NEAR EAST UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

MODULE HANDBOOK (BSc)

BS program, Computer Engineering Department

Course Unit Title	Computer Engineering Orientation
Course Unit Code	COM100
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	0
Number of ECTS Credits Allocated	1
Theoretical (hour/week)	1
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	MSc. Ramiz M. SALAMA
Name of Lecturer (s)	MSc. Ramiz M. SALAMA
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	Basic computer programming skills

Course description:
A first introduction to the discipline of computer engineering. A brief survey of the computer science discipline, focusing on the computer's role in representing, storing, manipulating, organizing and communicating information. For students considering further computer science offerings, this course provides an accurate picture of what lies ahead, hopefully increasing interest in the discipline.

Objectives of the Course:
During orientation you can expect to:

- 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!

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	To enter high technology workforce, and make significant contributions to Computer Engineering through the research, design and development of a wide range of embedded systems and system-on-chip applications.	2
2	To help further the state's economic growth by developing innovative ideas, and translating them into commercial products that benefit society.	2,3
3	To function effectively as a team member and/or leader in multidisciplinary and multicultural environments.	2
4	To recognize the societal and global context of their work and to understand professional and ethical responsibilities.	2,5
5	To pursue lifelong learning through such activities as graduate school, distance education, professional training and membership in professional societies and to be able to adapt to new engineering tools	2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	How to design and conduct experiments; as well as to analyze and interpret data	
2	2	How to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability	
3	3	Ability to function in multidisciplinary teams	
4	4	Ability to identify, formulate and solve engineering problems	
5	5	Understanding of professional and ethical responsibility .	
6	5	Ability to communicate effectively	
7	6	Understanding the impact of engineering solutions in a global, economic,	

		environmental and societal context	
8	6	Recognizing the need and having the ability to engage in lifelong learning	
9	7	Knowledge of contemporary issues	
10	8	Ability to use techniques, skills and modern engineering tools necessary for engineering practice	
			Final

Recommended Sources

TEXTBOOK(S)

1. Introduction to Computers , Peter Norton
2. Introduction to Computer Information System , Geoffrey Steinberg

Assessment

Attendance	30%	Less than 25% class attendance results in NA grade
Final Exam	70%	Written & lab Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulation

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	1	16
Labs and Tutorials	6	1	6
Assignment			
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	-	-	-
Final Examination	1	2	2
Self Study	3	2	6
Total Workload			30
Total Workload/30(h)			1

ECTS Credit of the Course	1

BS program, Computer Engineering Department

Course Unit Title	Introduction to Programming
Course Unit Code	COM141
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	Msc. Okan Donangil
Name of Lecturer (s)	Msc. Okan Donangil
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	-

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.

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.**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop algorithms for problem solution	1,2,3
2	Use selection statements in programming	1,2,3,4
3	Apply iteration statements	1,2,3,4
4	Explain modular programming and function design	1,2,3,4
5	Construct readable programs with sufficient documentation	1,2,3,4

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Quiz 4. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	4
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	3
5	Planning and carrying out experiments, as well as to analyze and interpret data	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4

7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	1
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction & Algorithm Development (A pseudocede approach)	
2		Algorithm Development (A pseudocede approach)	
3		Algorithm Development (A pseudocede approach)	
4	2	Overview of C programming language	
5	2,3	Data types, expressions and I/0 statements	
6	4,5	Conditions, Boolean expressions and Control statements	
7			Midterm
8	6	Looping structures.	
9	6	Looping structures.	
10	8	Arrays(one dimensional & multidimensional)	
11	8	Arrays(one dimensional & multidimensional)	
12	9	Functions	
13	9	Functions	
14	16	Structures	
15			Final

Recommended Sources

Textbook:

C Programming: A Modern Approach, K. N. King,W.W.Norton&Company, 2nd Edition,2008.

Supplementary Course Material

C: How to Program, H.M.Deitel, P.J.Deitel, Pearson, 5th Edition,2007.

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Assignment & Quiz	10%	
Lab Work	20%	
Midterm Exam	25%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	10	2	20
Assignment	5	2	10
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	4	2	8
Midterm Examination	1	15	15
Final Examination	1	18	18
Self Study	14	3	42
Total Workload			177
Total Workload/30(h)			5.90
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	English
Course Unit Code	ENG 101
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	3
Number of ECTS Credits Allocated	4
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	Sevilay Cangul
Name of Lecturer (s)	Feray Murat
	-
Mode of Delivery	Face to face teaching and midterm project (oral and written)
Prerequisites	Preparatory School
Recommended Optional Programme Components	Pre Intermediate English level grammar, reading, writing and listening skills.

Course description:

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.

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.**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Improve reading, writing and presentation skills.	1
2	Prepare a project.	1, 2,3
3	Write an academic essay.	2,3,4
4	Gain team-work opportunities.	1, 2
5	Use the discourse patterns and structures in different essay types that they need for real life.	2, 3
6	To use power-point for presenting the written projects.	2,3,4
7	the written projects will be presented by the students	2,3,4

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

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

Course Contents

Week	Chapter	Topics	Exam
1	1	Review of the tenses…….Jobs	
2	2	E-mails opening and closings. Common e-mail expressions.	
3	3	Specifications, measurement and dimensions	
	3	Features and benefits, technical persuasive description.	
5	3	Giving instructions(Sequences) Mechanism, machine part vocabulary	
6	4	Describing fixes(repair vocabulary, explaining effects)	
7			Midterm
8	4	Explaining processes (Active, Passive, present and past passive)	
9	5	Welcoming visitors, greeting and farewells. Requests, offers, apologies	
10	5	Tracking (Quantifiers)	
11	6	Planning (First conditional, if unless) Making comparisons, intensifiers.	
12	7	Rules and regulations	
13	7	Permission and obligation verbs	
14	7	Equipment documentation Location information in a manual	
15			Final

Recommended Sources

1. **Oxford Practice Grammar-Intermediate, John Eastwood, Oxford**
2. **Dictionary of Technical Terms-Fono Press**

Course book: tech-talk- Intermediate Student's Book, (Units 1-7)
John Sydes- Oxford University Press, 2009
Workbook: tech-talk – Intermediate Workbook, Lewis Lannsford-Oxford University Press 2009

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Midterm Project	15%	Both oral presentation and written assignment
Midterm Exam	35%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Tutorials	8	1	8
Assignment	-	-	-
Project/Presentation/Report	1	8	8
Project research	1	10	10
Quizzes	-	-	-
Midterm Examination	1	10	10
Final Examination	1	10	10
Self Study	10	1	10
Total Workload			120
Total Workload/30(h)			4
ECTS Credit of the Course			4

BS program, Computer Engineering Department

Course Unit Title	Calculus I
Course Unit Code	MAT 101
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	Assist. Prof. Dr. Ali Denker
Name of Lecturer (s)	Assist. Prof. Dr. Ali Denker
Name of Assistant (s)	-
Mode of Delivery	Face to Face,
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	

Course description:

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Recognize properties of functions and their inverses .	1
2	Recall and use properties of polynomials, rational functions, exponential, logarithmic, trigonometric and inverse-trigonometric	1
3	Understand the terms domain and range	1, 2
4	Sketch graphs, using function, its first derivative, and the second derivative	1, 2
5	Use the algebra of limits, and l'Hôspital's rule to determine limits of simple expressions	1, 2
6	Apply the procedures of differentiation accurately, including implicit and logarithmic differentiation and apply the differentiation procedures to solve related rates and extreme value problems	1,2
7	Obtain the linear approximations of functions and to approximate the values of functions	1,2
8	Perform accurately definite and indefinite integration, using integration by parts, substitution, inverse substitution	1,2
9	Understand and apply the procedures for integrating rational functions	1,2

Assessment Methods: 1. Written Exam, 2. Assignment

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	5
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	3

4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	2
5	Planning and carrying out experiments, as well as to analyze and interpret data	1
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	1
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	1
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	1
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Preparation for Calculus	
2,3	2	Limits and Their Properties , Continuity	Quiz
4,5	3	Dıfferentiation: The Derivative and the Tangent Line Problem Basic Differentition Rules and Rate of Change	
6	3	The chain rule, The derivative Of Trigonemetric Functions. Hıgher Order Derivative , Derivative of İnverse Function,Implicit Differentiation ,Related Rates	Quiz
7			Midterm
8,9	4	APPLICATIONS OF DIFFERENTIATION: Extrema on an Interval Rolle's Theorem and the Mean Value Theorem Increasing and Decresing Functions and The First Derivative Test	
10		Concavity and The Second Derivative Test, Limits at İnfinity, Curve Sketching, Optimization Problems	
11	5	INTEGRATION: Antiderivatives and Indefinite Integration, Areas Riemann Sum and Definite Integral, The Fundamental Theorem of Calculus	
12	5	Integration by Substitution, Numerical Integration, The Natural Logarithm as an Integral. Inverse Trigonometric Functions: Integration	Quiz
13	7	Applications of Integration: Area of a Region Between Two curves, Volume: The Disk Method	
14	8	INTEGRATION TECHNIQUES, L'HOPITAL'S RULE: Basic Integration Rules, Integration by Parts, Trigonometric Integrals Trigonometric Subtitution	Quiz
15	8	Partial Fractions, Indeterminate forms and L'Hopital's Rule	
16			Final

Recommended Sources

Textbook:

CALCULUS, Early Transcendental Functions Ron Larsaon, Bruce H.Edwards 5rd.edition, 2011

Supplementary Course Material

1- Early Transcendental Functions Robert Smith, Roland Minton 3rd.edition,2007
2- CALCULUS 7th edition Robert A.ADAMS , Christopher Essex 2010

Assessment

Attendance & Assignment	15%	
Midterm Exam	30%	Written Exam
Quizes	10%	
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	2	2	4
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	4	4	16
Midterm Examination	1	15	15
Final Examination	1	15	15
Self Study	14	5	70
Total Workload			184
Total Workload/30(h)			6.1
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	General Physics I
Course Unit Code	PHY 101
Type of Course Unit	Compulsory
Level of Course Unit	B.Sc.
National Credits	4
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	Assist. Prof. Dr. Erkut İnan İşeri
Name of Lecturer (s)	Assist. Prof. Dr. Erkut İnan İşeri
Name of Assistant (s)	Khalid M. Ahmed, Samuel Nii Tackie
Mode of Delivery	Face to Face, Group study
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	-

Course description:
A basic physics course which study mechanic phenomenas. . Topics include the description of motion, forces, gravitation, work, and energy, momentum, rotational motion, and Static equilibrium. Laboratory work is an important component of the course.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Gains skills to make vectoral processing	1, 2
2	Solves problems related to one- and two- dimensional motions	1, 2
3	Defines motion of bodies in a system by the Newton's Motion Laws	1, 2
4	Describes work, work-energy principle and conservation of energy	1, 2
5	Describes linear momentum and the conservation of the momentum	1, 2
6	defines motion of the rotating bodies about a certain axis	1, 2
7	describes torque and angular momentum	1, 2
8	Basic communication skills by working in groups on laboratory experiments and the thoughtful discussion and interpretation of data	3, 5
9	Enhance the student's ability and motivation to solve seemingly difficult problems in various fields	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	2
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	2
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	1
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	1

5	Planning and carrying out experiments, as well as to analyze and interpret data	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	1
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	2
10	A recognition of the need for, and an ability to engage in life-long learning	4

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Measurement	
2	2	Motion along a straight line	
3	3	Vectors	
4	4	Motion in two and three dimensions	
5	5	Motion in two and three dimensions	
6	6	Force and motion I	
7	7	Force and motion II	
8	8	Kinetic Energy and work	
9			Midterm
10	8	Potential Energy and Conservation of Energy	
11	9	Center of mass and linear momentum	
12	10	Rotation	
13	11	Rolling, torque and angular momentum	
14	12	Equilibrium and Elasticity	
15			Final

Recommended Sources

Textbook:

R D. Halliday, R. Resnick, and J. Walker, "Principles of Physics", 9th Edition, Wiley.

Supplementary Course Material

R. A. Serway and R. J. Beichner , "Physics for Scientist and Engineers with Modern Physics", 8th Edition, Thomson Brooks/ColeDouglas C. Giancoli, Physics for Scientist and Engineers with Modern Physics, 4th Edition, Printice Hall.

Assessment

Attendance	-	
Assignment	-	
Laboratory	15%	
Midterm Exam	35%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	12	1	12
Assignment	5	2	10
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	16	16
Final Examination	1	20	20
Self Study	14	4	56
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	General Chemistry
Course Unit Code	CHEM 101
Type of Course Unit	Compulsory
Level of Course Unit	Freshman
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/biweekly)	2
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	Assist. Prof. Dr. Hürmüs Refiker
Name of Lecturer (s)	Assist. Prof. Dr. Hürmüs Refiker
Name of Assistant (s)	İhsan Özçil
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	-

Course description:
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.

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Know and properly use the language of chemistry (nomenclature, terminology, and symbolic representations)	1
2	Comprehend and be able to apply chemical facts, concepts, and models	1, 5
3	Succeed in qualitative and quantitative problem solving skills.	1, 5
4	Think critically about the mutual impacts of science, society, natural resources, and the environment.	1, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	5
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	1
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	3
5	Planning and carrying out experiments, as well as to analyze and interpret data	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	3

8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Matter and Measurements	
2	1,2	Matter and Measurements Atoms, Molecules and Ions	
3	2	Atoms, Molecules and Ions	
4	3	Mass Relations in Chemistry; Stoichiometry	
5	5	Gases	
6	5	Gases	
7	6	Electronic Structure and the Periodic Table	
8			Midterm
9	7	Covalent Bonding	
10	8	Thermochemistry	
11	8	Thermochemistry	
12	9	Liquids and Solids	
13	9	Liquids and Solids	
14	13	Acids and Bases	
15			Final

Recommended Sources

Textbook:
Chemistry Principles and Reactions (7th edition, 2012) by William L. Masterton and Cecile N. Hurley, Brooks/Cole Cengage Learning

Assessment

Attendance	5%	
Laboratory	10%	
Midterm Exam	35%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Students may use calculators during the exam.

- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	3	48
Labs and Tutorials	6	2	12
Assignment	-	-	-
Project/Presentation/Report	5	2	10
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	5	70
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Atatürk İlkeleri ve İnkılap Tarihı I
Course Unit Code	AIT 101
Type of Course Unit	Core
Level of Course Unit	1
National Credits	0
Number of ECTS Credits Allocated	1 ECTS
Theoretical (hour/week)	2
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	1
Course Coordinator	
Name of Lecturer (s)	
Name of Assistant (s)	
Mode of Delivery	
Language of Instruction	Turkish
Prerequisites and co-requisites	-
Recommended Optional Programme Components	Basic background on History

Objectives of the Course:

- Osmanlı İmparatorluğu tarihini anlayabilme
- Devleti kurtarmaya yönelik Modernleşme/Batılılaşma hareketlerini kavrayabilme
- Modern Türkiye'nin oluşumuna zemin hazırlayan unsurlar olarak Osmanlı reformunu benimseyebilme
- İç ve Dış etkenleriyle birlikte Osmanlı Devleti'nin Yıkılış Sürecini anlayabilme
- Mondros Ateşkes Antlaşması ve ilk işgaller karşısında Osmanlı Hükümetleri ile Mustafa Kemal Hareketi'nin tutumlarını anlayabilme

Learning Outcomes

When this course has been completed the student should be able to		Assessment.
1	Osmanlı modernleşme sürecinin Atatürk Devrimine etkileri ile ondan ayrılan yanlarını kavrayarak mukayese edebilme yeteneğini geliştirir.	1
2	Kopuksuz Tarih anlayışı çerçevesinde Osmanlı Devleti ile Türkiye Cumhuriyeti devleti arasındaki kopuş ve süreklilikleri tesbit edip değerlendirir.	2
3	Günümüz Türkiyesi'nin Siyasal ve toplumsal sorunlarını tarihsel bir perspektif ve eleştirel bakış açısıyla anlama fırsatı yakalar.	1
4	Ulusal Kimliği pekişir ve bunun dünya Ulusları arasındaki yerini tesbit eder.	4
5		

Assessment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	-
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its	-

3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	-
4	An 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	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	-
9	An ability to communicate effectively with a range of audiences	5
10	A recognition of the need for, and an ability to engage in life-long learning	5
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)		

Course Contents

Week	Chapter		Exams
1		Giriş: Dersin ve Kaynakların Tanıtılması	
2		Kuruluşundan 18. Yüzyıl Sonuna Kadar Osmanlı İmparatorluğu	
3		Osmanlı Devleti'nin Çöküşüne Zemin Hazırlayan İş ve Dış Etkenler	
4		Klasik Osmanlı Devlet ve Toplum Yapısı	
5		Devleti Kurtarmaya Yönelik Reform Çabaları	
6		Devleti Kurtarmaya Yönelik Reform Çabaları(devam)	
7			Vize Sınavı
8		I. Dünya Savaşı ve Osmanlı İmparatorluğu, Mondros ve Savaş Sonrası Durum	
9		İşgaller ve İlk Tepkiler	
10		Cemiyetler, İsyanlar ve farklı arayışlar	
11		Mustafa Kemal ve Anadolu Direniş Hareketi'nin Teşkilatlanma süreci	
12		İstanbul Hükümetlerinin Tutumu ve Sevr Anlaşması	
13		Son Osmanlı Meclis-i Mebusanı'ndan TBMM'ne	
14			Quiz
15			Final

Recommended Sources

Textbook: Ali Efdal ÖZKUL-Hasan SAMANİ, İmparatorluktan Cumhuriyete Modern Türkiye'nin Oluşumu. Atatürk İlkeleri ve İnkılap Tarihi, Ankara, 2009.

Assessment

Attendance & Assignment	-	
Midterm Exam (Written)	40%	
Quiz (Written)	-	
Final Exam (Written)	60%	
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	**Number**	**Duration (hour)**	**Total Workload(hour)**
Course duration in class (including the Exam week)	16	1	16
Tutorials	-	-	-
Assignments	-	-	-
Project/Presentation/Report Writing	-	-	-
E-learning Activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	5	5
Final Examination	1	5	5
Self Study	4	1	4
Total Workload			30
Total Workload/30 (h)			1
ECTS Credit of the Course			1

BS program, Computer Engineering Department

Course Unit Title	Discrete Structures
Course Unit Code	COM121
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	3
Number of ECTS Credits Allocated	4
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	Msc. Okan Donangil
Name of Lecturer (s)	Msc. Okan Donangil
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	-

Course description:
Basic mathematical objects of computational mathematics: Sets, sequences, relations, functions, and partitions. Deductive mathematical logic proof techniques. Discrete number systems. Induction and recursion. Graphs and sub-graphs. Trees. Path problems. Directed graphs.

Objectives of the Course:
The students who succeeded in this course;
• Apply mathematical reasoning and combinatorial analysis and design discrete structures for computations
• Apply algorithmic thinking and formulate problems using mathematical structure

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Students will acquire knowledge sufficient to use the deterministic O.R techniques, primarily the linear programming.	1
2	Students will be able to develop an appropriate model from a verbal description of a problem.	1, 2
3	Students will be able to choose an approximate solution technique and solve engineering problems.	1, 2
4	Students will be able to interpret relevant information from a model and/or a solution and interpret it.	1, 2
5	Students will be able to understand and exercise professional and ethical norms.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Quiz.

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	4
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	1
5	Planning and carrying out experiments, as well as to analyze and interpret data	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	2
7	An understanding of professional, ethical, legal, security and social issues and	1

	responsibilities that apply to engineering	
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	2
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Logic , Sets and Functions	
2	1,2	Logic , Sets and Functions	
3	2	Logic , Sets and Functions	
4	3	Algorithms	
5	3	Algorithms	
6	5	Relations	
7	5	Relations	
8			Midterm
9	4	Counting	
10	6	Graphs	
11	6	Graphs	
12	7	Trees	
13	7	Trees	
14		Revision	
15			Final

Recommended Sources
Textbook:
Richard Johnsonbaugh, Discrete Mathematics, 5th ed., Prentice Hall, 2001.
Supplementary Course Material

Assessment

Quiz	10%	
Assignment	10%	
Midterm Exam	35%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East

University General Student Discipline Regulations			
ECTS allocated based on Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	4	2	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	2	1	2
Midterm Examination	1	10	10
Final Examination	1	14	14
Self Study	14	2	28
Total Workload			122
Total Workload/30(h)			4.06
ECTS Credit of the Course			4

BSc program, Computer Engineering Department

Course Unit Title	Programming and Problem Solving
Course Unit Code	COM162
Type of Course Unit	Compulsory
Level of Course Unit	Freshman
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hours/week)	3
Practice (hours/week)	-
Laboratory (hours/week)	2
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	Assist. Prof. Hüseyin Sevay
Name of Lecturer(s)	Assist. Prof. Hüseyin Sevay
Name of Assistant(s)	Mr Hamit Altıparmak
Mode of Delivery	Classroom and laboratory instruction
Language of Instruction	English
Prerequisites	COM141 (Introduction to Programming)
Recommended Optional Programme Components	To be described to students during personal one-on-one or group meetings.

Course description:

This course provides an introduction to fundamental concepts of programming and use of built-in data structures in solving problems using the Python general-purpose programming language. In this course, students study how write user-defined functions using iteration as well as recursion. This course also stresses the importance of programming tools such as programming editors and debuggers. The students are expected to work within a GNU/Linux environment. The course provides a basic introduction into object-oriented programming.

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Learn basic programming concepts and importance of testing software	1, 5
2	Develop an understanding of how real-life problems can/may be solved using programming	1, 2, 3, 5
3	Understand the important role programming plays in our lives	1, 2, 3, 4, 5
4	Write basic Python programs mainly using built-in data structures to solve problems	1, 2, 3, 5
5	Develop basic algorithms in pseudo-code format for given problems	2, 5
6	Write test code to test functions and methods in Python	2, 3, 5
7	Use input files and write output files in binary/text format	
8	Recognize the breadth of Python libraries in solving many real-life problems	2, 3, 5

9	Understand basic object-oriented programming concepts	1, 2, 3, 5
10	Understand the difference between mutable and immutable data types	1, 2, 3, 5
11	How data structures are used to represent objects in memory	1, 2, 3, 5
12	Understand how the stack is used in executing functions and methods	1, 2, 3, 5
13	Understand scoping rules	1, 2, 3, 5
14	Recognize the trade-off between space and time	2, 5
15	Understand the importance of abstraction	1, 2, 3, 5
16	Understand the concept of refactoring and code reuse	2, 5
17	Understand the importance of right data structure selection for implementation	2, 3, 5
Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work		

Course's Contribution to Program

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

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to programming and programming tools	
2	2	Variables, expressions, & statements	
3	3	Functions	
4	4	Interface Design	
5	5	Conditionals & Recursion	
6	6	Advanced Functions	
7	7	Iteration, Strings	
8	–		*Midterm*
9	8, 9	Solving Practical Problems	
10	10	Lists	
11	11	Dictionaries	
12	12	Tuples	

13	13	Data Structure Selection	
14	14	Files	
15	15	Introduction to Classes & Objects	
16	–		*Final*

Recommended Sources

Textbook:

- Python for Software Design: How to Think Like a Computer Scientist, Allen B. Downey, 2009, Cambridge University Press.

Supplementary Course Material

- Online Python tutorials, GNU/Linux command tutorials, source code for textbook examples

Assessment

Midterm	30%	Written exam (sometimes open-book)
Long and short homeworks	10%	Paper submission
Lab	15%	Attendance
Final	45%	Written exam (sometimes open-book)

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Lecture attendance is strongly advised.
- Late assignments are not accepted--No exceptions.
- Midterm makeup exams always include all material for the course.
- Students are allowed to use a printed copy of the textbook whenever open-book exams are administered.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to Near East University General Student Discipline Regulations.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload (hours)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	2	2	4
Assignment	8	4	32
Project/Presentation/Report	—	—	—
E-learning activities	—	—	—

Quizzes	—	—	—
Midterm Examination	1	15	15
Final Examination	1	18	18
Self Study	15	3	45
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	English
Course Unit Code	ENG 102
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	3
Number of ECTS Credits Allocated	4
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	SEVILAY CANGUL
Name of Lecturer (s)	Sevilay Cangul
Name of Assistant (s)	-
Mode of Delivery	Face to Face taught programme & midterm project (oral and written)
Language of Instruction	English
Prerequisites	ENG 101
Recommended Optional Programme Components	Intermediate English level grammar, reading, writing and listening skills

Course Description:

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	The course is designed to improve the students' reading, writing and presentation skills further	1
2	A project report to be prepared, including a literature review (displaying analysis/synthesis skills, and documentation)	1, 2,3
3	Definition/elaboration of a problem (using definition, description, cause/effect and comparison/contrast patterns) and suggestions for solution including personal views and	1, 2,3,

	argumentation	
4	Local and regional topics, personalizing the research and viewpoints will be recommended to prevent plagiarism.	1,2
5	Offers team-work opportunities to the students besides self-study/ individual study	2,3,4
6	Students will write an academic essay with proper documentation	1,2,3
7	the written projects will be presented by the students	2,3,4

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	8	Reporting Accidents, Causes and results (cause -effect verbs: lead to, result in etc.) Negative prefixes: in-, un-, dis- etc.	
2	9	Materials & Inventions	
3	9	Mixed conditionals & exercises	
4	10	Explaining How & Making Conversations,Chemical reactions vocabulary, Preposition+ ing. Writing: A Discursive Essay	
5	11	Making Predictions,Modal Verbs, Weighing alternatives	
6	12	Handling Complaints and Describing Damages	
7			Midterm
8		Damage vocabulary,Writing: A Newspaper Report	
9	13	Skills and Experience, Reporting Progress.Mixed Passive Forms	
10	14	Technical Writing, Measurement and Conversions	
11	15	Describing Location, Phrasal Verbs: clean up, hold onto, come up with, get rid of etc.	
12	16	Writing Style Text Abbreviations, Engine Part Vocabulary	
13	17	Organizing Schedules	
14	18	Faults and hazards	
15			Final

Recommended Sources

1- Oxford Practice Grammar-Intermediate, John Eastwood, Oxford

2- Macmillan English Grammar In Context- Intermediate,Michael Vince, Macmillan.

3- General Certificate English, New Edition, Alan Etherton, Nelson.

Supplementary Course Material

- **Course Book: tech talk – Intermediate Student's Book, (Units 8-17) , Vicki Hollett & John Sydes - Oxford University Press, 2009**
- **Workbook: tech talk – Intermediate Workbook,Lewis Lansford - Oxford University Press, 2009**

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Midterm Project	20%	Both oral presentation & written assignment
Midterm Exam	30%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	8	1	8
Assignment	2	5	10
Project/Presentation/Report	1	8	8
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	10	10
Final Examination	1	10	10
Self Study	10	1	10
Total Workload			120

Total Workload/30(h)	4
ECTS Credit of the Course	4

BS program, Computer Engineering Department

Course Unit Title	Calculus II
Course Unit Code	MAT 102
Type of Course Unit	Compulsory
Level of Course Unit	1st year BSc program
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	Prof. Dr. Cavit Atalar
Name of Lecturer (s)	Prof. Dr. Cavit Atalar
Name of Assistant (s)	-
Mode of Delivery	Face to Face,
Language of Instruction	English
Prerequisites	MAT101
Recommended Optional Programme Components	

Course description:

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Determine whether a sequence converges or diverges	1,2
2	Determine whether an infinite series converges or diverges	1,2
3	Find the radius of convergence of a power series and how to differentiate and integrate the power series and how to represent functions by power series	1, 2
4	Sketch a curve represented by parametric equations	1, 2
5	Find the arc length of a curve using the parametric curve	1, 2
6	Find the area of a region bounded by a polar graph and find the arc length of a polar graph	1,2
7	Sketch a graph, level curves and level surfaces.	1,2
8	Find the limit and determine continuity.	1,2
9	Find and use a partial derivatives. To use Chain Rule.	1,2
10	Find absolute and relative extrema and learn how to solve an optimization problem.	1,2
11	To evaluate an iterated integral and find the area of a plane region and volume of a solid region	1,2
12	Write and evaluate double integrals in polar coordinates and find the area of a surface	1,2
13	Write and evaluate the triple integrals and use a triple integral to find the volume of a solid region.	1,2

Assessment Methods: 1. Written Exam, 2. Assignment

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	9	Infinite Series : Sequences, Infite Series and Convergence	
2,3	9	The Integral test and p-test, Comparisons of series	Quiz
4	9	Alternating Series , The Ratio and the Root tests	
5,6	9	Power Series, Representation of Functions by power series, Taylor Series	Quiz
7			Midterm
8	10	Parametric Equations And Polar Coordinates: Conics, Plane Curves and Parametric Equations , Polar Coordinates and its Graphs, Area and Arc Length in Polar	
9,10	13	Functions of Several Variables : Introduction to Functions of Several Variables, Limits.	
11	13	Partial Derivatrives, Chain Rules,extrema of Functions of Two variables	
12	14	Multiple Integration: Iterated Integrals and Area in the plane	Quiz
13	14	Double integrals and Volume, Surface Area	
14	14	Triple integrals and Applications	Quiz
15	14	Triple Integrals in Cylindrical and Spherical Coordinates	
16			Final

Recommended Sources
Textbook:
CALCULUS, Early Transcendental Functions Ron Larsaon, Bruce H.Edwards 5rd.edition, 2011
Supplementary Course Material
1- Early Transcendental Functions Robert Smith, Roland Minton 3rd.edition,2007
2- CALCULUS 7th edition Robert A.ADAMS , Christopher Essex 2010

Assessment		
Attendance & Assignment	15%	
Midterm Exam	30%	Written Exam
Quizes	10%	
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	6	3	18
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	2	3	6
Midterm Examination	1	15	15
Final Examination	1	18	18
Self Study	14	4	56
Total Workload			177
Total Workload/30(h)			5.9
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Linear Algebra
Course Unit Code	MAT112
Type of Course Unit	Compulsory
Level of Course Unit	1^{st} year BSc program
National Credits	3
Number of ECTS Credits Allocated	4
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	Assist.Prof. Dr.Firudin Muradov
Name of Lecturer (s)	Assist.Prof. Dr.Firudin Muradov
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	MAT101 (Calculus I)
Recommended Optional Programme Components	Basic background in mathematics

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.

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**

Learning Outcomes

When this course has been completed the student should be able to		Assessment
1	Solve the systems of linear equations. Provide arithmetic operations with matrices. Compute the inverse of matrix.	1, 2
2	Determine the value of determinant of a matrix. Use Cramer's rule to solve the systems of linear equations.	1, 2
3	Realize the importance of the concepts of vector space, basis and dimention.	1, 2
4	Compute the matrix representation of a linear transformation.	1, 2
5	Evaluate the eigenvalues and the corresponding eigenvectors of the matrix.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to Systems of Linear Equations. Gaussian Elimination.	
2	1	Matrices and Matrix Operations. Inverses, Rules of Matrix Arithmetic.	
3	1	Elementary Matrices and a Method for Finding A^{-1}.	
4	1	Further Results on Systems of Equations and Invertability. Diagonal, Triangular and Symmetric Matrices	
5	2	Determinants by Cofactor Expansion.	
6	2	Evaluating Determinants by Row Reduction. Properties of the Determinant Function.	
7	4	Euclidean *n*-Space. Linear Transformations from R^n to R^m.	
8	4	Properties of Linear Transformations from R^n to R^m.	
9	4	Linear Transformations and Polynomials.	
10			Midterm
11	5	Real Vector Spaces. Subspaces. Linear Independence.	
12	5	Basis and Dimension.	
13	5	Row Space, Column Space and Nullspace. Rank and Nulity	
14	6	Inner Products. Angle and Orthogonality in Inner Product Spaces. Orthonormal Bases. Gram-Schmidt Process	
15	7	Eigenvalues and Eigenvectors. Diagonalization.	
16	7	Orthogonal Diagonalization.	
17			Final

Recommended Sources

Textbook:

Howard Anton , Chris Rorres, Elementary Linear Algebra, John Wiley Publications, 9th edition, 2005.

Supplementary Course Material

- Bernard Kolman, David R.Hill , Elementary Linear Algebra with Applications, 9 th edition, 2008.
- Ron Larson, David C. Falvo, Elementary Linear Algebra, sixth edition 2010.

Assessment

Attendance	10%	
Assignment	10%	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	2	2	4
Assignment	5	2	10
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	15	15
Self Study	12	1	12
Total Workload			120
Total Workload/30(h)			4
ECTS Credit of the Course			4

BS program, Computer Engineering Department

Course Unit Title	General Physics II
Course Unit Code	PHY 102
Type of Course Unit	Compulsory
Level of Course Unit	B.Sc.
National Credits	4
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	Erkut İnan İşeri -
Name of Lecturer (s)	Hanifa Teimourian
Name of Assistant (s)	Khalid M. Ahmed, Samuel Nii Tackie
Mode of Delivery	Face to Face, Group study
Language of Instruction	English
Prerequisites	PHY 101
Recommended Optional Programme Components	-

Course description:

A basic physics course which study electric and magnetic phenomenas. Topics include electricity, magnetism, and direct current circuits. Laboratory work is an important component of the course.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Describes the electrical charge and electrification	1, 2
2	Determines electrical potential and electrical potential energy	1, 2
3	Determines the technological uses of the capacitors and designes basic circuits with them	1, 2
4	analyzes basic direct current circuits	1, 2
5	Describes the effected magnetic force on moving charges, applies Biot-Savart's Law or Ampere's Law to determine the magnetic field	1, 2
6	Evaluates the electromagnetic induction, applies Faraday and Lenz law to electrical circuits	1, 2
7	Basic communication skills by working in groups on laboratory experiments and the thoughtful discussion and interpretation of data	3, 5
8	Enhance the student's ability and motivation to solve seemingly difficult problems in various fields	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	2
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	2

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	21	Electric charge	
2	22	Electric fields	
3	23	Electric fields. Gauss' law	
4	24	Gauss' law	
5	25	Electric potential	
6	26	Electric potential. Capacitance	
7	27	Capacitance	
8	28	Current and resistance	
9			Mid-Term Exam.
10	29	Circuits	
11	29	Circuits	
12	30	Magnetic fields due to currents	
13	31	Magnetic fields due to currents Induction and inductance	
14	32	Induction and inductance	
15			Final

Recommended Sources

Textbook:

R D. Halliday, R. Resnick, and J. Walker, "Principles of Physics", 9th Edition, Wiley.

Supplementary Course Material

R. A. Serway and R. J. Beichner , "Physics for Scientist and Engineers with Modern Physics", 8th Edition, Thomson Brooks/ColeDouglas C. Giancoli, Physics for Scientist and Engineers with Modern Physics, 4th Edition, Printice Hall.

Assessment

Attendance	-	
Assignment	-	
Laboratory	15%	

Midterm Exam	35%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	13	1	13
Assignment	-	-	-
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	20	20
Final Examination	1	25	25
Self Study	14	4	56
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Logic Design
Course Unit Code	COM211
Type of Course Unit	Compulsory
Level of Course Unit	2nd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	2
Semester when the course unit is delivered	5
Course Coordinator	Assist.Prof. Dr. Besime Erin
Name of Lecturer (s)	Assist.Prof. Dr. Besime Erin
Name of Assistant (s)	Ahmet İlhan
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM121 (Discrete Structures)
Recommended Optional Programme Components	Basic computer hardware skills

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.

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 buildingblocks such as adders, multiplexers and decoders**
- **Analysis of number systems**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand number systems, their addition, subtraction, multiplication, and division	1
2	Learn basic logic gates and their properties(AND, OR, NOT)	1, 2
3	Learn other logic gates(NAND, NOR, Exclusive OR)	1, 2
4	Learn properties of boolan algebra and simplification of logic functions using these properties	1, 2
5	Learn how to design combinational logic	1, 2, 5
6	Simplification of Boolean functions using Karnaugh Maps	1,2
7	Implementation of boolean functions using decoders, multiplexers and adders	1,2,5
8	Design and analysis of sequential Circuits	1,2,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4
3	An ability to apply mathematical foundations, algorithmic principles, and computer	4

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Number Systems	
2,3	2	Combinational Systems	Assignment
4	3	Karnaugh Maps	Midterm
4,5	4	Designing Combinational Systems	
6,7	4	Analysis of Combinational Systems	Assignment
7	4	Design of Sequential Systems	Final

Recommended Sources

Textbook:

Alan B. Marcovitz, Introduction to Logic and Computer Design, 1st edition, McGraw Hill.

Supplementary Course Material

- Digital Design: Principles and Practices, John F. Wakerly, Prentice Hall.
- Digital Design, M. Morris Mano, Prentice Hall.

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Assignment	10%	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	14	2	28
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	3	42
Total Workload			177
Total Workload/30(h)			5.9
ECTS Credit of the Course			6

BSc program, Computer Engineering Department

Course Unit Title	Data Structures and Algorithms
Course Unit Code	COM201
Type of Course Unit	Compulsory
Level of Course Unit	Sophomore
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hours/week)	3
Practice (hours/week)	–
Laboratory (hours/week)	2
Year of Study	2
Semester when the course unit is delivered	3
Course Coordinator	Assist. Prof. Hüseyin Sevay
Name of Lecturer(s)	Assist. Prof. Hüseyin Sevay
Name of Assistant(s)	–
Mode of Delivery	Classroom and laboratory instruction
Language of Instruction	English
Prerequisites	COM162 (Programming & Problem Solving)
Recommended Optional Programme Components	To be described to students during personal one-on-one or group meetings.

Course description:

This course comprises an introductory exploration into the design and implementation ofAbstract Data Types (ADTs) along with the study of algorithm design and complexity analysis. Even though the discussions during lectures about ADTs are language independent, this course uses Python, a very high-level general programming language, to implement these ideas using object-oriented programming. This class starts with a brief introduction to object-oriented programming.

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop an appreciation of the design of built-in ADTs and their performance, for example, in Python.	2, 3, 5
2	Design and implement user-defined ADTs for a given problem using built-in data structures and other user-defined ADTs.	1, 2, 3, 5
3	Design and implement solutions in terms of fundamental data structures such as arrays, lists, dictionaries, stacks, queues, trees and other linked structures	1, 2, 3, 5
4	Analyze the execution complexity of given algorithms using the Big-O notation	1, 2, 3, 5
5	Develop an understanding of how recursion operates	2, 3, 5
6	Design recursive algorithms to solve appropriate problems	1, 2, 3, 5

7	Choose the right data structure for a given problems	1, 2, 3, 5
8	Understand fundamental searching and sorting concepts and use them in the design of solutions to problems.	2, 3, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to OOP	
2	2	ADTs	
3	3	Arrays	
4	4	Sets & Maps	
5	5	Algorithm Analysis and Design	
6	6	Searching & Sorting	
7	7, 8	Linked Structures, Stacks	
8	–		*Midterm*
9	9	Queues	
10	10	Advanced Linked Lists	
11	11	Recursion	
12	12	Hash tables	
13	13	Advanced Sorting	
14	14	Binary Trees	
15	15	Search Trees	
16	16		*Final*

Recommended Sources

Textbook:

- Data Structures and Algorithms Using Python, Rance D. Necaise, 2011, John Wiley & Sons.

Supplementary Course Material

- Online Python OOP tutorials, GNU/Linux command tutorials, source code for textbook examples

Assessment

Midterm	30%	Written exam (sometimes open-book)
Long and short homeworks	10%	Paper submission
Lab	15%	Attendance
Final	45%	Written exam (sometimes open-book or take-home)

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Lecture attendance is strongly advised.
- Late assignments are not accepted--No exceptions.
- Midterm makeup exams always include all material for the course.
- Students are allowed to use a printed copy of the textbook whenever open-book exams are administered.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to Near East University General Student Discipline Regulations.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload (hours)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	—	—	—
Assignment	7	5	35
Project/Presentation/Report	—	—	—
E-learning activities	—	—	—
Quizzes	—	—	—
Midterm Examination	1	15	15
Final Examination	1	18	18
Self Study	15	3	45
Total Workload			177

Total Workload/30(h)	5.9
ECTS Credit of the Course	6

BSc. program, Computer Engineering Department

Course Unit Title	Electrical Circuits
Course Unit Code	EE 207
Type of Course Unit	Compulsory
Level of Course Unit	2rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	2
Semester when the course unit is delivered	4
Course Coordinator	Mr. Cemal KAVALCIOĞLU
Name of Lecturer (s)	Mr. Cemal KAVALCIOĞLU
Name of Assistant (s)	Khalid AHMED
Mode of Delivery	Face to Face, Laboratory
Language of Instruction	English
Prerequisites	PHY 102
Recommended Optional Program Components	The modes of delivery include formal lectures, discussions and lab works.

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.

Objectives of the Course:

- Conceptual overview of law and methods in engineering
- Teaching Methods of Circuit theory.
- Teaching Power in circuits

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Analyze simple DC circuits using systemic analysis techniques (basic law).	1, 2, 5
2	Apply Thevenin's theorem, Norton's theorem and the superposition theorem to aid in circuit analysis.	1, 2, 5
3	Explain AC steady-state circuit concepts (impedance, reactance, etc) and perform AC steady state analysis.	1, 2, 5
4	Perform DC and AC steady-state power calculations	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply the knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	3
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	4
5	Planning and carrying out experiments, as well as to analyze and interpret data	4
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering	3

	practice	
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	5
9	An ability to communicate effectively with a range of audiences	2
10	A recognition of the need for, and an ability to engage in life-long learning	4

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		• Definitions and Units.	
2		• Kirchhoff's Laws.	
3		• Nodal Analysis, Mesh Analysis	Midterm
4		• Superposition Theorem	
5		• Source Transformation	
6		• Thevenin's and Norton's Theorem	
7		• Energy Storage Elements	
8		• Sinusoidally Forcing Function	Final

Recommended Sources

Textbook:

- James W. Nilsson, Susan A. Riedel "ELECTRIC CIRCUITS" Prentice Hall, Seventh Edition.

Supplementary Course Material

Assessment

Attendance	5 %	Less than 25% class attendance results in NA grade
Laboratory	15 %	
Midterm Exam	30 %	Written Exam
Final Exam	50 %	Written Exam
Total	100 %	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance is Compulsory. Every student is expected to attend the class regularly on time.
- Students may use calculators during the exam.
- Cheating will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	6	2	12
Assignment	-	-	-

Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	20	20
Final Examination	1	26	26
Self Study	14	4	56
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Differential Equations
Course Unit Code	MAT201
Type of Course Unit	Compulsory
Level of Course Unit	2nd year BSc program
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	2
Semester when the course unit is delivered	3
Course Coordinator	-
Name of Lecturer (s)	Assoc. Prof. Dr. Fa'eq Radwan
Name of Assistant (s)	-
Mode of Delivery	Face to Face.
Language of Instruction	English
Prerequisites	MAT102, (CALCULAS II)
Recommended Optional Programme Components	

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

Objectives of the Course:

1. Introducing first, second and higher order differential equations, and the methods of solving these equations.
2. Emphasizing the important of differential equations and its engineering application.
3. Introducing the Laplace transform and its applications in solving differential equations and other engineering applications.
4. Introducing the series method in solving differential equations.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Learning the definition of differential equation and the classification of differentional equations.	1
2	Learning the method of solving different types of differentials and its applications.	1, 2
3	Learning the concepts of Laplace transform and its applications.	1, 2
4	Learning the series methods for solving differential equations.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	2
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	2
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	1

5	Planning and carrying out experiments, as well as to analyze and interpret data	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	2
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	3
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	2
9	An ability to communicate effectively with a range of audiences	4
10	A recognition of the need for, and an ability to engage in life-long learning	4

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Assessment
1	1	The nature of differential equations, definition, ordinary and partial differential equations, order and degree, linear and nonlinear equations.	Assignment 1
2	1	Separable equations and Homogeneous equations.	Assignment 2
3	1	Exact equations, and integrating factors,	Assignment 3
4	1	Linear equations, and Bernoull's equation, and initial value problems.	Assignment 4
5	2	Applications: simple electric circuits and free falling problems, parachute problem, radium decoposition and tank of water problem.	Assignment 5
6	2	Reduction of order and knowing one solution to find another solution and the general solution of second order linear differential equation.	Assignment 6
7			Midterm Exam
8	3	Introduction, the general solution of the homogeneous equation, and the general solution of nonhomogeneous differential equation.	
9	3	The homogeneous equation with constant coefficients and the solution of Euler's equidimensional equation.	Assignment 7
10	3	The method of undetermined coefficients for finding the particular solution.	
11	3	The method of variation of parameters for finding the particular solution and initial value problems.	Assignment 8
12	4	Laplace transform of continuous functions.	Assignment 9
13	4	Laplace transform of discrete functions.	Assignment 10
14	5	Introduction to solution by series.	Assignment 11
15			Final Exam.

Recommended Sources

Textbook:

Yunus A. Cengel, William J. Palm III**, '**Differential Equations for Engineers and Scientists', First edition, 2013 McGraw-Hill Higher Education.

Supplementary Course Material

- Dnnis G. Zill, Michael R. Cullin, Differential Equations with Boundary Value Problems, Seventh Edition, Brooks/Cole, Cengage Learning. Kenneth C. Louden, Programming Languages. Principles and Practice, Thomson, 2003.
- Fae'q A.A. Radwan, Linear Algebra and Differential Equations, Near East University, Nicosia, – Turkish

Republic of Northern Cyprus, 1999.

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Assignment	5%	
Midterm Exam	45%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	11	2	22
Project/Presentation/Report	-	-	-
E-learning activities	5	2	10
Quizzes	-	-	-
Midterm Examination	1	10	10
Final Examination	1	15	15
Self Study	15	4	60
Total Workload			177
Total Workload/30(h)			5.9
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	ENGLISH COMMUNICATION SKILLS
Course Unit Code	ENG 210
Type of Course Unit	Compulsory
Level of Course Unit	2nd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	2
Laboratory (hour/week)	-
Year of Study	2
Semester when the course unit is delivered	3
Course Coordinator	Heran Çiftçi, MA
Name of Lecturer (s)	Heran Çiftçi, MA
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	ENG101-ENG102
Recommended Optional Programme Components	

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.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Achieve the advance level of English, to be able to cope with the subjects of engineering; an ability to communicate effectively	1-2-3
2	Define/elaborate a problem(using linking words) and suggestions for solution including personal views and argumentation	1-2-3-4
3	Personalize a research and viewpoints to prevent plagiarism.	3-4
4	Have team-work opportunities besides self-study/individual study	3-4
5	Write an academic essay with proper documentation	1-2-3-4
6	Write a interview winning CV and a successful job interview	1-2

7	To use power- point for presenting the written projects.	2-3-4

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1.1	Tips for Note-Taking	3
2	1.2	Focusing on Academic Presentation skills	2-3-4
3	1.3	Some signposts in oral presentation	2-3-4
4	1.4	Focusing on Vocabulary	2-3
5	2.1	Word Studies	2-3
6	2.2	Adjectives and perspectives on personality	2-3
7	2.3	Proverbs and Conversation Questions	2-3-6
8		MID-TERM EXAMS (17-21 Nov.2014)	2Hrs.Exam
9	3.1	Focusing on Job Market Requirements	1-3-4-6
10	3.2	Focusing on CV writing	1-6
11	3.3	Study of Application Forms/Letters	1-3-6
12	3.4	Cover letters and Vacancy announcements	1-3-6
13	3.5	Study of Sample Letters, team work on interviews	1-3-6
14	3.6	Study of Power Phrases and Action Verbs.	1-3-5-6
15		Revisions/deadline for Termite Project submission	5
16		FINAL EXAMS (05-16 Jan. 2015)	2Hrs.Exam

1- final exam 2-mid-term exam 3- assignments 4-oral academic presentation 5- written project 6-team working in class

Recommended Sources

TEXTBOOK(S):

1. Jason, Davis. Rhonda, Lisa (2006), *Effective Academic Writing 3*, Oxford university Press: Oxford, New York.
2. Çiftçi, Heran (2013), *English 210 Communication Skills For Engineering Students course hand-outs*, Yakın Doğu University : Nicosia, Cyprus
3. Boatload, I.,Rein art, Ü. Mending , E. Stagnant Ö., (2005) *Academic Oral Presentation Skills,* METU Press. Ankara.
4. Düsseldorf, Marion (2007) *English for Presentation,* Oxford University Press: Oxford, New York
5. Fried-Booth, D. (2002), *Project Work*, Oxford University Press : Oxford, New York
6. Apiarist Flannel, D. (1999), *Skills Builder*, Oxford: England
7. McGowan, J.& Glen Dinning, H. E. (1998), *Information Technology*, Oxford: New York
8. Wall work, A. (2002), *Business Vision*, Oxford University Press:Oxford, New York.
9. Glen Dinning, H.E. and Kohl Alison, *Technology 2*,(2008) Oxford English for careers, Oxford University Press: Oxford, New York

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Assignment-Midterm Project	20%	
Midterm Exam	30%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

1. Students are expected to attend each class on time. Attendance will be recorded if the students fail to attend %30 of the lectures they will get N. A. equal to F.F
2. Homework and assignments should be delivered on time.
3. A Mid- Term Project (written and oral presentation) should be submitted on time . For oral presentation student should be registered on the oral presentation list given in class. Non-show of registered date for oral presentation student will get directly FF from the mid- term project and a second chance will not be given to students unless the proof of medical report.
4. Student are expected to do an oral presentation of **10-15** min. in class on the chosen written topic project before they submit their written project.
5. Any mid-term project without oral presentation in class will not be accepted.
6. The task for Mid-Term Project(oral presentation in class) can be done individually or team work can be accepted (Max.3 students) from the same department
7. For oral presentation in class student are expected to narrowing down the topic and make the oral presentation listener-friendly, easier to understand than written text.
8. Oral presentation have the aim to gain the ability to research, to develop topical vocabulary, to organize material clearly, to overcome stage fright and to deliver confidently which the students will serve them well throughout their careers.
9. The task for Mid- Term Project is to write an abstract/review on an article, chosen from your field of study.
10. The review/abstract of chosen article should be no less than **750** words and a maximum of **1000** words.The written Mid-Term Project should be submitted at announced deadline, it must be include a completed and signed coversheet.
11. Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.

ECTS allocated based on Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	5	3	15
Project/Presentation/Report	1	20	20
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	14	14
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.96
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Object oriented programming I
Course Unit Code	COM210
Type of Course Unit	Compulsory Departmental Course
Level of Course Unit	First Cycle
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	2
Semester when the course unit is delivered	Spring
Course Coordinator	Prof.Dr.Rahib H.Abiyev
Name of Lecturer (s)	Prof.Dr.Rahib H.Abiyev
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM141 Introduction to Programming
Recommended Optional Programme Components	COM162 Programming and Problem Solving

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.

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..

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Describe the properties and characteristics of object oriented programming	1
2	Develop different programs by function overloading, function template and realize them in C++ programming language	1,2,5
3	Studying the concepts of data abstraction and encapsulation in the creation of abstract data types. Develop programs by using classes and realize them in C++ programming language	1,2,5
4	Studying the single and multiple inheritances. Develop programs and realize them in C++ programming language	1,2,5
5	Studying polymorphism, operator overloading. Develop programs using overloading,	1,2,5

	method polymorphism, run-time polymorphism and realize them in C++ programming language	
6	Learn friend functions, template classes. Develop programs using friend functions	1,2,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction. Object-orientation. Objects in software, modelling the real world.	
2		C++, Control structures. Functions, Function overloading, Function templates.	
3		Abstraction, Abstract data types, Classes, Information hiding, Encapsulation	
4		Constructors and Destructors. Creating objects. Defoult Constructor. Parametrised constructor. Copy constructor.	
5		Object lifetimes. Destructors, Dynamic objects,	
6		Static objects, Metaclass	
7		Inheritance, Single inheritance, Base ans derived classes	
8		Private, Protected, Public derivation. Inheriting constructors.	Midterm
9		Associations and Aggregations	
10		Polymorphisim. Types of polymorphism Ad hoc polymorphism. Coercion, casting	
11		Operator overloading, Overloading of relational and arithmetic operators	
12		Types of polymorphism. Polymorphism by parameter,	
13		Run-time polymorphism. Method polymorphism	
14		Multiple Inheritance	

15		Templates and Friends. Friend functions.	
16		Stream operations. File processing	Final

Recommended Sources

Textbook:

1. H.M.Deitel, P.J.Deitel. C++ How to Program (7 edition). Prentice-Hall, Inc., New Jersey 07458, 2010.
2. David Parsons. Object Oriented Programming with C++. Letts Educational Aldine Place, London W128AW 01817402268,1997-98.

Lab Manual:

1. H.M.Deitel, P.J.Deitel. C++ In the Lab, Lab Manual to Accompany C++ How to Program, (4 edition). Upper Saddle River, N.J. : Prentice Hall 2003.
2. H.M.Deitel, P.J.Deitel. C++ How to Program (7 edition). Prentice-Hall, Inc., New Jersey 07458, 2010
3. Dr. Tim Lin, Dr. Saeed MonemiC / C++ Programming Lab manual. California State Polytechnic University at Pomona, 2006. http://www.cpp.edu/~hlin/CplusManual/ CCplusmanual.pdf
4. Standard C++ Programming Laboratory. http://web.stanford.edu/class/ cs106l/ course_reader.html

Supplementary Course Material

- Set of laboratory works designed by lecturer

Assessment

Attendance	10%	
Assignment	5%	
Lab	15%	Lab Attendance, Lab Performance, Written Lab exam
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students cannot use text books during exam. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	8	2	16
Assignment	6	2	12
Project/Presentation/Report	-	-	-

E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	16	16
Final Examination Study	1	25	25
Self Study	14	3	42
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6.0

BS program, Computer Engineering Department

Course Unit Title	Database Management Systems
Course Unit Code	COM242
Type of Course Unit	Compulsory Department Course
Level of Course Unit	First Cycle
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	2
Semester when the course unit is delivered	Spring
Course Coordinator	Assist. Prof. Dr Ümit İlhan
Name of Lecturer (s)	Assist. Prof. Dr Ümit İlhan
Name of Assistant (s)	
Mode of Delivery	Face To Face
Language of Instruction	English
Prerequisites	Data Structures Algorithms
Recommended Optional Programme Components	

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.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Describe the elements of a good Database Design	1
2	Identify the relationships between database tables	1, 2,5
3	Design and implement databases using popular DBMS	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4

4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to Database Systems	
2		Introduction to Database Design	
3		Relational Model	
4		Relational Algebra	
5		Database Application Development	
6		Normalization	
7		Lab Assignment review	
8		Examination	Midterm
9		Structured Query Language (SQL)	
10		Structured Query Language (SQL) continued	
11		DB Management Tools	
12		Internet and Databases	
13		Popular DBMS review	
14		Team Project Assesment	
15		Revision	
16		Final Exam	Final

Recommended Sources

3. **Textbook:**Fundamentals of Database Systems. By: Elmasri & Navathe
4. Database System Consepts. By: Abraham Silberschatz, Henry F. Korth, S. Sudarshan

Assessment

Attendance	-	
Assignment	5%	
Lab	20%	Lab Attendance, Lab Performance, Written Lab exam
Midterm Exam	25%	Written Exam

Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	20	1	20
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm ExaminationStudy	1	10	10
Final ExaminationStudy	1	21	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Software Engineering Department

Course Unit Title	Computer Organization and Architecture
Course Unit Code	COM256
Type of Course Unit	Compulsory Departmental Course
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	2
Semester when the course unit is delivered	Spring
Course Coordinator	Assist. Prof. Dr Kaan Uyar
Name of Lecturer (s)	Assist. Prof. Dr Kaan Uyar
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM211 Logic design
Recommended Optional Programme Components	

Course description:

Introduction to computer architecture and organization, basic concepts, logic and arithmetic, the central processing unit, assembly, parallel organization, control unit operation, microprogrammed control.

Objectives of the Course:

- Expose the students to the design aspects of all the elements that constitute a complete computer system design
- Allow student to apply their know-how from the pre-requisite courser and laboratory experiments to the design of these main elements
- Introduce the student to the concept of integration between software development and hardware design

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	describe the structure and functioning of a computer, including its overall system organization, architecture and digital components.	1, 2
2	explain the generic principles that underlie the building of a computer, including data representation, digital logic and programming	1, 2
3	implement assembly programs that accomplish basic computational and input/output operations	1,2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements	5

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1, 2	Basic Concepts and Computer Evolution Performance Issues	
2	3, 4	Computer Function and Interconnection Cache Memory	
3	5, 6	Internal Memory Technology External Memory	
4	7	Input/Output	
5	8, 9	Operating System Support Number Systems	
6	10, 11	Computer Arithmetic Digital Logic	
7		Examples, Review	
8			Midterm
9	12, 13	Instruction Sets: Characteristics and Functions Instruction Sets: Addressing Modes and Formats	
10	13,14	Instruction Sets: Addressing Modes and Formats Processor Structure and Function	
11	15	Reduced Instruction Set Computers (RISCs)	
12	16,17	Instruction-Level Parallelism and Superscalar Processors Parallel Processing	
13	18, 19	Multicore Computers General-Purpose Graphic Processing Units	
14	20, 21	Control Unit Operation Microprogrammed Control	
15		Review of the Semester	
16			Final

Recommended Sources

Textbook:

- William Stallings, "Computer Organization and Architecture", 10/E, Pearson, 2016.

Supplementary Course Material

- J. L. Hennessy and D. A. Patterson, “Computer Architecture: A Quantitative Approach”, Morgan Kaufmann, 5th edition, 2011
- D. A. Patterson and J. L. Hennessy, “Computer Organization and Design: The Hardware/Software Interface”, Morgan Kaufmann, 5th edition, 2013.
- Bryant and O'Hallaron, “Computer Systems: A Programmer's Perspective”, 3rd Edition, Pearson.

Assessment

Attendance	-	
Assignment	20%	
Lab	20%	
Project/Presentation	-	
Midterm Exam	20%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	8	1	8
Assignment	2	3	6
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	16	16
Final Examination Study	1	25	25
Self Study	14	4	56
Total Workload			175
Total Workload/30(h)			5.83

ECTS Credit of the Course	6

BSc. program, Computer Engineering Department

Course Unit Title	Basic Electronics
Course Unit Code	EE208
Type of Course Unit	Compulsory
Level of Course Unit	2nd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	2
Semester when the course unit is delivered	4
Course Coordinator	Assist. Prof. Dr. Kamil Dimililer
Name of Lecturer (s)	Assist. Prof. Dr. Kamil Dimililer
Name of Assistant (s)	Khaled Ahmad
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	EE207 (Circuit Theory)
Recommended Optional Programme Components	-

Course description:

This course introduces the characteristics and applications of semiconductor devices and circuits. Emphasis is placed on analysis, selection, biasing, and applications.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	explain the properties of intrinsic and doped semiconductors	1
2	explain physical behavior and regions of operation of semiconductor diodes	1, 2
3	explain physical behavior of and regions of operation transistors	1, 2
4	explain physical behavior of and regions of operation operational amplifiers	1, 2
5	conduct DC analysis of basic diode circuits	1, 2, 5
6	conduct DC analysis of basic transistor circuits	1, 2, 5
7	conduct DC analysis of basic operational amplifier circuits	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

1	Ability to understand and apply knowledge of mathematics, science, and engineering	2
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	1
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	3
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	3
5	Planning and carrying out experiments, as well as to analyze and interpret data	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and	4

	responsibilities that apply to engineering	
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	4
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)		

Course Contents

Week	Topics	Exams
1	Conduction, semiconductors, carriers.	
2	p-type and n-type doping, drift and diffusion mechanisms.	
3	Physical structure and behavior of the pn junction.	
4	Ideal diode, practical diode, electrical behavior and current-voltage curve. Diode models.	
5	DC analysis of diode circuits. Body resistance and parasitic capacitors	
6	Diode applications (e.g. rectifiers).	
7	Zener diode and regulation. Other diode types.	
8		Midterm
9	Physical structure and behavior of the bipolar-junction transistor (BJT).	
10	BJT operation regions, electrical model (Ebers-Moll) and characteristics	
11	DC biasing of BJT circuits.	
12	Basic applications of transistors.	
13	Physical structure and behavior of field effect transistors (JFET, MOSFET). Operation regions, characteristics and DC biasing of FETs	
14	Operational Amplifiers and their applications	
15		Final

Recommended Sources

Textbook: R. Boylestad & L. Nashelsky, “Electronic Devices and Circuit Theory”, 10th edition, Prentice Hall, 2008.

Supplementary Course Material: A. Sedra & K.C. Smith, “Microelectronic Circuits”, 6th edition, Oxford University Press, 2010.

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Assignments	10%	
Laboratory	15%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	3	48
Labs and Tutorials	9	2	18
Assignment	5	2	10
Project/Presentation/Report	1	8	8
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	4	56
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Microprocessors
Course Unit Code	COM301
Type of Course Unit	Compulsory Departmental Course
Level of Course Unit	First Cycle
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	3
Semester when the course unit is delivered	Fall
Course Coordinator	Assist. Prof. Dr Kaan Uyar
Name of Lecturer (s)	Assist. Prof. Dr Kaan Uyar
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM256 Computer Architecture and Organizations
Recommended Optional Programme Components	Digital Circuits

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Describes the basic operation of a microprocessor	1
2	To write programs for a microprocessor using assembly language	1, 2,5
3	Design a microprocessor based system	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3

9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction	
2		The Intel 8080 Microprocessor Instruction Set	
3		The Intel 8080 Microprocessor Instruction Set	
4		Assembly language, program writing, examples	
5		Assembly language, program writing, examples	
6		Assembly language, program writing, examples	
7		Examples, Review	
8			Midterm
9		The Intel 8085 Microprocessor	
10		The Memory Interface	
11		Parallel Input/Output Interface	
12		Serial Input/Output Interface	
13		8080/8085 Clock Circuits, Some Special Peripherals	
14		8085 System Design	
15		Examples, Review of the Semester, Lab Exam	
16			Final

Recommended Sources

Textbook:

Dogan Ibrahim and Kaan Uyar, The 8080 and 8085 Microprocessors and Peripherals, Bilesim Yayincilik, 2006, Turkey.

Lab Manual:

Dogan Ibrahim and Kaan Uyar, 8085 Microprocessor Experiments, Bilesim Yayincilik, 2006, Turkey

Supplementary Course Material

Assessment

Attendance	-	
Assignment	5%	
Lab	20%	Lab Attendance, Lab Performance, Written Lab exam
Midterm Exam	25%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.

- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	20	1	20
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	21	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Signals and Systems
Course Unit Code	COM360
Type of Course Unit	Compulsory Departmental Course
Level of Course Unit	First Cycle
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	3
Semester when the course unit is delivered	Fall
Course Coordinator	Prof.Dr.Rahib H.Abiyev
Name of Lecturer (s)	Prof.Dr.Rahib H.Abiyev
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	MAT201 Differential Equations
Recommended Optional Programme Components	EE208 Electronics

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Studying the properties and characteristics of continues time and discrete time signals. Classifying the signals according to energy, power, duration. Studying signal transformation operations.	1,2,5
2	Able to define, state and identify system properties of linearity, time (in)variance,	1,2,5

	causality, memory and stability. Able to formulate and solve differential equations describing linear, time invariant (LTI) systems.	
3	Able to use Fourier and Laplace Transform for computing output of continuous-time LTIS, for analysis of continuous-time LTIS,.	1,2,5
4	Able to use z- Transform for computing output of discrete-time LTIS, for analysis of discrete-time LTIS	1,2,5
5	Using Matlab package develop different programs on analysis, construction of different type of signals.	2,5
6	Solve problems, find solutions of the systems in time domain, z-domain and frequency domain	1,2,5
7	The modelling of linear time invariant systems using Matlab package	2,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction. Classification of signals. Basic signal modifications.	
2		Properties of continuous and discrete-time signals and systems. Digital Signals,	
3		Modulation. Amplitude, frequency modulations.	
4		Sampling. Sampling theorem. Sampling of Discrete time signals. Analog to digital conversion.	
5		Systems, Classification of systems. Memory, causal, stable, linear and time-invariant systems. Stochastic processes and noise..	
6		Linear time-invariant systems. Properties of continuous-time and discrete-time systems. Laplace transform.	
7		Impulse response, Step response, transfer function Convolution	
8		Time domain analysis. Difference equation. Block diagram of LTI systems	Midterm

9		Discrete time systems. Convolution	
10		Z domain analysis. Z- transform. Mapping s-plane into z-plane. Inverse Z-transform. Properties of Z- transform.	
11		Z-plane, poles and zeros. Stability	
12		Fourier series. Representation of signals by Fourier series.	
13		Fourier transforms. Properties of Fourier transforms. Frequency response.	
14		Discrete Fourier transform	
15		Filtering. Ideal and no-nideal filters.	
16		Feedback Systems. Space state equations.	Final

Recommended Sources

Textbook:

1. Alan V.Oppenheim. Alan S.Willsky, Ian T.Young. Signals and Systems. Prentive Hall Int.Editions. 1983
2. Hwei P.Hsu. Theory and Problems of Signals and Systems. Schaum's Outline Series. McGraw Hill. 1995
3. Simon Haykin. Barry Van Veen. Signals and Systems. John Wiley & Sons, Inc. 1999

Lab Manual:

1. Alex Palamides Anastasia Veloni. Signals and Systems Laboratory with MATLAB. CRC Press Taylor &. Francis Group, 2010
2. Signals and Systems. Massachusetts Institute of Technology. http://ocw.mit.edu/resources/res-6-007-signals-and-systems-spring-2011/assignments/

Supplementary Course Material

Assessment

Attendance	10%	
Assignment	10%	
Lab	10%	Lab Attendance, Lab Performance, Written Lab exam
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use calculators. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)

Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	8	1	8
Assignment	6	2	12
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	15	15
Final Examination Study	1	24	24
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.96
ECTS Credit of the Course			7

BS program, Computer Engineering Department

Course Unit Title	Programming Language Concepts
Course Unit Code	COM339
Type of Course Unit	Compulsory
Level of Course Unit	3rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	5
Course Coordinator	Prof. Dr. Adil Amirjanov
Name of Lecturer (s)	Prof. Dr. Adil Amirjanov
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM141 (Introduction to programming)
Recommended Optional Program Components	Basic computer programming skills

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.

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Use of evaluation criteria for an assessment of programming language	1
2	Make derivation and draw parse tree for programs written in a language given its context free grammar	1, 2
3	Demonstrate and reconstruct a specific grammar to avoid an ambiguity	1, 2
4	Apply static and dynamic semantics of the language for a verification of the program	1, 2
5	Analyse variables' life time and scope (static or dynamic)	1, 2, 5
6	Examine different concepts implemented in programming languages (data types, control structures, procedural and object-oriented programming)	1, 5
7	Compare imperative and declarative paradigms of programming languages	1, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	An ability to analyse a problem, identify and define the computing requirements appropriate to its solution	4

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1,2	Introduction. Programming Language's Evaluation Criteria.	
2	3	Context free grammars. Derivation of program.	
3	3	Parse trees. Ambiguity. Reconstruction of grammar.	
4	4	Extended BNF grammar	
5	4	Static semantic grammar	
6	4	Dynamic semantic grammar	
7			Midterm
8	5	Variables. Name, Life time, Scope. Static and dynamic binding.	
9	6	Data types (Primitive, Arrays, Pointers, Records).	
10	8	Control structures.	
11	9,10	Procedural programming paradigm	
12	11	Abstract data types	
13	12	Object-oriented programming concept	
14	15	Functional Programming. Common Lisp.	
15			Final

Recommended Sources

Textbook:

Robert W. Sebesta, Concepts of Programming Languages, 8th ed., Addison-Wesley, 2008.

Supplementary Course Material

- David A. Watt, Programming Language Design Concepts, John Wiley & Sons, 2004.
- Kenneth C. Louden, Programming Languages. Principles and Practice, Thomson, 2003.

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Assignment	10%	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam

Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	2	2	4
Assignment	5	4	20
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	20	20
Final Examination	1	25	25
Self Study	14	3	42
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Automata Theory
Course Unit Code	COM344
Type of Course Unit	Restrictive Departmental Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	Fall
Course Coordinator	Prof. Dr Rahib H.Abiyev
Name of Lecturer (s)	Prof. Dr Rahib H.Abiyev
Name of Assistant (s)	
Mode of Delivery	Face To Face
Language of Instruction	English
Prerequisites	Discrete Mathematic
Recommended Optional Programme Components	

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

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand mathematical models of computation,	1
2	Understand the equivalence between Non-deterministic Finite State Automata and Deterministic Finite State Automata.	1, 2
3	Build a pushdown automaton or context-free grammar for a context-free language,	1, 2
4	Build a Turing machine that accepts a recursively-enumerable language, or computes a recursive function,	1,2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5

3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to Automata Theory. Basic consepts	
2		Deterministic finite automata (DFA), Regular languages	
3		Nondeterministic finite automata (NFA), From DFA to NFA, From NFA to DFA	
4		Regular expressions (RE), Kleene algebra, algebraic laws for regular expressions	
5		DFA state minimization	
6		pumping lemma and applications	
7		Proving non-regularity using the Pumping Lemma, Reduction	
8			Midterm
9		Context-free grammars and languages	
10		parsing (or derivation) and parse trees	
11		Pushdown automata	
12		Various forms of PDA. Deterministic PDAs. Application: Control flow analysis of programs	
13		Turing machines, Equivalent models	
14		Universal Turing machine, Self-reference and incompleteness	
15		Review	
16		Examination	Final

Recommended Sources

1. J. Hopcroft, R. Motwani, and J. Ullman. Introduction to Automata Theory, Languages, and Computation, 3rd edition, 2006, Addison-Wesley.

2.Harry R. Lewis and Christos H. Papadimitriou, *Elements of the Theory of Computation,* 2nd ed., Prentice Hall, 1998.

3. P. Linz. Introduction to Formal Languages and Automata, 5th edition, 2011 (or 4th or 3rd edition)

Assessment

Attendance	10%	
Assignment	15%	
Lab		
Midterm Exam	35%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	5	2	10
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm ExaminationStudy	1	20	20
Final ExaminationStudy	1	25	25
Self Study	14	4	56
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Probability and Statistics
Course Unit Code	MAT350
Type of Course Unit	Compulsory
Level of Course Unit	3rd year B.Sc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	4
Course Coordinator	-
Name of Lecturer (s)	Assoc. Prof. Dr. Fa'eq Radwan
Name of Assistant (s)	-
Mode of Delivery	Face to Face.
Language of Instruction	English
Prerequisites	MAT102, (CALCULAS II)
Recommended Optional Programme Components	EXCEL

Course description:
Probability and counting, permutation and combination. Some probability laws, Axioms of probability. Random variables and discrete distributions. Continuous distributions. Joint distributions. Mathematical Expectation, Some Discrete Probability Distributions, Some Continuous Probability Distributions.

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.**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	To make data analysis and calculate many statistics parameters	1
2	To solve problems related to probability and to construct the tree diagram of many sample spaces of many experiments.	1, 2
3	To know the relation of variability to production process.	1, 2
4	The applications of probability distributions in engineering.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	2
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	2
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	1
5	Planning and carrying out experiments, as well as to analyze and interpret data	2

6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	2
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	3
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	2
9	An ability to communicate effectively with a range of audiences	4
10	Ability to understand and apply knowledge of mathematics, science, and engineering	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	**Assessment**
1	1	Introduction to statistics and Data Analysis.	Assignment 1
2	2	Definition of probability, interpreting probabilities, sample spaces and events.	
3	2	Counting formulas, permutations and combinations Axioms of probability, conditional probability, independence and the multiplication rule, Bayes theorem.	Assignment 2
4	3	Random variable and probability distributions	
5	3	Discrete probability distribution, continuous probability density.	
6	3	Joint distributions.	Assignment 3
7			Midterm Exam.
8	4	Mathematical Expectation.	
9	4	Mathematical Expectation.	Assignment 4
10	5	Some discrete probability distributions.	
11	5	Uniform distribution, binomial, multinomial and negative binomial distributions.	
12	5	Hyper geometric and Poisson distributions.	Assignment 5
13	12	Some continuous probability distributions	
14	15	Normal and standard normal distributions.	Assignment 6
15			Final Exam.

Recommended Sources

Textbook:

Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye. 'Probability and Statistics for Engineers and Scientists', 8Edition, Pearson Education International, Pearson Prentice Hall.

Supplementary Course Material

J. S. Milton, Jesse C. Arnold, Introduction to Probability and Statistics, Principles and Applications for Engineering and the Computing Sciences, Second Edition, McGraw-Hill, Inc.

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade

Assignment	5%	
Midterm Exam	45%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	6	4	24
Project/Presentation/Report	-	-	-
E-learning activities	3	2	6
Quizzes	-	-	-
Midterm Examination	1	14	14
Final Examination	1	16	16
Self Study	14	4	56
Total Workload			176
Total Workload/30(h)			5.86
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Operating Systems
Course Unit Code	COM312
Type of Course Unit	Compulsory Department Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	Spring
Course Coordinator	Assist. Prof. Dr Ümit İlhan
Name of Lecturer (s)	Assist. Prof. Dr Ümit İlhan
Name of Assistant (s)	
Mode of Delivery	Face To Face
Language of Instruction	English
Prerequisites	Computer Organization
Recommended Optional Programme Components	

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.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand the basic principles and structure of Operating Systems	1
2	Use the basic commands to manage the operating system at work	1, 2,5
3	Use algorithmic approach to simulate basic o.s commands.	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer	4

	engineering techniques in the modeling and design of computer-based systems	
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to Operating Systems	
2		Computer Systems/OS Structures	
3		Process Management and Threads	
4		CPU Scheduling	
5		CPU Scheduling continued	
6		Process Synchronization	
7		Deadlocks	
8		Examination	Midterm
9		Memory Management	
10		Examination	
11		Virtual Memory	
12		File-System Interface	
13		I/O Systems	
14		Windows & Unix O.S.	
15		Final Revision	
16		Examination	Final

Recommended Sources

5. Understanding Operating Systems. By: Ida M. Flynn & Ann McIver McHoles
6. Modern Operating Systems. By: Andrew S. Tenanbaum

Assessment

Attendance	-	
Assignment	10%	
Lab	15%	
Midterm Exam	25%	Written Exam

Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm ExaminationStudy	1	14	14
Final ExaminationStudy	1	20	20
Self Study	14	5	70
Total Workload			176
Total Workload/30(h)			5,86
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Systems Simulation
Course Unit Code	COM321
Type of Course Unit	Compulsory Department Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	Spring
Course Coordinator	Assist. Prof. Dr Ümit İlhan
Name of Lecturer (s)	Assist. Prof. Dr Ümit İlhan
Name of Assistant (s)	
Mode of Delivery	Face To Face
Language of Instruction	English
Prerequisites	Computer Organization
Recommended Optional Programme Components	

Course description: Introduction to simulation as a problem solving tool . Methodology of simulation . The use of computers. Classification of simulation . (Monte Carlo Techniques. Markov Models.Basics of queueing theory. Planing of a computer simulation experiment. Introduction to simulation programming languages.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand the basic principles of modeling	1
2	Understand and apply the Queuing Theory	1, 2,5
3	Make simulation experiments and analyse the outcome.	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to Simulation	
2		Discrete-Event System Simulation	
3		Simulation of Queueing Systems	
4		Simulation of Inventory Systems	
5		Manual Simulation Using Event Scheduling	
6		Statistical Models	
7		Random Number Generation	
8		Examination	Midterm
9		Team Project Assignment	
10		The Event Scheduling/Time Advance Algorithm	
11		Team Project review	
12		Simulation Software review	
13		Spreadsheets as simulation tool	
14		Team Project presentation	
15		Final Revision	
16		Examination	Final

Recommended Sources

7. Understanding Operating Systems. By: Ida M. Flynn & Ann McIver McHoles
8. Modern Operating Systems. By: Andrew S. Tenanbaum

Assessment

Attendance	-	
Assignment	15%	
Lab	10%	
Midterm Exam	25%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	2	4	8
Project/Presentation/Report	2	5	10
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm ExaminationStudy	1	16	16
Final ExaminationStudy	1	22	22
Self Study	14	4	56
Total Workload			176
Total Workload/30(h)			5,86
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Data Communications and Networking
Course Unit Code	COM322
Type of Course Unit	Compulsory
Level of Course Unit	3rd year BSc program
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	3
Year of Study	3
Semester when the course unit is delivered	6
Course Coordinator	MSc. Ramiz M. SALAMA
Name of Lecturer (s)	MSc. Ramiz M. SALAMA
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	Basic computer programming skills

Course description:

This course is to provide students with an overview of the concepts and fundamentals of data communication and computer networks. Topics to be covered include: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols.

Objectives of the Course:

At the end of the course, the students will be able to:

1. Build an understanding of the fundamental concepts of computer networking.
2. Familiarize the student with the basic taxonomy and terminology of the computer Networking area.
3. Introduce the student to advanced networking concepts, preparing the student for Entry Advanced courses in computer networking.
4. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Independently understand basic computer network technology.	1
2	Understand and explain Data Communications System and its components.	1, 2,5
3	Identify the different types of network topologies and protocols.	1, 2
4	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.	1, 2,5
5	Identify the different types of network devices and their functions within a network	1, 2, 5
6	Understand and building the skills of subletting and routing mechanisms.	1, 5
7	Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.	1, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

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

Course Contents

Week	Chapter	Topics	Exam
1	1	The Network as Platform	
2	2	The Element of a Networks	
3	3	The Architectures of the internet, A Fault Tolerant Network Architecture, Providing Quality of Service, Providing Network Security	
4	4	The Platform for Communication.	
5	5	The Elements of Communication, Communicating the Message, Components of the Network	
6	5	End Devices and their Role on the Network, Intermediary Devices and their Role on the Network	
7	6	Network Media	Midterm
8	7	LANs, WANs, and Internet works	
9	8	Local Area Networks, Wide Area Networks, The Internet – A Network of Networks ,Network presentations	
10	9	Protocols, Rules That Govern Communications, Network Protocols	
11	10	Protocol Suites and Industry Standards, The Interaction of Protocols, Technology Independent Protocols,	
12	11	Using Layered Models, The Benefits of Using of Layered Model, Protocol and Reference Models, The TCP/IP Model, The Communication Process	
13	12	The OSI Model, Comparing the OSI Model with the TCP/IP,	
14	13	Network Addressing, Addressing in the Network, Getting the Data to the End Device, Getting the Data through the Internet work, Getting the Data to the Right Application	
15	14	Planning and Cabling Networks, LANs Making the Physical Connection	
			Final

TEXTBOOK(S) :

- Data Communications and Networking. Fourth Edition, Behrouz A.Forouzan
- Networking, Second Edition, Jeffery S.Beasley

Assessment

Attendance	05%	Less than 25% class attendance results in NA grade
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Lab Work	25%	
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	8	2	16
Assignment	4	4	16
Project/Presentation/Report	1	6	6
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	3	42
Total Workload			179
Total Workload/30(h)			5.96
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Operations Research
Course Unit Code	COM333
Type of Course Unit	Compulsory
Level of Course Unit	3rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	5
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	6
Course Coordinator	Msc. Okan Donangil
Name of Lecturer (s)	Msc. Okan Donangil
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	Mat 112 Linear Algebra
Recommended Optional Programme Components	-

Course description:
Historical Development of Operations Research.Modeling, Graphical solution, Simplex and Dual Simplex Methods. Duality and sensitivity analysis.Transportation, assignment, and transshipment problems. Integer Programming.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Students will acquire knowledge sufficient to use the deterministic O.R techniques, primarily the linear programming.	1
2	Students will be able to develop an appropriate model from a verbal description of a problem.	1, 2
3	Students will be able to choose an approximate solution technique and solve engineering problems.	1, 2
4	Students will be able to interpret relevant information from a model and/or a solution and interpret it.	1, 2
5	Students will be able to understand and exercise professional and ethical norms.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Quiz.

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	4
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	5
5	Planning and carrying out experiments, as well as to analyze and interpret data	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	An understanding of professional, ethical, legal, security and social issues and	1

	responsibilities that apply to engineering	
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	2
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to OR	
2	2	A review of basic linear algebra	
3	3	Introduction to Linear Programming	
4	3	The Graphical method	
5	3	The Graphical method	
6	4	The Simplex algorithm	
7	4	The Simplex algorithm	
8			Midterm
9	5,6	Duality	
10	5,6	Sensitivity analysis	
11	7	Transportation problems	
12	7	Transportation problems	
13	7	Assignment and transshipment problems	
14	7	Assignment and transshipment problems	
15			Final

Recommended Sources

1. F.S.Hiller, G.J.Lieberman. Introductıon to operatıons research. 7th edition, McGraw-Hill Higher Education, 2001

Supplementary Course Material

2. Hamdy A. Taha.Operations Research: An Introduction (9th Edition) 9th Edition.Prentice Hall, 2007

3. F.S.Hiller, G.J.Lieberman. Introductıon to operatıons research with student access card. 9th edition, McGraw-Hill Higher Education, 2016

4. Wayne L. Winston, Operations Research, 4th ed., Thomson, 2004.

Assessment

Attendence	10%	
Assignment	10%	
Midterm Exam	35%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	5	3	15
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	2	2	4
Midterm Examination	1	14	14
Final Examination	1	15	15
Self Study	14	3	42
Total Workload			150
Total Workload/30(h)			5
ECTS Credit of the Course			5

BS program, Computer Engineering Department

Course Unit Title	Real Time Systems
Course Unit Code	COM382
Type of Course Unit	Compulsory
Level of Course Unit	3rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	6
Course Coordinator	Assist. Prof. Elbrus Imanov
Name of Lecturer (s)	Assist. Prof. Elbrus Imanov
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	MAT 205
Recommended Optional Programme Components	

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.

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on basic of modern systems engineering such as the fundamental concepts of system	1
2	Open and Closed loop systems	1, 2
3	The mathematical modeling of systems,	1, 2
4	Transfer functions impulse an transient functions	1, 2
5	Block diagram and Signal flow graph representation of systems.	1, 2
6	Analysis of the real time systems.	1, 2
7	Industrial automatic controller.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to Systems. Modeling of the System.	
2	1	Modeling of Electrical Systems.	
3	2	The main characteristics of second order system.	
4	2	Transfer function, z-transform.	
5	3	Open and Closed loop systems	
6	4	Block Diagrams.	
7			Midterm
8	4	Signal flow graph.	
9	5	Analysis of the control systems.	
10	6	Frequency Response Analysis.	
11	7	Develop a controller for a large complex system.	
12	7	Deploy a control algorithm on a real-time target.	
13	8	Design of the Real-Time control systems.	
14	8	Basic control action and industrial automatic controllers	
15			Final

Recommended Sources

Textbook:

Control systems engineering Prof. Dr Fakhreddın Mamedov Nıcasıa 1999.

Supplementary Course Material

Control systems engineering Norman S.Nise California State Polytechnic University,Pomona 1999

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Quiz	20%	Written Quiz

Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	5	4	20
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	2	4	8
Midterm Examination	1	20	20
Final Examination	1	25	25
Self Study	14	3	42
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Engineering Design I
Course Unit Code	COM490
Type of Course Unit	Compulsory
Level of Course Unit	4th year BSc program
National Credits	2
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	-
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	7
Course Coordinator	-
Name of Lecturer (s)	-
Name of Assistant (s)	-
Mode of Delivery	Project, Presentation
Language of Instruction	English
Prerequisites	Refer to the Graduation project guideline
Recommended Optional Programme Components	Refer to the Graduation project guideline

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 real life computer engineering problem as a team and present their work. They are expected to get familiar to ethical problems of the profession.

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.

Learning Outcomes

After completing the course the student will be able to		Assessment
1	Understand and apply the fundamentals of engineering-design practices and procedures	3, 4
2	Participate in team work activities	3, 4
3	Implement the techniques of oral and written presentations	3, 4
4	Identify an engineering problem and assess alternative solutions	3, 4
5	Apply project management fundamentals	3, 4
6	Understand the ethics of engineering profession and environmental issues	3, 4
7	Interact with industry	

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Topics	Exam
1	Literature and market surveys	
2	Project selection	
3	Project submission	
4	Engineering design specifications	
5	Project management	
6	Project report submission	
7		Midterm
8	Project management	
9	Project management	
10	Project management	
11	Project management	
12	Project management	
13	Project management	
14	Presentation to the review board	
15		Final

Recommended Sources

Will be required depending on the recommendation of the project supervisor and according to the needs of the specific project topics.

Supplementary Materials:

Project Manual for students of Engineering Faculty

Assessment

Project Proposal	10%	

Progress Report	10%	
Evaluation of the review board	40%	
Project Supervisor's Assessment	30%	
Final report	10%	
Total	100%	

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	-	-	-
Labs and Tutorials	-	-	-
Assignment	12	6	72
Project/Presentation/Report	3	7	21
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	-	-	-
Final Examination (Presentation to the review board)	1	1	1
Self Study	14	6	84
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Software Engineering
Course Unit Code	COM411
Type of Course Unit	Compulsory
Level of Course Unit	4th year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	7
Course Coordinator	Prof. Dr. Adil Amirjanov
Name of Lecturer (s)	Prof. Dr. Adil Amirjanov
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM339 (Programming Language Concepts)
Recommended Optional Programme Components	Computer programming skills

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.

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**

Learning Outcomes

After completing the course the student will be able to		Assessment
1	Capture and analyze requirements to software product	1, 3
2	Apply different software development models	1, 3
3	Employ group working skills – including general organization, planning, etc.	3
4	Plan a software engineering process using an object-oriented software engineering methodology	1, 3, 5
5	Employ concepts and techniques to complete a small-scale analysis and design project	1, 3, 5
6	Translate a specification into a design, and then realize that design practically	1, 3, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4
3	An ability to apply mathematical foundations, algorithmic principles, and computer	4

	engineering techniques in the modelling and design of computer-based systems	
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	5
5	Planning and carrying out experiments, as well as to analyze and interpret data	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	4
9	An ability to communicate effectively with a range of audiences	4
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1,4[1]	Introduction. Software Development Process.	
2	6[1]	Functional and non-functional requirements. Requirement capture and analysis.	
3	8[1]	Software development models.	
4	14[1], 1[2]	Object-oriented software development. Unified modeling language.	
5	2[2], 4[2]	Use- case diagrams.	
6		Case study: Point of sale terminal. Use- case model.	
7			Midterm
8	2[2], 3[2]	Conceptual model. Concepts and Classes. Class diagrams.	
9	3[2]	Association. Aggregation. Generalization.	
10		Case study: Point of sale terminal. Conceptual model.	
11	4[2]	System behavior: System sequence diagrams and operations.	
12	4[2]	Collaboration and object sequence diagrams.	
13		Case study: Point of sale terminal. Dynamic design phase.	
14	23[1]	Software Testing. Unit testing, integration and system testing.	
15			Final

Recommended Sources

Textbook:

1. I. Sommerville, Software Engineering, Addison-Wesley, 2010.
2. G. Booch, J. Rumbaugh, I. Jacobson, “The Unified Modeling Language User Guide”, Addison Wesley, 2005.

Supplementary Course Material

- R.S. Pressman, “Software Engineering: a Practitioner's Approach”, McGraw–Hill, 2010.
- W. Boggs, M. Boggs, “Mastering UML with Rational Rose”, BPB Publications, 2002.

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Project/Report	10%	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	5	2	10
Assignment	-	-	-
Project/Presentation/Report	1	25	25
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	3	42
Total Workload			176
Total Workload/30(h)			5.86
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Engineering Design II
Course Unit Code	COM491
Type of Course Unit	Compulsory
Level of Course Unit	4th year BSc program
National Credits	2
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	-
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	8
Course Coordinator	-
Name of Lecturer (s)	-
Name of Assistant (s)	-
Mode of Delivery	Project, Presentation
Language of Instruction	English
Prerequisites	Refer to the Graduation project guideline
Recommended Optional Programme Components	Refer to the Graduation project guideline

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.

Objectives of the Course:

COM491 Engineering Design II is the continuation of COM490 in which the students continue to develop their project.

The purpose of the Engineering Design II 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.

Learning Outcomes

After completing the course the student will be able to		Assessment
1	Understand and apply the fundamentals of engineering-design practices and procedures	3, 4
2	Participate in team work activities	3, 4
3	Implement the techniques of oral and written presentations	3, 4
4	Identify an engineering problem and assess alternative solutions	3, 4
5	Apply project management fundamentals	3, 4
6	Understand the ethics of engineering profession and environmental issues	3, 4
7	Interact with industry	

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Topics	Exam
1	Project management	
2	Project management	
3	Project management	
4	Project management	
5	Project management	
6	Project report submission	
7		Midterm
8	Project management	
9	Project management	
10	Project management	
11	Project management	
12	Project management	
13	Project management	
14	Presentation to the review board	
15		Final

Recommended Sources

Will be required depending on the recommendation of the project supervisor and according to the needs of the specific project topics.

Supplementary Materials:

Project Manual for students of Engineering Faculty

Assessment

Project Proposal	-	
Progress Report	10%	

Evaluation of review board	50%	
Project Supervisor’s Assessment	30%	
Final report	10%	
Total	100%	

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	-	-	-
Labs and Tutorials	-	-	-
Assignment	12	6	72
Project/Presentation/Report	3	7	21
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	-	-	-
Final Examination (Presentation to the review board)	1	1	1
Self Study	14	6	84
Total Workload			178
Total Workload/25(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Economics for Engineers
Course Unit Code	ECON 431
Type of Course Unit	Compulsory
Level of Course Unit	4th year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	5
Course Coordinator	Assist. Prof. Dr. Besime Erin
Name of Lecturer (s)	Mustafa Gündüz
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	None
Recommended Optional Programme Components	Basic engineering economy

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 relationships. Depreciation. Money and banking. Price changes and inflation. Business and company finance

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on engineering decision making	1
2	Understand the principles of economic analysis of design process	1
3	Understand the different costs(fixed cost, variable cost, direct cost, indirect cost, standard cost and opportunity cost)	1
4	Realize the money-time relationships	1
5	Realize applications of money time relationships	1
6	Understand price changes and inflation	1
7	Understand price and relations using graphical approach	1

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4
3	An ability to apply mathematical foundations, algorithmic principles, and computer	-

	engineering techniques in the modelling and design of computer-based systems	
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	5
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	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	1
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Foundations of Engineering Economy	
2	2	Factors: How time and Interest Affect Money	
3	4	Nominal and Effective Interest rates	
4	5	Present-worth Analysis	
5	6	Annual-worth Analysis	
6	6	Future-worth Analysis	
7			Midterm
8	13	Breakeven Analysis	
9	14	Effects of inflation	
15			Final

Recommended Sources

Textbook:

Leland Blank, Anthony Tarquin, Engineering Economy, 6th edition, McGrawHill.

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Midterm Exam	40%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East

University General Student Discipline Regulations			
ECTS allocated based on Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	6	4	24
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	20	20
Final Examination	1	25	25
Self Study	14	3	42
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Management for Engineers
Course Unit Code	MAN 402
Type of Course Unit	Free Elective
Level of Course Unit	4rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	5
Course Coordinator	Assist. Prof. Dr. Besime Erin
Name of Lecturer (s)	Assist. Prof. Dr. Besime Erin
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	
Recommended Optional Programme Components	Basic management skills

Course description:

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

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on management principles	1
2	Develop a thorough understanding on budgeting principle	1
3	Developing presentation skills	3,4

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5.Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	-
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	-
4	An 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	4

7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	1
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Principles of management	
2		Functions of managers	
3		Organisation and Environment	
4		Marketing management	
5		Production Management	
6		Personnel management	Midterm
7		Managerial control	
8		Accounting and Financial reports	
9		Budgeting and overall control	
10		PRESENTATIONS	Final

Recommended Sources

Textbook:

Management: Concepts, Practices and Skills R.Wayne Mondy, Shane R.Premeaux

Supplementary Course Material

- Managing Engineering and Technology, Daniel L. Babcock

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Project Presentation	20%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)

Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	-	-	-
Project/Presentation/Report	1	20	20
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	4	56
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Neural Networks
Course Unit Code	COM420
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall/Spring
Course Coordinator	Assist. Prof. Dr. Boran Şekeroğlu
Name of Lecturer (s)	Assist. Prof. Dr. Boran Şekeroğlu
Name of Assistant (s)	Çağrı Özkan
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Analyze theoretical and practical basics of neural networks	1
2	To write programs for neural networks applications using Matlab	2,5
3	Develop real life applications of neural networks	2,3,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	5
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	5
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	3
8	An ability to work productively in a multidisciplinary team, in particular to carry out	4

	projects involving computer engineering skills.	
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction	
2		Fundamentals of Neural Networks	
3		Fundamentals of Neural Networks	
4		Supervised / Unsupervised Learning Algorithms	
5		Supervised / Unsupervised Learning Algorithms	
6		Introduction to Back Propagation Algorithm	
7		Applications of Back Propagation Algorithm	
8			Midterm
9		XOR Problem	
10		Introduction to ADALINE	
11		Practical Application of ADALINE	
12		Hopfield Algorithm	
13		Application of Hopfield Algorithm	
14		Examples, Review of the Semester	
15		Examples, Review of the Semester	
16			Final

Recommended Sources

Textbook:

Fundamentals of Artificial Neural Networks, by Mohamad Hassoun

Lab Manual:

Supplementary Course Material

Assessment

Attendance	-	
Assignments	5%	
Lab	20%	Lab Attendance, Lab Performance, Assignments
Midterm Exam	25%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.

- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	20	1	20
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	21	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	**Computer Hardware**
Course Unit Code	COM422
Type of Course Unit	Technical Elective
Level of Course Unit	3rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	3
Semester when the course unit is delivered	5
Course Coordinator	MSc. Ramiz M. SALAMA
Name of Lecturer (s)	MSc. Ramiz M. SALAMA
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM245 (Computer Organization)
Recommended Optional Programme Components	Basic computer programming skills

Course description:

Parts of a PC. The CPU organization. The BIOS. Motherboard, memory organization, 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.

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.**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Define enterprise storage and describe the types of enterprise storage	1,5
2	Describe the hierarchy of computers according to power and their respective roles.	1, 2,5
3	Differentiate the various types of input and output technologies and their uses.	1, 2,5
4	Describe what multimedia systems are and what technologies they use.	1, 2
5	Discuss strategic issues that link hardware design and innovation to competitive business strategy.	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	2
3	An ability to apply mathematical foundations, algorithmic principles, and computer	4

	engineering techniques in the modelling and design of computer-based systems	
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	5
5	Planning and carrying out experiments, as well as to analyze and interpret data	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	3
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	3
9	An ability to communicate effectively with a range of audiences	3
10	A recognition of the need for, and an ability to engage in life-long learning	5
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)		

Course Contents

Week	Chapter	Topics	Exam
1	1	What is a CPU and What Does It Do?	
2	2	Best Motherboard CPU Combo 2014 Intel PU Socket Types AMD CPU Socket Types	
3	3	How to Check CPU Temperature Idle, Normal, Max CPU temperatures What is CPU Thermal Paste?	
4	4	How to Apply CPU Thermal Grease How to Install a CPU How to Install a CPU Heatsink Fan	
5	4	What is a Motherboard and How It Works	
6	4	Best Motherboard CPU Combo 2014 Motherboard Components and Parts	
7	5	Motherboard Form Factors, How to Choose a Motherboard	Midterm
8	5	Intel Motherboard Socket Types, AMD Motherboard Socket Types	
9	6	The Difference Between USB 2.0 and 3.0	
10	7	What is RAM and How It Works, Difference Between DDR2 vs DDR3 RAM	
11	8,9	Max RAM Supported by Your Computer, How Much RAM Do You Need?	
12	10	How to Test RAM for Errors, How to Install RAM Memory	
13	11	Best Computer Power Supply, Desktop PC Power Requirements	
14	11	What is a Hard Drive - Types of Hard Drive, SSD vs HDD - Should You Buy a SSD or HDD?	
15	12	How to Run a Hard Drive Benchmark Test	
16			Final

Recommended Sources

TEXTBOOK(S)

9. Hardware and Computer Organization , Arnold S.Berger

10. Computer Engineering: Hardware design, M. Morris Mano

Assessment		
Attendance	5%	Less than 25% class attendance results in NA grade
Assignment	10%	
Midterm Exam	20%	Written Exam
Final Exam	40%	Written Exam
Lab	25%	
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	5	2	10
Assignment			
Project/Presentation/Report	5	4	20
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	16	16
Final Examination	1	20	20
Self Study	14	3	42
Total Workload			172
Total Workload/30(h)			5.73
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Programming Language I
Course Unit Code	COM430
Type of Course Unit	Technical Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	Fall
Course Coordinator	Assist. Prof. Dr Ümit İlhan
Name of Lecturer (s)	Assist. Prof. Dr Ümit İlhan
Name of Assistant (s)	
Mode of Delivery	Face To Face
Language of Instruction	English
Prerequisites	Object Oriented Programming
Recommended Optional Programme Components	

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.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand Development Environment, Object-Oriented Programming Principles	1
2	Students will be able to develop an algorithm to solve a given problem	1, 2,5
3	Understand how to write and run a complete program	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate	5

	to its solution	
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to VB	
2		Introduction to Integrated Development Environment	
3		Forms and Menues	
4		Components and their properties	
5		Events	
6		Arithmetical and logical Operators	
7		Decision Making	
8		Examination	Midterm
9		Loops	
10		Data Conversions and String Manipulations	
11		Sequential and Random Files	
12		Menu Driven Programs	
13		Databases with Visual Basic	
14		Embedded SQL in Visual Basic	
15		Final Revision	
16		Examination	Final

Recommended Sources

11. Introduction :Visual Basic 6, Microsoft
12. Visual Basic 6 Complete, Steve Brown

Assessment

Attendance	-	
Assignment	-	
Lab	15%	

Midterm Exam	35%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	4	2	8
Project/Presentation/Report	2	5	10
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm ExaminationStudy	1	15	15
Final ExaminationStudy	1	25	25
Self Study	14	4	56
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	System Programming
Course Unit Code	COM424
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	3
Semester when the course unit is delivered	Fall
Course Coordinator	Assist. Prof. Dr Huseyin Sevay
Name of Lecturer (s)	Assist. Prof. Dr Huseyin Sevay
Name of Assistant (s)	
Mode of Delivery	Face To Face
Language of Instruction	English
Prerequisites	Introduction to Programming
Recommended Optional Programme Components	

Course description:

This course is an introduction to the design and implementation of system software. System software consists of a variety of programs that support the operation of a computer. Tools of Unix; design philosophy, command line options, combining programs using pipes and I/O redirection. File systems and memory. Profiling tools, binary tools, debuging tools. Basic shell scripting. Build tools. Signal and handling, synchronous and asynchronous I/O. Introduction to threads and concurrency.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Write and debug programs in the C programming language;	1,2,5
2	Explain how the Unix command shell processes commands; Write simple scripts	1, 2,5
3	Explain how the Unix file system stores information; Explain how concurrent processes are used in Unix;	1, 2, 5
4	Explain how asynchronous I/O and signals operate;	1,2,5
5	Apply the above knowledge to solve programming problems	1,2,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to Systems Programming and languages	
2		Operating system functions , Device management, Memory management, Process management,	
3		Operating system functions , File system management, Accounting and security, User services	
4		Introduction to Unix & C Programming. Manipulating with OS using C	
5		Process Management, Processes & Threads Concepts. Program (Process) Environment. Process VS Thread	
6		Functions, Library Function Calls. Thread-Safe Functions	
7		Process Identification, Process State,	
8			Midterm
9		Input/Output. Reading and Writing. Blocking,	
10		Files, Opening and closing. File Representation. File permissions , Functions used for file.	
11		Sockets for network communication, TCP and UDP sockets	
12		Concurrent process models, Synchronous VS Asynchronous IO Models	
13		Inter- process communication, Pipes, FIFO, Pipes and client server model	
14		Thread Management, Thread attributes	
15		Final Revision	
16		Examination	Final

Recommended Sources

Adam Hoover, *System Programming with C and Unix*, Addison-Wesley Publishing, 2009.

William Stallings, Operating Systems: Internals and Design Principles, Fifth Edition UNIX™ Systems Kay A. Robbins and Steven Robbins, Programming: Communication, Concurrency, and Threads,

Samuel P. Harbison, C: A Reference Manual, Fifth Edition, III and Guy L. Steele, Jr

Assessment

Attendance	-	
Assignment	-	
Lab	15%	
Midterm Exam	35%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	4	2	8
Project/Presentation/Report	2	5	10
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	15	15
Final Examination Study	1	25	25
Self Study	14	4	56
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Programming languages II
Course Unit Code	COM 432
Type of Course Unit	Compulsory
Level of Course Unit	4rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	2
Practice (hour/week)	2
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	6
Course Coordinator	Assist. Prof. Elbrus Imanov.
Name of Lecturer (s)	Assist. Prof Elbrus Imanov.
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	Com 162
Recommended Optional Programme Components	

Course description:

This course is designed for Introduction to Delphi, Organization of Forms and units, Organization of Object Inspector, The role of code in Delphi, Using components palette in Delphi, Controls and Components, Properties of components, Delphi and the dialogs File structure of a Delphi project, Text files, Database Formats. Creating simple Database applications.

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**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on the aim the course is to expose students to the introduction to Delphi	1
2	Components of Delphi	1, 2
3	Using components palette in Delphi	1, 2, 4
4	Properties of components and the available options	1, 2, 5
5	Events and event triggering. File structure of a Delphi project.	1, 2, 5
6	Files of PAS, DFM & DPR extensions.	1, 4, 5
7	Forms with multi document interface	1, 4, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate	4

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to Delphi.	
2	1	Organization of Forms and units.	
3	2	Organization of Object Inspector.	
4	2	The role of code in Delphi.	
5	3	Using components palette in Delphi	
6	4	Controls and Components. Properties of components.	
7			Midterm
8	4	Delphi and the dialogs File structure of a Delphi project.	
9	5	Text files.	
10	6	Database Formats. Creating simple Database applications.	
11	7	Windows-Based applications to Delphi projects	
12	7	The Data access method.	
13	8	Building an Access program with a DBNavigator.	
14	8	Tables on the record.	
15			Final

Recommended Sources
Textbook:
Delphi Programming Explorer Jeff Dustman, Jim Michel, Don Taylor Copyright 1995

Supplementary Course Material
Delphi for .Net Developer's Guide First Edition by Xavier Pacheco. 2004

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade
Presentation	20%	Presentation

Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	2	2	4
Assignment	6	4	24
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	20	20
Final Examination	1	25	25
Self Study	14	3	42
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Advanced object oriented programming
Course Unit Code	COM441
Type of Course Unit	Elective Departmental Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Prof.Dr.Rahib H.Abiyev
Name of Lecturer (s)	Prof.Dr.Rahib H.Abiyev
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM141 Introduction to Programming
Recommended Optional Programme Components	

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.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Describes the properties and characteristics of object oriented programming using C#	1
2	Develop different projects- console applications, windows application, web application, xml- by using object oriented technologies	1, 2,5
3	Learn programming of different problems by using C# language and solve the problems using classes, dynamic objects, inheritance, aggregation, polymorphism, overloading.	1, 2, 5
4	To combine visual programming with object-oriented programming and to improve the	1, 2, 5

	ease of systems development	

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Object-orientation. Modeling the objects in software. Modelling the real world.	
2		Overview of the .NET Framework. Components and Languages in the .NET. C# programming. ".NET is visual programming environment for object oriented C# programming".	
3		Structure of a C# Program. Input/Output. Console Application, Windows application. Class, Namespace.	
4		Data Types. Converting Data Types. Statements. Selection, Iteration, Jump Statements.	
5		Functions, Parameters. Methods, Overloaded Methods.	
6		Abstract Data types, Classes and Objects, Encapsulation, Creating and Destroying Objects, Constructors	
7		Inheritance, Single and multiple inheritance. *Interfaces,* Aggregation	
8			Midterm
9		Modules, Operator Overloading, Polymorphism	
10		Delegates, Events	
11		Windows Forms, Class Hierarchy, Propeties and Events.	
12		Visual environment for object oriented programming. Visual Control components,	
13		Dialogs, Menus, Multiple Document Interface	
14		Data Access and Data Binding, ADO.NET, .NET Data Providers	

15		Data Sets, Tables, Data manipulaton, DataGridView	
16		Interacting with XML Data, Web Browser	Final

Recommended Sources

Textbook:

3. Deitel, H. M., Deitel, P. J. Visual C# 2010 How to Program (4th Edition) Pearson Custom Computer Science,2010.
4. Allen Jones and Adam Freeman.Visual C# 2010 Recipes, A Problem-Solution Approach, Apress, 2010.

Lab Manual:

1. Deitel, H. M., Deitel, P. J. Visual C# 2010 How to Program (4th Edition) Pearson Custom Computer Science,2010.
2. Andrew Troelsen. Pro C# 2010 and the .NET 4 Platform, Fifth Edition, Apress,2010.

Supplementary Course Material

- Set of projects prepared by lecturer

Assessment

Attendance	10%	
Assignment	20%	
Lab	10%	Lab Attendance, Lab Performance, Written Lab exam
Midterm Exam	30%	Written Exam
Final Exam	30%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students cannot use text books during exam. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	7	2	14
Assignment	3	5	15
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-

Midterm Examination Study	1	18	18
Final Examination Study	1	23	23
Self Study	14	3	42
Total Workload			176
Total Workload/30(h)			5.86
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Object-Oriented Programming II
Course Unit Code	COM442
Type of Course Unit	Technical Elective
Level of Course Unit	4rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	7/8
Course Coordinator	Assist. Prof. Dr. Melike Şah Direkoğlu
Name of Lecturer (s)	Assist. Prof. Dr. Melike Şah Direkoğlu
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM141 (Introduction to programming)
Recommended Optional Programme Components	Basic computer programming skills

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.

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Describe the principles of object-oriented programming	1
2	Use the concepts of data encapsulation, inheritance, polymorphism, abstract classes, exception handling and collections	1, 2, 5
3	Acquire the concepts of Graphical User Interfaces	1, 2, 5
4	Acquire the concepts of database connectivity	1, 2, 5
5	Acquire the concepts of internet programming and Java Applets	1, 2, 5
6	Formulate problems step by step thus problems can be solved systematically	1, 2
7	Integrate robustness, reusability and portability into large-scale software development	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

	CL

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topic	Exam
1	1	Introduction. Types of Java programs: applications, applets.	
2	3	Object-oriented concepts in Java. Classes.	
3	3	Packages and Interfaces.	
4	4	Graphical User Interfaces (GUI). Hierarchy of GUI classes.	
5	4	Layout Managers.	
6	4	GUI components.	
7			Midterm
8	5	Exception handling.	
9	6	Java Archives.	
10	7	Animation and Threads.	
11	8	Input and output streams.	
12	8	File classes.	
13	9	Database Access. JDBC interface.	
14	10	Java Internet applications and Java applets.	
15			Final

Recommended Sources

Textbook:

- Adil Amirjanov, Java Programming for students, Bilesim, 2006.

Supplementary Course Material

- David Flanagan, Java In A Nutshell, O'Reilly, latest version.
- Baldwin's Introductory Java Tutorials available at http://www.DickBaldwin.com
- The Java Tutorials, available for free downloading from http://java.sun.com/docs/books/tutorial/

Assessment

Attendance	5%	Less than 60% class attendance results in NA grade
Assignment	25%	Coding
Midterm Exam	30%	Written Exam

Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	5	2	10
Assignment	4	5	20
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	15	15
Self Study	16	3	48
Total Workload			172
Total Workload/30(h)			5.73
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Advanced Operating Systems
Course Unit Code	COM447
Type of Course Unit	Elective
Level of Course Unit	4th year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	7
Course Coordinator	Assist. Prof. Dr.Umit Ilhan
Name of Lecturer (s)	Assist. Prof. Dr.Umit Ilhan
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM312 Operating Systems
Recommended Optional Programme Components	-

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.

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

Learning Outcomes		
At the end of the course the student should be able to		Assessment
1	be proficient in details of operating systems and be sensitive to implementation and performance tuning of operating systems	1, 2
2	Understand how operating systems are structured, what are alternative OS architectures	1, 2,5

	and how different modules interact together to form a cohesive and complex system.	
3	Write non-trivial programs that would invoke OS services via system calls in an efficient manner	1, 2, 5
Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work		

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

Course content

WEEK	CHAPTER	TOPICS
1	1	Introduction,
2	2	Advanced file systems issues, FFS, LFS, and RAID
3	3	Caching for file systems; possible course projects
4	4	Threads, events, and scheduling, interprocess communications
6	6	Interprocess communications part II
7	7	Operating systems organization
8	8	Midterm Exam
9	9	Operating systems organization part II
10	10	Distributed operating systems part I
11	11	Distributed operating systems part II
12	12	IPC in distributed systems, Distributed file systems
13	13	Operating systems security
14	14	Operating systems reliability
15	15	Review
16	16	Final Exam

Recommended Sources

Textbook:

1. Silberschatz and Galvin, Operating Systems Concepts, 7th or 8th Ed. Addison-Wesley

2. A. Tanenbaum, Modern Operating Systems, 3rd edition, Prentice Hall, 2007

3. William Stallings Operating Systems Internals and Design Principles Prentice Hall 5th edition (2004)

Assessment		
Attendence	10%	
Assignments	10%	
Quizzes	-	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies.

Course Policies

- As this is primarily a lab course, attendance is required. You are expected to attend regularly. There will absolutely be no make-up of any missed work – exams, HWs, quizzes.
- Arrive to class on time and turn on your computer before the lecture starts.
- Turn off cell phones during class.
- Safeguard classroom and computers by not eating or drinking in the classroom

Any student commits an academic irregularity(dishonesty) when any of the following orsimilar situations is involved:

- Copying another student's work or program.
- Copying answers from another student, or use of unauthorized notes or books during an examination or a quiz.

Such involvements in academic dishonesty will be penalized according to the Near East University General Student Discipline Regulations**.**

ECTS allocated based on Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64

Labs and Tutorials	-	-	-
Assignment	5	3	15
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	18	18
Final Examination	1	25	25
Self Study	14	4	56
Total Workload			178
Total Workload/30(h)			5.93
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Database Applications
Course Unit Code	COM450
Type of Course Unit	Elective
Level of Course Unit	4th year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	7
Course Coordinator	MSc. Kemal Ataman
Name of Lecturer (s)	MSc. Kemal Ataman
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM242 Database Management Systems
Recommended Optional Programme Components	Basic computer programming skills

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.

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.

Learning Outcomes		
At the end of the course the student should be able to		Assessment
1	Identify major components of the Oracle Express Edition system and Use the Oracle GUI module to create users and tables	1, 5
2	Identify major Oracle data types such as CHAR, VARCHAR2, NUMBER and DATE	1, 2, 5
3	Write Structured Query Language (SQL) Data Manipulation Language (DML) statements to retrieve, insert, update and delete data from an Oracle database	1, 2, 5
4	Write Structured Query Language (SQL) Data Definition Language (DDL) statements to create, alter and remove database objects, such as tables and views.	1, 2, 5
5	Write sophisticated queries to retrieve data from multiple tables	1, 2, 5
6	Write simple PL/SQL anonymous blocks using basic control structures such as IF and LOOP statements, as well as cursors.	1, 2, 5
Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work		

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

Course content		
WEEK	**CHAPTER**	**TOPICS**
1-2	1, 2, 3	Introduction, Database Concepts, Data Modeling and Normalization
3	3	Basic SQL Statements
4	4	Oracle Tables : Creation and Modification
5	5	Working with Tables : Data Management and Retrieval
6	6	Multiple Tables : Joins and Subqueries
7	7	Single Row and Group Functions
8	7, 8	Views, Sequences, Synonyms, Indexes; Transactions and Controlling Access
9	8, 9	Introduction to PL/SQL
10	10, 11	Control Structures in PL/SQL
11-12	11, 12	Cursors and Exceptions
13	12	Cursors and Exceptions

Recommended Sources

Textbook:

Database Systems Using Oracle 2/E , Nilesh Shah, 2004, Prentice-Hall

Assessment		
Assignments	15%	
Quizzes	15%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies.

Course Policies

- As this is primarily a lab course, attendance is required. You are expected to attend regularly. There will absolutely be no make-up of any missed work – exams, HWs, quizzes.
- Arrive to class on time and turn on your computer before the lecture starts.
- Turn off cell phones during class.
- Safeguard classroom and computers by not eating or drinking in the classroom

Any student commits an academic irregularity(dishonesty) when any of the following orsimilar situations is involved:

- Copying another student's work or program.
- Copying answers from another student, or use of unauthorized notes or books during an examination or a quiz.

Such involvements in academic dishonesty will be penalized according to the Near East University General Student Discipline Regulations**.**

ECTS allocated based on Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	10	1	10
Assignment	5	2	10

Project/Presentation/Report	-	-	-
E-learning activities	6	1	6
Quizzes	2	2	4
Midterm Examination	1	15	15
Final Examination	1	20	20
Self Study	14	3	42
Total Workload			171
Total Workload/30(h)			5.7
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Artificial intelligence
Course Unit Code	COM 451
Type of Course Unit	Compulsory
Level of Course Unit	4rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	2
Practice (hour/week)	2
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	6
Course Coordinator	Assist. Prof., Dr. Elbrus Imanov
Name of Lecturer (s)	Assist. Prof., Dr. Elbrus Imanov
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	COM 201
Recommended Optional Programme Components	

Course description:

This course is designed for Introduction to Artificial Intelligence Search Strategies in AI Fuzzy Logic, Neural Networks (NN), learning NeroSell Program, Expert Systems. Programming language of Artificial intelligence-VPX Programming language of Artificial intelligence-Prolog, Hybrid systems, Probabilistic Uncertainty Reasoning, Belief Network Distributed AI

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.**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on basic of the foundation of AI	1
2	Solving problem by searching,	1, 2
3	Basic representation of planning	1, 2
4	Expert systems technology	1, 2, 5
5	Artificial neural network technology Pattern recognition, distributed AI systems	1, 2, 5
6	Expert systems and Artificial neural network technology	1, 5
7	This course also includes programming language of AI-PROLOG with different examples and VP-Expert Primer.	1, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to Artificial Intelligence	
2	1	Search Strategies in AI	
3	2	Fuzzy Logic, Fuzzy Set,	
4	3	Neural Networks (NN)	
5	3	Types of Neural Networks (NN)	
6	3	Neural Networks (NN) learning Nero Sell Program	
7			Midterm
8	4	Expert Systems	
9	4	Programming language of Artificial intelligence-VPX	
10	4	Programming language of Artificial intelligence-Esplan	
11	4	Programming language of Artificial intelligence-Prolog	
12	4	Hybrid systems	
13	5	Probabilistic Uncertainty Reasoning	
14	5	Belief Network Distributed AI	
15			Final

Recommended Sources

Textbook:

Artificial Intelligence. A modern approach. Stuart J. Russel and Peter Norvig. New Jersey 1995

Supplementary Course Material

Efraim Turban. Decision support systems and expert systems. Fourth Edition. Prentice Hall.

Assessment		
Attendance	10%	Less than 25% class attendance results in NA grade
Quiz	20%	Written Quiz
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	2	2	4
Assignment	5	4	20
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	20	20
Final Examination	1	26	26
Self Study	14	3	42
Total Workload			172
Total Workload/30(h)			5.73
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Decision Making
Course Unit Code	COM 453
Type of Course Unit	Compulsory
Level of Course Unit	4rd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	5
Course Coordinator	Assist. Prof., Dr. Elbrus Imanov
Name of Lecturer (s)	Assist. Prof., Dr. Elbrus Imanov
Name of Assistant (s)	-
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	Com 201
Recommended Optional Programme Components	

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.

Objectives of the Course:

- **Improving 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.**

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on the theory and practice of decision making	1
2	Decision making theory and forecasting	1, 2
3	Impart an understanding of the role of decision making process	1, 2
4	Theories in decision making and Decision Trees	1, 2
5	Theories in decision making and Time series.	1, 2
6	Have to understand many of the models	1, 2
7	Theories in decision making and forecasting.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	5
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3
3	An ability to apply mathematical foundations, algorithmic principles, and computer	4

	engineering techniques in the modeling and design of computer-based systems	
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	4
5	Planning and carrying out experiments, as well as to analyze and interpret data	2
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	2
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	2
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	2
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	1	Introduction to decision making.	
2	1	Decision making process.	
3	2	Decision making under uncertainty.	
4	2	Utility theory.	
5	3	Risk theory, under uncertainty. Risk aversion.	
6	4	Decision making under conflict.	
7			Midterm
8	4	Queuing theory.	
9	5	Decision Trees.	
10	5	Decision Trees. Under uncertainty.	
11	6	Multiple regression model. Exponential smoothing	
12	6	Group decision making.	
13	7	Linear regression model and correlation.	
14	7	Time series. Forecast accuracy.Non linear models for forecasting.	
15			Final

Recommended Sources

Textbook:

R.A.Aliev, B. Fazlollahi and R.R.Aliev. Soft Computing and its Applications in Business and Economics, Springer, 2004.

Supplementary Course Material

K.T.Marshall and R.T.Oliver. Decision making and forecasting. MC-Graw Hill, 1995.

Assessment

Attendance	10%	Less than 25% class attendance results in NA grade

Quiz	20%	Written Quiz
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials			
Assignment	5	4	20
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	2	2	4
Midterm Examination	1	20	20
Final Examination	1	27	27
Self Study	14	3	42
Total Workload			173
Total Workload/30(h)			5.76
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Image Processing
Course Unit Code	COM463
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall/Spring
Course Coordinator	Assist. Prof. Dr. Boran Şekeroğlu
Name of Lecturer (s)	Assist. Prof. Dr. Boran Şekeroğlu
Name of Assistant (s)	Çağrı Özkan
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM360 Signal Processing
Recommended Optional Programme Components	

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Analyze theoretical and practical basics of image processing	1
2	To write programs for image processing applications using Matlab	2,5
3	Develop real life applications of image processing	2,3,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	4
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	5
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	3
8	An ability to work productively in a multidisciplinary team, in particular to carry out	4

	projects involving computer engineering skills.	
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction	
2		Discrete-time signals and systems	
3		Discrete-time signals and systems	
4		Image Acquisition, Image Sampling and Quantization	
5		Point, Local and Global Operations	
6		Introduction to Image Enhancement	
7		Image Enhancement Applications	
8			Midterm
9		Image Enhancement Applications	
10		Basics of Image Binarization	
11		Applications of Image Binarization	
12		Introduction to Morphological Image Processing	
13		Introduction to Morphological Image Processing	
14		Examples, Review of the Semester	
15		Examples, Review of the Semester	
16			Final

Recommended Sources

Textbook:

Digital Image Processing by Gonzalez and Woods, A Simplified Approach to Image Processing by Randy Crane.

Lab Manual:

Supplementary Course Material

Assessment

Attendance	-	
Assignments	5%	
Lab	20%	Lab Attendance, Lab Performance, Assignments
Midterm Exam	25%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	20	1	20
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	21	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Web Design and Programming
Course Unit Code	COM481
Type of Course Unit	Technical Elective
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	2
Practice (hour/week)	2
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Assist. Prof. Dr Kaan Uyar
Name of Lecturer (s)	Assist. Prof. Dr Kaan Uyar
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	Basic programming skills
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.	

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	explore, evaluate, discuss and gain experience on web based technologies.	1, 2, 3, 4
2	Understanding and applying design principles around typography, color, layout, content, structuring, navigation and accessibility issues.	1, 2, 3
3	Design and develop a web-based application using HTML, CSS and Javascript	1, 2, 3

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction	
2		HTML Overview, Marking Up Text	
3		Adding Links and Images	
4		Table Markup, Forms, more HTML5	
5		Cascading Style Sheets (CSS), CSS 2.1	
6		CSS 2.1	
7		CSS3, Review	
8			Midterm
9		Page Layout	
10		Design Issues, JavaScript	

11		Introduction to Responsive Web Design, Media Queries: Supporting Differing Viewports	
12		Embracing Fluid Layouts, HTML5 for Responsive Designs, CSS3: Selectors, Typography, and Color Modes	
13		Stunning Aesthetics with CSS3, CSS3 Transitions, Transformations, and Animations	
14		Forms with HTML5 and CSS3, Solving Cross-browser Responsive Challenges	
15		Term Project Presentations, Review of the Semester	
16			Final

Recommended Sources

Textbooks:

- Jennifer Niederst Robbins, "Learning Web Design, A Beginner's Guide to (X)HTML, StyleSheets, and Web Graphics, 4th Edition", O'Reilly, 2012
- Jon Duckett, "Beginning HTML, XHTML, CSS, and JavaScript", Wrox, 2010
- Ben Frain, Responsive Web Design with HTML5 and CSS3, Packt Publishing, 2012

Supplementary Course Material

Assessment

Attendance	-	-
Assignment	10%	
Quizzes	-	Oral
Presentation	5%	
Project	25%	
Midterm Exam	20%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Students must upload their homework and project to a Web Server.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64

Labs and Tutorials	-	-	-
Assignment	5	3	15
Project/Presentation/Report	1	35	35
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	14	14
Self Study	14	3	42
Total Workload			180
Total Workload/30(h)			6
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Multimedia Systems
Course Unit Code	COM488
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall/Spring
Course Coordinator	Assist. Prof. Dr. Boran Şekeroğlu
Name of Lecturer (s)	Assist. Prof. Dr. Boran Şekeroğlu
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	

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.

Objectives of the Course:

- Teaching the basics of multimedia systems
- To illustrate the basic applications of multimedia systems using Jython.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Analyze theoretical and practical basics of multimedia systems	1
2	To write programs using Jython	2,5
3	Develop real life applications	2,3,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	4
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	5
4	An 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	4
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	5
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	3

8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	5
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction to Multimedia Systems	
2		Introduction to Python Programming	
3		Modifying Pictures	
4		Modifying Pictures using Loops	
5		Advance Picture Techniques	
6		Modifying Sounds	
7		Modifying Sounds	
8			Midterm
9		Modifying Movies	
10		Modifying Movies	
11		Creating Movies	
12		Functional Programming	
13		Object-Oriented Programming	
14		Examples, Review of the Semester	
15		Examples, Review of the Semester	
16			Final

Recommended Sources

Textbook:

Introduction to Computing and Programming in Python, A Multimedia Approach (2nd Edition), by Mark J. Guzdial

Lab Manual:

Supplementary Course Material

Assessment

Attendance	-	
Assignments	-	
Lab	40%	Lab Attendance, Lab Performance, Assignments
Midterm Exam	20%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	20	1	20
Assignment	2	4	8
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	21	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Microprocessor Systems
Course Unit Code	COM401
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall
Course Coordinator	Assist. Prof. Dr Kaan Uyar
Name of Lecturer (s)	Assist. Prof. Dr Kaan Uyar
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM301 Microprocessors
Recommended Optional Programme Components	Digital Circuits

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand the architectures, of microprocessor systems, operations of a microprocessor	1
2	To write programs for a microprocessor using assembly language	1, 2,5
3	Design a microprocessor based system	1, 2, 5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5

6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction	
2		8086 Microprocessor Architecture, Segmented Memory	
3		Addressing Modes , Instruction Set, 8086 Assembly Language Programming	
4		8086 Assembly Language Programming	
5		8087 Numerical Data Processor Architectural details	
6		Architectural details of 80386 Microprocessor - Special registers	
7		Memory management, Operation in protected mode and virtual 80386 mode	
8			Midterm
9		Memory paging mechanism, Special instructions of 80386	
10		Architectural details of 80486, Comparision	
11		Introduction to Pentium Processor, Architectural features	
12		Branch prediction logic, cache structure, Special Pentium Registers	
13		Memory management, virtual mode of operation	
14		RISC Microprocessors, RISC Vs CISC,RISC Properties	
15		Examples, Review of the Semester	
16			Final

Recommended Sources

Textbook:

1. Barry B Brey “Intel Microprocessors : 8086/88, 80186/188, 80286, 80386, 80486,Pentium, Pentium – II, Pentium – III and Pentium – IV, Architecture, Programming & Interfacing”, Pearson Education, 2003.

2. Badri Ram, “Advanced Microprocessors and Interfacing”, Tata McGraw Hill.

3**Supplementary Course Material**.

1. A.K. Ray & K.M. Bhurchandi, “Advanced Microprocessors & Peripherals, Architecture,

Programming & Interfacing", Tata McGraw Hill.

2. Dogan Ibrahim and Kaan Uyar, The 8080 and 8085 Microprocessors and Peripherals, Bilesim Yayincilik, 2006, Turkey.

Assessment

Attendance	10%	
Assignment	10%	
Lab	10%	Lab Performance, Written Lab exam
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	4	2	8
Assignment	4	4	16
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	14	14
Final Examination Study	1	21	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Computer Graphics
Course Unit Code	COM402
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall
Course Coordinator	Assist. Prof. Dr Umit Ilhan
Name of Lecturer (s)	Assist. Prof. Dr Umit Ilhan
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	
Recommended Optional Programme Components	Object oriented Programming

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Understand the structure of modern computer graphics systems.	1
2	Understand the basic principles of implementing computer graphics primitives.	1, 2
3	Be able to construct interactive computer graphics programs using OpenGL	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5

3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)		

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, computer graphics, graphics architectures and software,	
2		Human vision, synthetic camera, modeling vs rendering	
3		OpenGL: architecture, displaying simple two-dimensional geometric objects, positioning systems, working in a windowed environment	
4		Color: Color perception, color models (RGB, CMY, HLS), color transformations. Color in OpenGL. RGB and Indexed color	
5		Input: working in a network environment, client-server computing; input measure, event, sample and request input, using callbacks, picking.	
6		Geometric transformations: affine transformations (translation, rotation, scaling, shear), homogeneous coordinates, concatenation, current transformation and matrix stacks.	
7		Practical examples	
8			Midterm
9		Three dimensional graphics: classical three dimensional viewing, specifying views, affine transformation in 3D, projective transformations.	
10		Ray Tracing.	
11		Shading: illumination and surface modeling, Phong shading model, polygon shading	
12		Rasterization: line drawing via Bresenham's algorithm, clipping, polygonal fill, BitBlt.	
13		Graphics Pipeline and Rasterization Introduction to hidden surface removal (z buffer).	
14		Discrete Techniques: buffers, bitblt, reading and writing bitmaps and pixelmaps, texture mapping, compositing.	
15		Examples, Advanced topics	
16			Final

Recommended Sources

Textbook:

1. Hughes, Van Dam, et al. Computer Graphics Principles and Practice 3e, Pearson, 2014

2. P Shirley, Fundamentals of Computer Graphics, 2e, AK Peters, 2005

Supplementary Course Material.

1. OpenGL Programming Guide, Addison-Wesley, 2004.

2. Watt, Alan. *3D Computer Graphics*. Addison-Wesley, 1999.

Assessment

Attendance	10%	
Assignment	10%	
Lab	-	
Midterm Exam	40%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	6	4	24
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	14	14
Final Examination Study	1	20	21

Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Parallel computer architecture
Course Unit Code	COM410
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall
Course Coordinator	Assist. Prof. Dr Kaan Uyar
Name of Lecturer (s)	Assist. Prof. Dr Kaan Uyar
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM256 Computer Architecture and Organisation
Recommended Optional Programme Components	

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

Objectives of the Course:

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	learn the parallel programming architectures, parallelization methodologies and paradigms,	1
2	evaluate and make the tradeoffs in the design of parallel architectures	1, 2
3	learn parallel programming models, their implementation	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3

2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, Classification of parallel machines	
2		Programming parallel computers	
3		Workload characteristics, Performance Evaluation, Pipelined processing.	
4		Bus-based machines (CMP, SMP) Coherent memory, Bus-based consistency protocols.	
5		Synchronization	
6		Interconnection networks. Message Passing.	
7		Review	
8			Midterm
9		Scalable Shared Memory.	
10		Incoherent, Coherent, Directory-based, Consistency protocols	
11		Hybrid Message Passing/Shared Memory Machines.	
12		Dataflow machines.	
13		Special-purpose parallel machines, Routers, network processors	
14		Parallel computer performance models	
15		Review, Advanced topics	
16			Final

Recommended Sources

Textbook:

1. David E. Culler, Jaswinder Pal Singh, Anoop Gupta; Parallel Computer Architectures. A Hardware/Software Approach. Morgan Kaufman, 1998, ISBN No. 1-55860-343-3.

Supplementary Course Material.

1. F Thomson Leighton; Introduction to Parallel Algorithms and Architecture.

Assessment

Attendance	10%	
Assignment	10%	
Lab	-	
Midterm Exam	40%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	6	4	24
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	14	14
Final Examination Study	1	20	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Digital Control Systems
Course Unit Code	COM414
Type of Course Unit	Elective Course
Level of Course Unit	First Cycle
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	1
Year of Study	4
Semester when the course unit is delivered	Fall
Course Coordinator	Prof. Dr Rahib Abiyev
Name of Lecturer (s)	Prof. Dr Rahib Abiyev
Name of Assistant (s)	
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM482 Real time systems
Recommended Optional Programme Components	

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.

Objectives of the Course:

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	understand the concept and use of z-transform and difference equations in discrete-time system analysis	1,2
2	Analyze stability, transient response and steady state behavior of linear discrete-time systems, analytically and numerically using tools such as Matlab and Simulink.	1, 2,5
3	Design digital control systems using transform techniques and state-space methods.	1, 2,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work		
Course's Contribution to Program		
		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	5
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modeling and design of computer-based systems	4
4	An 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	5
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering.	4
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills.	3
9	An ability to communicate effectively with a range of audiences	1
10	A recognition of the need for, and an ability to engage in life-long learning	5
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)		

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, Digital Control,	
2		Discrete time Systems, z-transform	
3		Inverse z transform	
4		Sampling and Reconstruction	
5		Difference equation solutions	
6		State space representation, State variables, Solution of state equation	
7		Open loop systems. Closed loop systems	
8		Time response characteristics, Steady-state accuracy	Midterm
9		Stability of digital control systems, The Routh-Hurwitz Criterion.	
10		Jury's stability, Root locus, Stability in z plane.	
11		The Nyquist criterion, The Bode diagram	
12		Digital Controller Design, Compensation	
13		PID controller design, Design by Root-locus	
14		Analog and Digital filters. Digital filter structures.	
15		Review	
16			Final

Recommended Sources

Textbook:

1. C. L. Phillips and H. T. Nagle, *Digital Control System Analysis and Design,* Prentice-Hall, 1995, 3rd ed. (required)

2. Katsuhiko Ogata, "*Discrete-Time Control Systems*", 2nd Edition, Pearson Education.

Supplementary Course Material.

Gene F. Franklin, J. David Powel, Michael Workman, "*Digital Control of Dynamic Systems*" 3rd Edition, Pearson Education.

Assessment

Attendance	10%	
Assignment	10%	
Lab	10%	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Exams are open book. Students may use text, notes, calculators, etc. Cell phones and computers must be switched off during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Attacks performed against University/lecturer resources are expressly prohibited.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	6	2	12
Assignment	6	2	12
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-

Midterm Examination Study	1	14	14
Final Examination Study	1	20	21
Self Study	14	4	56
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Internet Programming
Course Unit Code	COM434
Type of Course Unit	Technical Elective
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	1
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Assist. Prof. Dr Umiy Ilhan
Name of Lecturer (s)	Assist. Prof. Dr Umiy Ilhan
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	-
Recommended Optional Programme Components	Basic programming skills

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

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	learn basic Internet structure and its most iportant protocols	1, 2, 3, 4
2	provide knowledge of and proficiency in basic techniques for the development of web-based applications,	1, 2,3
3	provide basic knowledge of construction techniques related to client-server applications in Internet	1, 2, 3

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3
3	An ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems	3

4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	5
5	Planning and carrying out experiments, as well as to analyze and interpret data	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	5
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	5
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	5
9	An ability to communicate effectively with a range of audiences	5
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Fundamentals: Introduction to the Internet	
2		HTML review	
3		Cascading Style Sheets	
4		CSS 2, CSS3,	
5		Introduction to JavaScript	
6		JavaScript and HTML documents	
7		Review	
8			Midterm
9		XML and Application Server	
10		A client/server architecture	
11		Introduction to Java Server Pages	
12		Protocols, HTTP, FTP, accessing a local file, SSH, Proxy servers	
13		Database access through the web	
14		Writing Web pages using HTML, Java Applets	
15		Project Presentation and Review	
16			Final

Recommended Sources

Textbooks:

- Harvey M. Deitel, Abbey Deitel.Internet and World Wide Web How to Program by Inc. Deitel & Associates, (Harvey & Paul), Prentice Hall, 2011
- Jon Duckett, "Beginning HTML, XHTML, CSS, and JavaScript", Wrox, 2010

Supplementary Course Material

1) Jennifer Niederst Robbins, "Learning Web Design, A Beginner's Guide to (X)HTML, StyleSheets, and Web Graphics, 4th Edition", O'Reilly, 2012

2)Robert W.Sebesta, Programming the World Wide Web, Addison Wesley

2) Chase, Nicholas. XML Primer Plus, Sams Publishing, 2003,993 pp.

Assessment

Attendance	-	
Assignment	10%	
Quizzes	-	
Presentation	-	
Project	20%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Students must upload their homework and project to a Web Server.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	5	3	15
Project/Presentation/Report	1	35	35
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	10	10
Final Examination Study	1	14	14
Self Study	14	3	42
Total Workload			180
Total Workload/30(h)			6
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Digital Signal Processing
Course Unit Code	COM449
Type of Course Unit	Technical Elective
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	3
Number of ECTS Credits Allocated	5
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Prof. Dr Fahreddin Sadikoglu
Name of Lecturer (s)	Prof. Dr Fahreddin Sadikoglu
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM360 Signals and Systems
Recommended Optional Programme Components	

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

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.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	describe the process of sampling mathematically	1, 2,5
2	use and manipulate representations of discrete-time signals in both the time and frequency domains	1, 2,5
3	compute and interpret the Fourier transforms of discrete-time signals and frequency responses of discrete-time LTI systems. Perform Fast Fourier transforms (FFT)	1, 2,5
4	design and implement both finite and infinite impulse discrete-time filters	1, 2,5

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, Discrete-time signals and Systems.	
2		Discrete linear time-invariant systems. Properties	
3		Frequency domain and Fourier transforms. Sampling.	
4		A/D conversion and quantization. D/A conversion.	
5		Discrete time Fourier transform (DTFT) and its properties	
6		z-transform. Inverse z-transform. Properties	
7		Review	
8			Midterm
9		Fast Fourier Transform. Decimation in time FFT	
10		Digital filter design	
9		Finite impulse response (FIR) filters	
10		Infinite impulse response (IIR) filters	
13		Direct, parallel and cascaded realizations of filters.	
14		Transform analysis of LTI systems, DSP Applications	
15		Review	
16			Final

Recommended Sources

Textbooks:

Hennesy

- Alan V. Oppenheim, Ronald W. Schafer, and John R. Buck, Discrete-Time Signal Processing. 3rd Edition, Pearson Higher Education Inc., 2010
- Ingle and Proakis, *Digital Signal Processing using Matlab*, 2nd ed., Thomson-Engineering, 2006

Supplementary Course Material

- R. Chassaing and D. Reay, Digital Signal Processing and Applications with the TMS320C6713 and TMS320C6416 DSK, 2nd Edition, Wiley IEEE Press, 2008.
- S.K. Mitra, Digital Signal Processing: A Computer-Based Approach, third edition, McGraw-Hill Inc., New York, 2005.

Assessment

Attendance	10%	
Assignment	20%	
Quizzes	-	
Presentation	-	
Project	-	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Students must upload their homework and project to a Web Server.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	6	2	12
Assignment	6	2	12
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	20	20
Final Examination Study	1	30	30
Self Study	14	3	42
Total Workload			180

Total Workload/30(h)	6
ECTS Credit of the Course	6

BS program, Computer Engineering Department

Course Unit Title	Introduction to Parallel Computing
Course Unit Code	COM452
Type of Course Unit	Technical Elective
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Prof. Dr Rahib Abiyev
Name of Lecturer (s)	Prof. Dr Rahib Abiyev
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM256 Computer Architecture and Organisation
Recommended Optional Programme Components	

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

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	understand parallel computing architectures	1, 2
2	provide knowledge of parallel programs. Parallelize an existing application using an appropriate parallel programming paradigm	1, 2,3
3	develop and analyze a parallel algorithm	1, 2, 3

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate	3

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, Overview of parallel computing	
2		Parallel computation models, Performance analysis, deadlock, race conditions, synchronization	
3		parallel algorithm design and analysis	
4		Network intraconnects and embeddings	
5		MPI programming	
6		OpenMP shared memory multicore programming	
7		Review	
8			Midterm
9		Parallel reduction operations	
10		Parallel prefix	
11		Matrix operations	
12		Parallel scientific computing applications	
13		MapReduce and cloud computing	
14		Frontiers and Future topics	
15		Review	
16			Final

Recommended Sources

Textbooks:

- A. Grama, G. Karypis, V. Kumar, A. Gupta,"Introduction to Parallel Computing" , Addison-Wesley, 2nd Edition,2003

- Pacheco, P. S. An introduction to Parallel Programming, Morgan Kaufmann, 2011

Supplementary Course Material

- F.T. Leighton. "Introduction to Parallel Algorithms and Architectures" , Morgan Kaufmann,1992

Assessment

Attendance	-	
Assignment	10%	
Quizzes	-	
Presentation	-	
Project	20%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Students must upload their homework and project to a Web Server.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	4	2	8
Project/Presentation/Report	1	30	30
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	14	14
Final Examination Study	1	21	21
Self Study	14	3	42
Total Workload			179
Total Workload/30(h)			5.97
ECTS Credit of the Course			6

BS program, Computer Engineering Department

Course Unit Title	Advanced Computer Architecture and Organisation
Course Unit Code	COM454
Type of Course Unit	Technical Elective
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Prof. Dr Dogan Ibrahim
Name of Lecturer (s)	Prof. Dr Dogan Ibrahim
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM256 Computer Architecture and Organisation
Recommended Optional Programme Components	

Course description:

Fundamentals of Computer Design, Instruction set architectures, Classifications, RISC, CISC, VLIW, EPIC, Pipeline processors, Memory Hierarchy Design (caches, virtual memory), Parallelism,Vector processing, Multicore systems, Multiprocessors

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Discuss the organisation of computer-based systems and how a range of design choices are influenced by applications	1, 2
2	Understand different processor architectures and system-level design processes. Understand pipelining, instruction set architectures,	1, 2
3	Understand the components and operation of a memory hierarchy	1, 2, 3
4	Understand the organisation and operation of current generation parallel computer systems, including multiprocessor and multicore systems	1,2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3

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

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, Fundamentals of Computer Design	
2		Instruction set architectures, Classifications, RISC, CISC, VLIW, EPIC.	
3		Pipeline processors	
4		Memory Hierarchy Design (caches, virtual memory)	
5		Parallelism	
6		Level Parallelism and Its Exploitation	
7		Review	
8			Midterm
9		Vector processing	
10		NIVIDIA architecture models	
9		Multicore systems	
10		Multithreading, Thread control models	
13		Multiprocessors (shared memory, distributed memory, synchronization, etc)	
14		Frontiers and Future topics	
15		Review	
16			Final

Recommended Sources

Textbooks:

- A. Grama, G. Karypis, V. Kumar, A. Gupta,"Introduction to Parallel Computing" , Addison-Wesley, 2nd Edition,2003
- Hennesy and Patterson, Computer Architecture A Quantitative Approach, 5th or later Edition, Morgan Kaufmann Publishers, 2012

Supplementary Course Material

- Michel Dubois, Murali Annavaram, and Per Stenström. Parallel Computer Organization and Design. Cambridge University Press, 2012.

Assessment

Attendance	10%	
Assignment	10%	
Quizzes	-	
Presentation	-	
Project	-	
Midterm Exam	30%	Written Exam
Final Exam	50%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Students must upload their homework and project to a Web Server.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	5	4	20
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	20	20
Final Examination Study	1	30	30
Self Study	14	3	42
Total Workload			176
Total Workload/30(h)			5..87

ECTS Credit of the Course	6

BS program, Computer Engineering Department

Course Unit Title	Hardware Design using FPGAs
Course Unit Code	COM471
Type of Course Unit	Technical Elective
Level of Course Unit	Bachelor's Degree (First Cycle)
National Credits	3
Number of ECTS Credits Allocated	5
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	4
Semester when the course unit is delivered	Spring
Course Coordinator	Prof. Dr Dogan Ibrahim
Name of Lecturer (s)	Prof. Dr Dogan Ibrahim
Name of Assistant (s)	-
Mode of Delivery	Face to Face
Language of Instruction	English
Prerequisites	COM211 Logic design
Recommended Optional Programme Components	

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.

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

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	To understand the FPGA design and implementation hierarchy	1, 2
2	To understand the VHDL language	1, 2
3	To provide the FPGA design, simulation, implementation and testing techniques using VHDL.	1, 2, 3

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution	3
3	An ability to apply mathematical foundations, algorithmic principles, and computer	3

	engineering techniques in the modelling and design of computer-based systems	
4	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects	5
5	Planning and carrying out experiments, as well as to analyze and interpret data	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	5
7	An understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering	5
8	An ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills	5
9	An ability to communicate effectively with a range of audiences	5
10	A recognition of the need for, and an ability to engage in life-long learning	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1		Introduction, Review of digital design	
2		FPGA architectures, hardware modelling and synthesis	
3		Overview of VHDL. Introduce synthesis and subset.	
4		VHDL	
5		FPGA design flow ,technology mapping, placement, routing,	
6		FPGA-based reconfigurable computing applications, and evolvable hardware	
7		Review	
8			Midterm
9		Logic synthesis	
10		design of complex controllers with Finite State Machines,	
9		design of sequential blocks with Controller-Datapath methodology	
10		issues in design for testability	
13		electrical & timing issues in logic and system design	
14		Future direction: nanotechnology and programmable quantum-dot cellular automata	
15		Review	
16			Final

Recommended Sources

Textbooks:

Hennesy

- Pong P. Chu, *FPGA Prototyping using Verilog Examples – Xilinx Spartan-3 Version*, Wiley

Supplementary Course Material

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Assessment

Attendance	-	
Assignment	10%	
Quizzes	-	
Presentation	-	
Project	20%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is necessary but not mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations.
- Students must upload their homework and project to a Web Server.

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	4	3	12
Project/Presentation/Report	1	30	30
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination Study	1	12	12
Final Examination Study	1	20	20
Self Study	14	3	42
Total Workload			180
Total Workload/30(h)			6
ECTS Credit of the Course			6