Course Description

Introduction to parallel computers. Classification of parallel machines. SISD, MISD, SIMD, and MIMD. Pipelined processing. Programming parallel computers , Single instruction stream parallel machines, Bus-based machines (CMP, SMP) Coherent memory ,Bus-based consistency protocols. Synchronization Interconnection networks. Message Passing. Scalable Shared Memory. Incoherent, Coherent, Directory-based, Consistency protocols. Hybrid Message Passing/Shared Memory Machines. Dataflow machines. Special-purpose parallel machines, Routers, network processors. Parallel computer performance models

COM 411 Software Engineering 3 credits

Objectives of the Course:

To become familiar with the basic concepts of software engineering and the software development life cycle. To apply good analytic, design, and implementation skills required to formulate and solve computer engineering problems. To plan the different phases of a software development project,

including the estimation of the level of effort required, and to track the progress of the project. To understand the important issues of working in teams on the different phases of software development project

Course Description

Software Project Management: metrics, estimation, planning. Software requirement analysis techniques. Software design techniques. Software implementation. Managing software projects Software project planning and estimation risk analysis. Analysis concepts and modelling. Software quality assurance. Object-oriented approach to analyze, specify, design and implement software packages. Software testing methods and strategies.. Software maintenance. Software maintenance. Prerequisite: COM 339

COM 414 Digital Control Systems 3 Credits

Objectives of the Course:

Teaching the fundamentals of parallel computer architectures; To study parallelization methodologies and paradigms; To study programming with parallel structures

Course Description

Introduction to sampled data systems. Discrete modeling of systems. Z-transforms. Relationship between the s and the z-planes. Second order discrete systems. difference equations, State variables, Solution of state equation . Time response characteristics, Steady-state accuracy, Stability. The The Routh-Hurwitz Criterion. Root-locus in the z-plane, Z-plane stability. Frequency response. Analyzes of digital control systems using Nyquist and Bode plots and root locus. Digital Controller Design, Compensation. PID-controllers. Analog and Digital filters. Digital filter structures. Prerequisite: COM 382

COM 420 Neural Networks 3 Credits

Objectives of the Course:

Teaching the basics of neural networks. To illustrate the basic applications of neural networks using Matlab. To give the principles of neural networks approaches

Course Description

The Neural network paradigm and fundamentals. Training by error minimization. Back propagation algorithms. Feedback and recurrent networks. Hopfield network, Genetic algorithms. Probability and neural networks. Optimizations and constraint.

COM424 System Programming 3 Credits

Objectives of the Course:

To study the function of the common operating system kernel routines that are provided by an operating system and accessible from a systems programming language. Design, write, and test moderately complicated low-level programs using a systems programming language. Proficiently use a preprocessor to implement code that is portable between different computing platforms. Use operating system kernel calls from within a programming language to allocate/free virtual memory, initiate and synchronize multiple threads/processes, interact with the file system, set and respond to timers/interrupts.

Course Description

Introduction to system programming, operating systems and fundamental concepts of programming language processors, one and two pass assemblers, symbol tables, compilers and compiler design, parsing, syntax and semantic phases, optimization, relocatable and linkable loaders, operating systems design principles

Prerequisite: COM 301

ECON 431 Economics for Engineers 3 Credits

Objectives of the Course:

Discuss principles and economic analysis of decision making. Discuss cost concepts, make-versus-purchase studies; Analyze principles of money-time relationships. Work on cash flow analysis. Analyze application of money-time relations. Analyze supply and demand relations. Analyze price and

demand relations.Analyze breakeven point analysis and effects of inflation on money-time relationships

Course Description

Principles and economic analysis of engineering decision making. Cost concept. Economic environment. Price and demand relations. Competition. Make-versus-purchase studies. Principles and applications of money-time relations. Depreciation. Many and banking. Price changes and inflation. Business and company finance.

COM 432 Programming Languages II 3 Credits

Objectives of the Course:

Familiarize students with the processes involved in long computer programs. To teach students Delphi programming logic, the creation of databases, and to form the relationships between various databases. Develop a windows application quickly, efficiently and with ease, including full database techniques. Develop a greater understanding of the issues involved in programming language design and implementation

Course Description

Introduction to Delphi. Components of Delphi projects. Organization of Forms and units. Using components palette in Delphi. Properties of components and the available options. Delphi project. Files of PAS, DFM & DPR extensions. Events and event triggering. Visible and invisible components. Dialog components. Text editor. Graphical operators. File organization. Forms with multi document interface. Linking of Windows-Based applications to Delphi projects (OLE). Database components. The Data access method. Orfganization of database using SQL.

Prerequisite: COM 141

COM 434 Internet Programming 3 Credits

Objectives of the Course:

understand the basic concepts of the Internet, the Web and online communication; use the basic features of web browsers, email, ftp, and Web search engines; create web pages using HTML and CSS; Design applications on Internet using HTML and JavaScript.

Course Description

Introduction to the Internet. HTML, XHTML,, CSS, Cascading Style Sheets, Javascript, JavaScript and HTML documents, XML and Application Server, A client/server architecture, Java Server Pages, Protocols, HTTP, FTP, accessing a local file, SSH, Proxy servers, Database access through the web, Writing Web pages using HTML and Java Applets.

Prerequisite: COM 330

COM441 Advanced object oriented programming

Objectives of the Course:

Teaching object-oriented programming using C# (C sharp). To develop students' skills and dispositions regarding problem analysis and development of different projects using object oriented programming. To show the advantages of object oriented programming and visual programming in project development. To teach inheritance, multiple inheritance, polymorphism, operator overloading and implement them on examples using C sharp. Development of different programs using aggregation, delegates, Events. To teach the design of windows application using object-oriented and visual programming.

Course description:

Modeling the real world using object-oriented software. Overview of the .NET Framework. Components and Languages in the .NET. Structure of a C# Program. Input/Output. Console class, Namespace, Generating Extensible Markup Language (XML) document. Data Types. Control Statements. Methods, Parameters. Overloaded Methods. C# and Object Orientation, Classes and Objects, Encapsulation, Constructors, Creating and Destroying Objects, Destructors, Inheritance, *Interfaces,* Aggregation, Namespaces, Modules, Operator Overloading, Delegates, Events. Windows Forms Class Hierarchy, Properties, Events, Controls, Dialogs, Menus, Multiple Document Interface,

Data Access and Data Binding, DataGridView, ADO.NET, .NET Data Providers, Interacting with XML Data, .NET controls.
Prerequisite: COM 210

COM 442 Object-oriented Programming Language II 3 Credits
Objectives of the Course:
Design, compile and run Java applications and applets. Understand the role of the Java Virtual Machine in achieving platform independence. Use the Object Oriented paradigm in design of Java programs. Understand the division of classes into Java packages. Use exceptions to handle run time errors.
Use threads in order to create more efficient Java programs. Design Java applications with database access.
Course Description
Introduction to Java. Java and object-oriented programming. Introduce advanced Java concepts – inheritance, polymorphism, abstract classes, exception handling, use of collections and database connectivity. Gain more practical experience by designing and writing Java applications. Components of Java projects. Designing Graphic User Interface GUI. Java Internet applications. Java applets.
Prerequisite: COM 210

COM 447 Advanced Operating Systems 3 Credits
Objectives of the Course:
At the successful completion of this course the student will be able to: Understand the engineering tradeoffs involved in the design of various sub-modules of an operating system; understand the kernel, process and memory managers, file access, I/O driver, scheduler; understand distributed operating systems understand security and reliability issues of operating systems
Course Description
Advanced memory management and virtual memory concepts. Memory protection in multiprocessing environment. Scheduling algorithms. Time-slicing and priorities, deadlocks, event flags, semaphores, and process synchronization. Process intercommunication techniques. Shared peripheral control. Filing system management. Example operating system design.concepts of the Structured Query Language (SQL) and Programming Language/Structured Query Language(PL/SQL) will also be covered.
Prerequisite: COM 312

COM 449 Digital Signal Processing 3 Credits
Objectives of the Course:
to provide a basic introduction to the theory of digital signal processing; to study signal representation in time domain, in frequency domain; to learn sampling theorem, linear time-invariant system, discrete convolution, z-transform; to study Fourier transform, discrete Fourier transform, fast Fourier transform to study digital filter design, to design FIR and IIR filters.
Course Description
Discrete-time signals and Systems. Discrete linear time-invariant systems. Properties , Sampling and Reconstruction of continuous time signals, A/D conversion and quantization. D/A conversion. Discrete time Fourier transform and its properties, Fast Fourier transform algorithms, The Z-transform and its properties, Transform analysis of linear time invariant systems, Implementation of structures for discrete time systems, Digital filter design techniques, Finite impulse response (FIR) filters, Infinite impulse response (IIR) filters, Applications of DSP.
Prerequisite: COM360

COM 450 Database Application 3 Credits
Objectives of the Course:
At the successful completion of this course the student will be able to: Identify major components of the Oracle Express Edition system; Use the Oracle GUI module to create users and tables; Identify major Oracle data types such as CHAR, VARCHAR2, NUMBER and DATE; Write Structured Query

Language (SQL) Data Manipulation Language (DML) statements to retrieve, insert, update and delete data from an Oracle database; Write Structured Query Language (SQL) Data Definition Language (DDL) statements to create, alter and remove database objects, such as tables and views; Write sophisticated queries to retrieve data from multiple tables; Write simple PL/SQL anonymous blocks using basic control structures such as IF and LOOP statements, as well as cursors.

Course Description

This course provides students with a general understanding of the Oracle database system and a thorough understanding of SQL. The student will learn the fundamentals of database design, a structured approach to system development, creation and manipulation of data, and retrieval of information from an Oracle database. Numerous concepts of the Structured Query Language (SQL) and Programming Language/Structured Query Language(PL/SQL) will also be covered. Prerequisite: COM 242

COM 451 Introduction to Artificial Intelligence 3 Credits

Objectives of the Course:

To familiarize students with Artificial Intelligence techniques for building well-engineered and efficient intelligent systems. To have a basic understanding of some of the more advanced topics of AI such as learning, natural language processing. To have an understanding of the basic issues of knowledge representation and blind and heuristic search, as well as an understanding of other topics such as minimax, resolution, etc. that play an important role in AI programs. To have a basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language. Artificial Intelligence Programming using Prolog and VPX will be provided to help students with the programming part of the course.

Course Description

Problem solving methods, heuristic search, game-playing, knowledge acquisition, knowledge representation, logical inference, planning, reasoning under uncertainty, decision theory, expert systems and application, Prolog/LISP programming, learning, perception, and natural language understanding

COM 452 Introduction to Parallel Computing 3 Credits

Objectives of the Course:

understand parallel computing architectures and their limitations; create and implement parallel programs using various standard libraries ; write parallel code; Design, implement, test and debug a parallel application program using MPI

Course Description

Overview of parallel computing, Parallel computation models, Classification. SISD, MISD, SIMD, and MIMD. Performance analysis, deadlock, Parallel algorithm design and analysis, Network intraconnects and embeddings, MPI programming, OpenMP shared memory multicore programming, Parallel reduction operations, Matrix operations, MapReduce and cloud computing. Prerequisite: COM 254

COM 453 Decision Making 3 Credits

Objectives of the Course:

Students able to improve decision making: characterizing risk, uncertainty and opportunity, quantifying goals and identifying alternatives, tools for multi-goal decision making, staged decision making and decision tree models, scenario building and strategic planning. Make better decisions through critical thinking and creative problem solving. Develop insight into how you make decisions on your own and in collaboration with others. Recognize and remove barriers to individual and group creativity to foster an innovative work environment. Feel confident in the knowledge that decisions are the best choices that will produce the best results.

Course Description

This course is designed for Introduction to decision making. Decision making process, Decision Trees. Decision making under uncertainty. Utility theory, Group decision making, Risk theory. Risk

aversion, Decision making under risk, Decision making under conflict, Queuing theory. Linear regression model and correlation, Multiple regression model, exponential smoothing and time series.

COM 454 Advanced Computer Architecture 3 Credits
Objectives of the Course:
fundamental knowledge of computer hardware and computer systems, with an emphasis on system design and performance; to understand the principles of organisation computer systems and operation of a memory hierarchy; to understand the organisation of current generation parallel computer systems
Course Description
Fundamentals of Computer Design, Instruction set architectures, Classifications, RISC, CISC, VLIW, EPIC, Pipeline processors, Memory Hierarchy Design (caches, virtual memory), Parallelism, Instruction level Parallelism, Data level Parallelism, dataflow mechanisms.Vector processing, Thread level Parallelism, Multicore systems, Multiprocessors
Prerequisite: COM 254

COM 457 Cryptography and Coding Theory 3 Credits
Objectives of the Course:
Teaching the basics of coding theory; To learn the cryptography algorithms used for coding of information. To learn basic applications of coding algorithms
Course Description
Fundamental concepts of cryptography, block ciphers, stream ciphers, public key encryption, differential and linear cryptanalysis, the Advanced Encryption Standard, digital signatures, cryptographic hash functions, authentication protocols, key distribution protocols, key management, security protocol pitfalls, Internet cryptography, IP sec., SSL/TLS, e-mail security, firewalls.
Prerequisite: COM 322

COM 463 Digital Image Processing 3 Credits
Objectives of the Course:
Teaching the basics of image processing; To illustrate the basic applications of image processing using Matlab. To give the principles of image enhancement approaches
Course Description
Discrete-time signals and systems. Realization of discrete-time systems. Discrete Fourier transform. FIR and IIR filters. Cyclic limit. Synthesis of filters. Bilateral transform. Windowing. Image processing techniques. Image recognition. Noise sensitivity and scaling. Edge detection.
Prerequisite: COM 360

COM 410 Parallel Computer Architecture 3 Credits
Course Description
Introduction to parallel computers. Why parallel computing ?. Classification of parallel machines. SISD, MISD, SIMD, and MIMD. Using shared memory in parallel computing. Shared variables. Interconnection networks. Mesh, rings, hypercube, x-tree, butterfly. Speedup and efficiency in parallel computing. Factors that limit speedup. Amdahls Law.
Prerequisite: COM 254

COM473 Hardware Design using FPGAs 3 Credits
Objectives of the Course:
Understanding VHDL code for hardware simulation and hardware synthesis; To study FPGA, investigate the state-of-the-art FPGA-based reconfigurable computing both from a hardware and software perspective; To write intelligent VHDL designs that show understanding of basic hardware that will be synthesized with tools to verify hardware designs
Course Description
This course covers the systematic design of digital systems using Field Programmable Gate Arrays (FPGAs). The design methodology, systematically introduced & used in the course, is based on simulation & synthesis with hardware description language VHDL. Topics covered in this course

include: conceptual design step from requirements & specification to simulation & synthesis model in VHDL, design of complex controllers with Finite State Machines, design of sequential blocks with Controller-Datapath methodology, issues in design for testability, electrical & timing issues in logic and system design, overview of implementation technologies with emphasis on advances in FPGAs. Prerequisite: COM211 Logic design

COM481 Web Design and Programming 3 Credits
Objectives of the Course:
To teach a variety of strategies and tools to create websites. To provide students with a comprehensive mastery of Hyper Text Markup Language (HTML) coding practices. Understanding and practicing the Cascading Style Sheets (CSS), Javascript, and Responsive Web Design. Design and implement an entire website
Course Description
History of the internet. Basic Color Theory. Web Graphics. Accessibility. HyperText Markup Language (HTML). Cascading Style Sheets (CSS). Page Layout. Design Issues. Javascript. Responsive Web Design.

COM488 Multimedia Systems 3 Credits
Objectives of the Course:
Teaching the basics of multimedia systems; To illustrate the basic applications of multimedia systems using Jython.
Course Description
Introduction to Media Computation, Introduction to Programming, Modifying Pictures Using Loops, Modifying Pixels in a Range, Advanced Picture Techniques, Modifying Sounds Using Loops, Modifying Samples in a Range, Making Sounds by Combining Pieces, Building Bigger Programs, Creating and Modifying Text, Advanced Text Techniques:Web and Information, Making Text for theWeb, Creating and Modifying Movies, Speed, Functional Programming, Object-Oriented Programming.
Prerequisite: COM 162

16. Sample copy of diploma supplement

At the end of program the diploma supplement which is given to all graduates of our university free of charge. It ıs arranged in English.

The diploma supplement is a document the purpose of which is to provide sufficient independent data to improve the international “transparency” and fair academic and professional recognition of qualifications (diplomas, degrees, certificates, etc.). It is designed to provide a description of the nature, level, context, content and the status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgments, equivalence statements or suggestions about recognition

Diploma supplement

Diploma No:	**Diploma Date: 11.07.2014**
1.INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION	
1.1. ***Family name(s):*** **1.2.** ***Given name(s):***	**1.3.** ***Place and date of birth:*** **1.4.** ***Student identification number:***
2. INFORMATION IDENTIFYING THE QUALIFICATION	

2.1. ***Name of the qualification and (if applicable) the title conferred*** BACHELOR OF SCIENCE, B.Sc. **2.2.** ***Main field(s) of study for qualification*** COMPUTER ENGINEERING **2.3.** ***Name and status of awarding institution*** NEAR EAST UNIVERSITY, PRIVATE UNIVERSITY	**2.4.** ***Name and type of institution administering studies*** SAME AS 2.3. **2.5.** ***Language(s) of instruction/examinations*** ENGLISH

3. INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1. ***Level of qualification*** First Cycle (Bachelor's Degree)	**3.2.** ***Official length of program*** Normally 4 Years (excluding 1 year English Preparatory School, if necessary), 2 semesters per year, 16 weeks per semester

3.3. ***Access requirement(s)***
Admission of Turkish nationalities to higher education is based on a nation-wide Student Selection Examination (ÖSS) administered by the Higher Education Council of Turkey (YÖK). Admission of Turkish Republic of Northern Cyprus nationals is based on the Near East University Entrance and Placement Exam for Turkish Cypriots. Admission of foreign students is based on their high school credentials. Proof of English language proficiency is also required.

4. INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1. ***Mode of study*** Full-Time	**4.2.** ***Programme requirements*** A student is required to have a minimum CGPA of 2.OO/4.00 and no failing grades (below DD).
4.3. ***Objectives*** The aim of the computer engineering department is to prepare engineering candidates for various branches of industry with an improved self-confidence and individual initiative. Students are educated to have scientific systematic approach in solving engineering problems, sound engineering base, life-long learning habits and research abilities.	***4.4. Programme details and the individual grades/marks obtained*** Please see the next page.

4.5. ***Grading scheme, grade translation and grade distribution guidance:***
For each course taken, the student is assigned one of the following grades by the course teacher.
For A.Sc., B.Sc. or B.A. degrees, students must obtain at least DD or S from each course and have a GGPA of not less than 2.00 out of 4.00 and have completed all the courses and summer practices in the program. For graduate degrees, students must obtain at least CC or S from each course for M.Sc. and M.A., at least BB for Ph.D. They also need to have a GCPA of 3.00 to graduate. The student's standing is calculated in the form of a Graduate Point Average (GPA) and Cumulative Grade Point (CGPA) and is announced at the end of each semester by the Registrar's Office. The total credit points for a course are obtained by multiplying the coefficient of the final grade by the credit hours. In order to obtain the GPA for any given semester, the total credit points are divided by the total credit hours. The averages are given up to two decimal points. Students who obtain a CGPA of 3.00-3.49 at the end of a semester are considered as "Honour Students" and those who obtain a CGPA of 3.50-4.00 at the end of a semester are considered as "High Honour Students" and this is recorded in their academic report. The letter grades, the quality point equivalents are:

Percentage	**Course Coefficient**	**Grade**	**Percentage**	**Course Coefficient**	**Grade**
90-100	4	AA	70-74	2	CC
85-89	3.5	BA	65-69	1.5	DC
80-84	3	BB	60-64	1	DD
75-79	2.5	CB	50-59	0.5	FD
49 and below	0	FF			

I- Incomplete **S**- Satisfactory Completion, **U**-Unsatisfactory, **NA**-Never Attended,**E**-Exempted, **W**– Withdrawn

4.6*Overall classification of the award* CGPA: 3.04/4.00

5. INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1. ***Access to further study*** May apply to second cycle programmes.	**5.2.** ***Professional status conferred*** This degree enables the graduates to teach English in public and private institutions.

6. ADDITIONAL INFORMATION

6. 1. ***Additional information*** The department is accredited by Edexcel Assured Services for its quality standards.	***6.2. Sources for further information*** ***Faculty web site***http://www.neu.edu.tr/en/node/6183 ***Department web site*** http://english.neu.edu.tr/ ***University web site*** http://www.neu.edu.tr ***The Council of Higher Education of Turkey*** http://www.yok.gov.tr ***Higher Education Planning, Evaluation Accreditation and Coordination of North Cyprus Council Web site*** http://www.ncyodak.org **Edexcel Quality Assured Services** http://www.edexcel.com/international/qualifications/edexcel-assured/Pages/default.aspx

4.4. *Program details and the individual grade/marks obtained:*

1 (1st Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
TUR100	Turkish for Foreners	-	1	Compulsory	
COM100	Computer Engineering Orientation	-	1	Compulsory	
COM141	Introduction to Programming	4	6	Compulsory	
ENG101	English I	3	4	Compulsory	
MAT101	Calculus I	4	6	Compulsory	
PHY101	General Physics I	4	6	Compulsory	
CHEM101	General Chemistry	4	6	Compulsory	
		19	30		

2 (2nd Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM121	Discrete Structures	3	4	Compulsory	
COM162	Programming and Problem Solving	4	6	Compulsory	
ENG102	English II	3	4	Compulsory	
MAT102	Calculus II	4	6	Compulsory	
MAT112	Linear Algebra	3	4	Compulsory	
PHY102	General Physics II	4	6	Compulsory	
		21	30		

3 (3rd Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM211	Logic Design	4	6	Compulsory	
COM201	Data Structures and algorithms	4	6	Compulsory	
EE207	Electrical Circuits	3	6	Compulsory	
MAT201	Differential Equations	4	6	Compulsory	
		3	5	Non-Technical Elective	
		18	29		

4 (4th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM242	Database Management System	4	6	Compulsory	
COM256	Computer Architecture and Organization	4	6	Compulsory	
EE208	Basic Electronics	4	6	Compulsory	
ENG210	English Communication Skills	3	6	Compulsory	
		3	5	Restricted Elective	
COM200	Summer Training I	-	1	Compulsory	
		18	30		

5 (5th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM312	Operating Systems	3	6	Restricted Technical Elective	
COM360	Signals and Systems	4	6	Compulsory	
COM339	Programming Language Concepts	3	6	Compulsory	
MAT350	Probability and Statistics	3	6	Compulsory	
COM344	Automata Theory	3	6	Compulsory	
		17	30		

6 (6th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM301	Microprocessors	4	6	Compulsory	
COM322	Data Communications & Networking	4	6	Compulsory	
COM321	System Simulation	3	6	Compulsory	
COM333	Operational Research	3	6	Compulsory	
COM382	Real Time Systems	3	6	Compulsory	
COM300	Summer Training II	-	1	Compulsory	
		16	31		

7 (7th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM490	Engineering Design I	2	6	Compulsory	
COM411	Software Engineering	3	6	Compulsory	
		3	6	Technical Elective	
		3	6	Technical Elective	
		3	6	Technical Elective	
		14	30		

8 (8th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
COM491	Engineering Design II	2	6	Compulsory	
ECON431	Economics for Engineers	3	6	Compulsory	
		3	6	Free Elective	
		3	6	Technical Elective	
		3	6	Technical Elective	
		14	30		

TOTAL CREDITS 137

7. CERTIFICATION OF THE SUPPLEMENT

7.1. *Date* :

7.2. Name and *Signature* :Ümit Serdaroğlu

7.3. *Capacity* : Registrar

7.4. *Official stamp or seal* :

INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The basic structure of the North Cyprus Education System consists of four main stages as pre-school education, primary education, secondary education and higher education.

Pre-school education consists of non-compulsory programs whereas primary education is a compulsory 8 year program for all children beginning from the age of 6. The secondary education system includes “General High Schools” and “Vocational and Technical High Schools”.

The Higher Education System in North Cyprus is regulated by the Higher Education Planning, Evaluation, Accreditationand Coordination Council (Yüksek öğretim Planlama, Denetleme, Akreditasyonve Koordinasyon Kurulu – YÖDAK). Established in 1988, the Council regulates the activities of higher education institutions with respect to research, governing, planning and organization. The higher education institutions are established within the framework of the Higher Education Law. All programs of higher education should be accredited by YÖDAK.

Higher education in North Cyprus comprises all post-secondary higher education programmes, consisting of short, first, second, and third cycle degrees in terms of terminology of the Bologna Process. The structure of North Cyprus higher education degrees is based on a two-tier system, except for dentistry, pharmacy, medicine and veterinary medicine programmes which have a one-tier system. The duration of these one-tier programmes is five years except for medicine which lasts six years. The qualifications in these one-tier programmes are equivalent to the first cycle (bachelor degree) plus secondary cycle (master degree) degree. Undergraduate level of study consists of short cycle (associate degree) - (önlisansderecesi) and first cycle (bachelor degree) - (lisansderecesi) degrees which are awarded after the successful completion of full-time two-year and four-year study programmes, respectively.

Graduate level of study consists of second cycle (master degree) – (yükseklisansderecesi) and third cycle (doctorate) – (doktoraderecesi) degree programmes. Second cycle is divided into two sub-types named as master without thesis and master with thesis. Master programmes without thesis consists of courses and semester project. The master programmes with a thesis consist of courses, a seminar, and a thesis. Third cycle (doctorate) degree programmes consist of completion of courses, passing a qualifying examination and a doctoral thesis. Specializations in dentistry, accepted as equivalent to third cycle programmes are carried out within the faculties of dentistry. Specialization in medicine, accepted as equivalent to third cycle programmes are carried out within the faculties of medicine, and university hospitals and training hospitals operated by the Ministry of Health.

Universities consist of graduate schools (institutes) offering second cycle (master degree) and third cycle (doctorate) degree programmes, faculties offering first cycle (bachelor degree) programmes, four-year higher schools offering first cycle (bachelor degree) degree programmes with a vocational emphasis and two-year vocational schools offering short cycle (associate degree) degree programmes of strictly vocational nature.

Second cycle degree holders may apply to third cycle programmes if their performance at the first cycle degree level is exceptionally high and their national central Graduate Education Entrance Examination (ALES) score is also high and their application is approved. The doctoral degree is conferred subject to at least one publication in a cited and refereed journal.

GENERAL STRUCTURE OF THE NORTH CYPRUS EDUCATION SYSTEM