

# Statistics and Probability

*Introduction to probabilistic and statistical methods.*

Week	Subjects	Related Preparation
1	Course Introduction	Yes
2	Probabilistic Models	Yes
3	Conditional Probability	Yes
4	Total Probability Theorem	Yes
5	Bayes' Rule	Yes
6	Independence	Yes
7	Counting	Yes
8	Review	Yes
9	Midterm	Yes
10	Discrete Probability Distributions	Yes
11	Continuous and Joint Probability Distributions	Yes
12	Mathematical Expectation	Yes
13	Discrete Uniform & Binomial Distributions	Yes
14	Continuous Uniform & Normal Distributions	Yes
15	Midterm Exam 2 at appropriate times	Yes
16	Final Exam	Yes

## Course Books

- Intro. To Prob. (Bertsekas & Tsitsiklis)
- Prob. & Stats. For Engineers & Scientists (Walpole, Myers, Myers, Ye)
- Fundamentals of Probability and Statistics For Engineers (Soong)
- Applied Statistics and Probability for Engineers (Montgomery and Runger)

# Introduction to Computer Science I

*To review the fundamental subjects and interests of computer engineering*

Week	Subjects	Related Preparation
1	Fundamental Concepts of Computer Sciences and Engineering	NA
2	Software and Hardware Concepts	NA
3	Number Bases, Conversion, Signed Numbers, Signed Numbers Arithmetic	NA
4	Introduction to Programming Languages	NA
5	Algorithm Concept	NA
6	Pseudo Code, Flow Charts	NA
7	Introduction to simple data types and operators: integer, float, character, addition, subtraction, multiplication, division, Input/Output	NA
8	1st Midterm Exam	NA
9	Conditionals	NA
10	Loops	NA
11	More on Loops	NA
12	Arrays, Multidimensional Arrays	NA
13	Search Algorithms	NA
14	2nd Midterm Exam	NA
15	Sorting Algorithms	NA
16	Final exam	NA

## Course Books

None listed formally, various introductory programming books are recommended according to the teacher.

# Occupational Law and Ethics

*To equip the students with the occupational regulations and rules of computer engineering.*

Week	Subjects	Related Preparation
1	Course Explanations	NA
2	Philosophy of Engineering and Ethics	NA
3	Chamber of Computer Engineers Code of Ethics	NA
4	IEEE Code of Ethics	NA
5	Intellectual and Industrial Property Rights Law and Other Legalizations	NA
6	Material Rights on a Intellectual Property	NA
7	Moral Rights on a Intellectual Property	NA
8	Midterm	NA
9	Intellectual Property defined by law	NA
10	Program defined by law	NA
11	Plagiarism defined by law	NA
12	Student Presentations	NA
13	Student Presentations	NA
14	Student Presentations	NA
15	Principles of Preparing Legal Feasibility Report	NA
16		NA

## Course Books

- Chamber of Computer Engineers Documents
- IEEE Documents
- Intellectual and Industrial Property Rights Law

# Physics 1

*To introduce the fundamental principles and concepts of physics in detail at freshmen level. To show the necessity and importance of physics for other branches of natural sciences and engineering through applications in real life, and industry and technology.*

Week	Subjects	Related Preparation
1	Physics and Measurement and Vectors	Textbook (Ch. 1 and 3)
2	Motion in One Dimension and Motion in Two Dimensions	Textbook (Ch. 2 and 4)
3	The Laws of Motion and Other Applications of Newton's Laws	Textbook (Ch. 5 and 6)
4	Work and kinetic energy	Textbook (Ch. 7)
5	Potential Energy and energy conversation	Textbook (Ch. 8)
6	Linear Momentum and Collisions	Textbook (Ch. 9)
7	Rotation of a Rigid Object About a Fixed Axis	Textbook (Ch. 10)
8	Angular Momentum	Textbook (Ch. 11)
9	Static Equilibrium and Elasticity	Textbook (Ch. 12)
10	Oscillatory Motion	Textbook (Ch. 15)
11	Wave Motion	Textbook (Ch. 16)
12	Temperature and thermodynamic systems	Textbook (Ch. 19)
13	work and heat in thermodynamic processes	Textbook (Ch. 20)
14	Heat Engines, Entropy, and the Second Law of Thermodynamics	Textbook (Ch. 22)
15	Midterm (suitable week)	NA
16	Final week	NA

## Course Books

- Serway Physics-5th Edition
- David Halliday-Robert Resnick, Fundamentals of Physics
- Frederick J.Keller, W.Edward Gettys, Malcolm J. Skove, Physics 1
- Giancoli - Physics
- Sears ve Zemansky, University Physics

# Mathematics 1

*Introductory course on single-variable calculus*

Week	Subjects	Related Preparation
1	Functions: Functions and their graphs, Trigonometric functions Limits and Continuity: Rates of Change and Tangents to Curves, Limit of a Function and Limit Laws, The Sandwich (The Squeeze theorem), The Precise	Textbook 1 (Chapter 1)
2	Definition of a Limit, One-sided Limits, Continuity, Types of Discontinuity, Continuous Functions, The Intermediate Value Theorem, Limits Involving Infinity, Asymptotes of Graphs Differentiation: Tangents, Normal Lines, The Derivative at a Point, The Derivative as a Function, Differentiable on an	Textbook 1 (Chapter 2)
3	Interval, One-sided Derivatives, Differentiation Rules, High order Derivatives, The Derivative as a Rate of Change	Textbook 1 (Chapter 3)
4	Derivatives of Trigonometric Functions, The chain rule, Implicit Differentiation, Linearization and Differentials Applications of derivatives: Extrem Values of Functions, Critical Points, Rolle's Theorem, The Mean Value Theorem,	Textbook 1 (Chapter 3)
5	Monotonic Functions and The First Derivative Test: Increasing Functions and Decreasing Functions, the First Derivative Test for Local Extrema Concavity and Curve Sketching, The Second Derivative Test for Concavity,	Textbook 1 (Chapter 4)
6	Point of Inflection The Second Derivative Test for Local Extrema, Graphing of $y=f(x)$ , Antiderivatives, Indefinite Integrals Integration: Area and Estimating with Finite Sums, Average Value of Nonnegative Continuous Functions, Sigma Notation and Limits of Finite	Textbook 1 (Chapter 4)
7	Sums, Riemann Sums, Definite Integral, Properties of Definite Integral, Area Under the Graph of a nonnegative Function, Average Value of Continuous Functions	Textbook 1 (Chapter 5)

	(Quizexam) Mean Value Theorem for Definite Integrals, The Fundamental Theorem of Calculus: Fundamental Theorem Part 1, Fundamental Theorem Part 2, Total Area	Textbook 1 (Chapter 5)
8	Indefinite Integrals and the Substitution Method, Substitution and Area Between Curves, Integration with Respect to y, Definite Integrals Of Symmetric Functions	Textbook 1 (Chapter 6)
9	Applications of definite integrals: Volumes Using Cross-sections, The Disk Method, the Washer Method, The Cylindrical Shell method, Arch Length, Areas of Surfaces of Revolution	Textbook 1 (Chapter 6)
10	Transcendental Functions: Inverse Functions and Their Derivatives, Natural Logarithms, Logarithmic Functions and Their Derivatives, Logarithmic Differentiation, Integrals of Trigonometric Functions, Exponential Functions and Their Derivatives, Indeterminate Forms and L'Hospital's Rule, Cauchy's Mean Value Theorem	Textbook 1 (Chapter 7)
11	Inverse Trigonometric Functions and Their Derivatives, Hyperbolic Functions and Their Derivatives, Inverse Hyperbolic Functions and Their Derivatives	Textbook 1 (Chapter 7)
12	(Midterm Exam) , Techniques of Integration: Integration by Parts, Integration by Parts Formula for Definite Integrals, Trigonometric Integrals, Reduction Formulas	Textbook 1 (Chapter 8)
13	Trigonometric Substitutions, Integrations of Rational Functions by Partial Fractions	Textbook 1 (Chapter 8)
14	Improper Integrals, Improper Integrals of Type I and Type II	Textbook 1 (Chapter 8)
15	Final exam	-
16		

## Course Books

- Thomas' Calculus, 12th Edition, G.B Thomas, M.D.Weir, J.Hass and F.R.Giordano, Addison-Wesley, 2012.
- Calculus: A Complete Course, Robert A. Adams, C Essex 7th Edition, Addison Wesley Longman Toronto 2010.

# Linear Algebra

*Establish the background for advanced topics in mathematics.*

Week	Subjects	Related Preparation
1	Definition of matrix, types of matrix, Equality of Matrices, Addition and subtraction of matrices, matrix multiplication by a scalar, Some properties about them. Multiplying matrices and Some properties about it. Transposes of matrices and properties of the transpose.	Textbook (Chapter 1)
2	Some Special Matrices and matrix applications.	Textbook (Chapter 1)
3	Elementary row and column operations in the Matrices. Row-Echelon form and reduced row-echelon form. Rank of a matrix. Inverses of matrices and some applications about this.	Textbook (Chapter 1)
4	Definition of a determinant. Laplace expansion of a matrix. Properties of a determinant.	Textbook (Chapter 2)
5	Rule of Sarrus. The adjoint of a matrix, Using the adjoint matrix to find an inverse matrix and some applications about this.	Textbook (Chapter 2)
6	System of linear equations: solving systems of linear equations with aid of equivalent matrices, linear homogeneous equations and some applications about this.	Textbook (Chapter 2)
7	Cramer's rule. Using the inverse of a coefficient matrix to solve a linear systems and some applications about this.	Textbook (Chapter 2,3)
8	Midterm exam	-
9	Vectors: Definition of vector. The sum of vectors and the difference of vectors. Vectors in coordinate systems. Dot product of vectors and some properties of dot product .	Textbook (Chapter 4)
10	Cross product of vectors and properties of cross product. Scalar triple product of the vectors and properties of it. Some applications about this.	Textbook, Chapter 4

	Vector Spaces: Definition of vector spaces and theorems. Subspaces. Span concept and fundamental theorems.	
11	Linear dependence and linear independence of vectors and some theorems about linear dependence and linear independence. Some applications about this.	Textbook (Chapter 5)
12	Bases and dimension concepts and fundamental theorems. Definition of coordinates and transition matrices and some theorems.	Textbook (Chapter 5)
13	Some applications about Vector Spaces and some theorems about linear dependence and linear independence.	Textbook (Chapter 5)
14	Eigenvalues and eigenvectors: The eigenvalues of a square matrix	Textbook (Chapter 6)
15	Using Cayley Hamilton theorem, find the inverse of a square matrix, and the power of matrix. Some applications about this.	Textbook (Chapter 5)
16	Final exam	-

### Course Books

- Anton Howard, "Elementary Linear Algebra", 2000
- Lineer Cebir ve Çözümlü Problemleri\Linear Algebra and Solving Problems (Güncelleştirilmiş Baskı), Prof. Dr. A. Göksel AĞARGÜN, Yrd. Doç. Dr. Hülya BURHANZADE, Birsen Yayınevi, İstanbul 2015
- Lineer Cebir Çözümlü Problemleri" ,Doç.Dr.Gürsel Yeşilot
- Bernard Kolman, David, R, Hill, "Uygulamalı lineer Cebir" Prof.Dr.Ömer Akın, Palme Yay., 2002 (Applied Linear Algebra)



# Advanced English I

*Students will be able to: use different reading strategies, skim a text and comprehend the main idea, scan a text to find some specific information, differentiate facts and opinions, identify main idea and supporting details, make inferences, guess the meaning of words from context, answer open-ended questions and discuss the topic in the target language. Students will be able to produce coherent paragraphs by writing topic sentences and supporting details. Students will be able to write their opinions about the texts. Students will be able to accurately pronounce the target vocabulary and will be able to make sentences with them.*

## Week Subjects

## Related Preparation

1	Introduction to the Course	Giving information about the course
2	Reading : The Effect of Music on Behavior Writing : Sentence Transformation	Preparing related coursebook
3	Reading : The Internet Issues Writing : Linking Words of Addition/ Reason/ Result/ Exemplifying	Preparing related coursebook
4	Reading : Reading: Pets to the Rescue Writing : Linking Words of Opposition/ Summarizing	Preparing related coursebook
5	For Monday and Tuesday Classes: Revision for the First Midterm Exam (Available at the website and the photocopy centers) For Wednesday, Thursday and Friday Classes HOLIDAY (FEAST OF SACRIFICE) (24th-25th-26th October 2012)	Preparing related coursebook
6	For Monday Classes HOLIDAY (29th October 2012 ) (NATIONAL HOLIDAY) For Tuesday, Wednesday, Thursday, Friday Classes Revision for the First Midterm (Available at the website and the photocopy centers)	Preparing related coursebook
7	REVISION FIRST MIDTERM	NA
8	Reading: The Changing Workplace Writing : Writing Input ( Part 1)	Preparing related coursebook
9	Writing: Writing Input (Part 2 & Part 3)	Preparing related worksheets
10	Reading: Names in Business Revision for the First Midterm Exam (Available at the website and the photocopy centers)	Preparing related coursebook
11	SECOND MIDTERM	NA

12	Reading: Why Downloading Pirated Music Hurts IN-CLASS WRITING 1 (Students will write an opinion paragraph in groups)	Preparing related coursebook
13	Reading: The Influence of the Media IN-CLASS WRITING 2 (Students will write an opinion paragraph individually)	Preparing related coursebook
14	For Monday and Tuesday Classes Revision for the Final Exam (Available at the website and the photocopy centers) Feedback on Individual Writing For Wednesday, Thursday, Friday Groups Revision For the Final (Available at the website and the photocopy centers)	Preparing related coursebook
15	Catch-Up Final Revision	Preparing related worksheet
16	FINAL EXAM	NA

## Course Books

- Material compiled by lecturers of Modern Languages Department [www.dictionary.com](http://www.dictionary.com)
- <http://www.academicvocabularyexercises.com> <http://dictionary.cambridge.org>
- <http://www.merriam-webster.com>

# Introduction to Computer Science 2

*Gain the ability to design and optimize an algorithm.*

Week	Subjects	Related Preparation
1	Course Introduction	NA
2	The definition of an algorithm and good algorithm	NA
3	Control Statements (if, for)	NA
4	Control Statements (for, while)	NA
5	The basics of C Programming Language-1	NA
6	The basics of C Programming Language-2	NA
7	Single and Multidimensional Arrays	NA
8	First Visa	NA
9	String processing-1	NA
10	String processing-2	NA
11	Random Number Generation	NA
12	Second Visa	NA
13	Recursive Functions	NA
14	Encryption Algorithms	NA
15	Course Overview	NA
16	Final Exam	NA

## Course Books

None

# Numerical Analysis

*To understand the various types of numerical methods so that we know capabilities and limitations of them.*

## Course Contents

### Week Subjects

- 1 Matematik Modeling and Solving of Mathematic Problems
- 2 Number representation, round-off error, truncation error, mistakes
- 3 The Solution of Nonlinear Equations - Close Methods
- 4 The Solution of Nonlinear Equations - Open Methods
- 5 The Solution of Root of Polynomial
- 6 The Solution of Linear Systems
- 7 Matrices and its Solutions Methods
- 8 The Solution of Nonlinear Systems
- 9 Finite Differences
- 10 Interpolation
- 11 Numerical Differentiation
- 12 Numerical Integration
- 13 Curve Fitting
- 14 The Solution of Differential Equations
- 15 Midterm Exam 2 at appropriate times

### Related Preparation

Mühendisler için Sayısal Yöntemler Section 1-3  
Numerical Methods for Mathematics, Science and Engineering Section 1  
Numerical Methods for Mathematics, Science and Engineering Section 2  
Numerical Methods for Mathematics, Science and Engineering Section 2  
Mühendisler için Sayısal Yöntemler Section 2-7  
Numerical Methods for Mathematics, Science and Engineering Section 3  
Mühendisler için Sayısal Yöntemler Section 3-11  
Mühendisler için Sayısal Yöntemler Section 3-12  
Mühendisler için Sayısal Yöntemler Section 8-31  
Numerical Methods for Mathematics, Science and Engineering Section 4  
Numerical Methods for Mathematics, Science and Engineering Section 6  
Numerical Methods for Mathematics, Science and Engineering Section 7  
Numerical Methods for Mathematics, Science and Engineering Section 5  
Numerical Methods for Mathematics, Science and Engineering Section 9  
Two Visa Exams

**Course Books**

- Numerical Methods for Mathematics, Science and Engineering, J.H.Mathews, Prentice Hall
- Numerical Methods, Software and Analysis, J.R. Rice, McGraw-Hill
- Mühendisler için Sayısal Yöntemler, H. Heperkan, Uğur Kesgin, Literatür

# Circuit Theory

*This course is intended to provide fundamental informations about circuit elements and solution techniques and to apply these informations in the laboratory environment.*

Week	Subjects	Related Preparation
1	Intoduction to circuit theory. Charge, current, voltage and power expressions and relationships between them. Types of circuits and circuit elements, basic circuit elements (source, resistor etc.) symbols and the meaning of these symbols.	Yes
2	Ohm's law, mathematical model of the resistor. Kirchhoff's current and voltage laws, analysis of a single-loop and a single-node-pair circuits.	Yes
3	Resistance and source combination, series and parallels combinations of the circuit elements, voltage and current division.	Yes
4	A practicle example: Operational Amplifier, Introduction to some useful techniques of circuit analysis	Yes
5	Nodal analysis and mesh analysis.	Yes
6	Source transformations. Maximum power theorem.	Yes
7	Thévenin's and Norton's theorems and applying to resistive circuits.	Yes
8	Midterm Exam - 1	Yes
9	Inductance and capacitance, mathematical models, series-parallels combinations, duality concept.	Yes
10	Source-free RL and RC circuits, the application of the unit-step forcing function, switching concept, RL and RC circuit analysis.	Yes
11	Introduction to sinusoidal analysis. Phasor relationships for R, L and C. The sinusoidal steady-state response in the frequency domain.	Yes
12	Circuit theorems in the sinusoidal steady state.	Yes

13	Average and maximum power theorems in the sinusoidal steady state. Dynamic circuits and systems analysis in the s-domain, definition of the Laplace transform and basic expressions.	Yes
14	Equivalences of the circuits in the s-domain, dynamic circuit analysis by using Laplace transform techniques.	Yes
15	Midterm Exam 2 at appropriate times	Yes
16	Final Exam	Yes

### **Course Books**

- Engineering Circuit Analysis, William H. Hayt-Jack E. Kemmerly, 5th ed, McGraw Hill, 1993
- Introductory Circuit Analysis, Robert L. Boylestad, 6th ed., Maxwell Macmillan, 1990

# Semiconductor Physics for Engineers

*The aim of the course, semiconductors and to give information about uses of semiconductors.*

Week	Subjects	Related Preparation
1	Semiconductors (Electrical, Magnetic, Optic) and Applications	Textbook (Chapter 1)
2	The classification of materials according to their electrical properties	Textbook (Chapter 2)
3	Semiconductor types	Textbook (Chapter 3)
4	Carrier concentration, Energy and Density of States	Textbook (Chapter 4)
5	Distribution function, Current Density, Generation and Recombination	Textbook (Chapter 5)
6	Optical Properties	Textbook (Chapter 6)
7	Magnetic Properties	Textbook (Chapter 7)
8	Midterm 1	NA
9	p-n Junctions, Schottky Diodes	Textbook (Chapter 8)
10	Transistors	Textbook (Chapter 9)
11	LED, OLED	Textbook (Chapter 10)
12	LASER	Textbook (Chapter 11)
13	Midterm 2	NA
14	Solar Cells	Textbook (Chapter 12)
15	Photodiodes	NA
16	Final week	NA

## Course Books

- Lecture Notes of Isık Karabay Modern Physics for Science and Engineering
- J.R. Taylor, C.Zafaritos Physics for Science and Engineering
- R.A.Serway Physics of Solids
- R.Turton Semiconductor Physics 1



# Social Formations and Historical Transformations

*Critically analyzing key concepts such as modernity, globalization, liberalism, secularism and nation-state in relation to their historicities, taking into consideration geographic, cultural, social and economic variations as well as their histories. Understanding and explaining social phenomenon with multi-causal models, learning how to use history.*

## Week Subjects

- 1 Introduction
- 2 The end of feudalism and the early modern age
- 3 Renaissance and reformation in Europe
- 4 The age of discovery, mercantalism and the price revolution
- 5 Centralization, and the rise of the modern state
- 6 Midterm I
- 7 The enlightenment and the scientific revolution
- 8 French revolution
- 9 Industrial revolution
- 10 The formation of nations, nationalism
- 11 Colonialism and imperialism
- 12 The dissolution of the empires, socialism and the October revolution
- 13 Two world wars and in between
- 14 Modernization attempts in the Ottoman empire and the founding of the republic
- 15 Cold war and globalization
- 16 Final Exam

## Related Preparation

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Preperation to exam

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Researching of sources about the subject

Preperation to exam

## Course Books

- Modernity: An introduction to modern societies. S.Hall, D. Held, D. Hubert, K. Thompson (eds.) Blackwell Pub. 1996

- Edward M. Burns, Robert E. Lerner ve Standish Meacham, *Western Civilizations*. New York: Norton, 1984

# Mathematics II

*Aim of this course is:*

- To give a broad knowledge and basic understanding of sequences and series,
- To give the basic concepts of vectors,
- To gain ability of using the concepts of limit, continuity, partial differentiation , double integrals

## Course Books

- Thomas' Calculus, 12th Edition, G.B Thomas, M.D.Weir, J.Hass and F.R.Giordano, Addison-Wesley, 2012.
- Thomas Kalkülüs (cilt 1-2) ,George B. Thomas ,Maurica D. Weir Joel R. Hass , Çeviri Editörü Mustafa Bayram , 2011, Ankara
- Calculus: A Complete Course, Robert A. Adams,C Essex 7th Edition,Addison Wesley Longman Toronto 2010.

# Advanced English II

*Students will be able to: use different reading strategies, skim a text and comprehend the main idea, scan a text to find some specific information, differentiate facts and opinions, identify main idea and supporting details, make inferences, guess the meaning of words from context, answer open-ended questions and discuss the topic in the target language. Students will be able to produce coherent paragraphs by writing topic sentences and supporting details. Students will be able to write their opinions about the texts. Students will be able to accurately pronounce the vocabulary items and will be able to make sentences with them.*

## Week Subjects

## Related Preparation

- |   |   |                                     |
|---|---|-------------------------------------|
| 1 | Introduction to the Course  | Giving information about the course |
| 2 | Reading : Eating Well Writing : Words of Transition Assignment : Study “Adverbs & Adjectives” input part for the next week. (exercises to be done in class)   | Preparing related coursebook        |
| 3 | Listening : You Are What You Eat Writing : Exercises in “Adjectives & Adverbs” parts Assignment (for the classes which won’t apply screening): Watch AntZ, Check out the Glossary & Everyday Use of English and Comprehension Exercises until week 10 | Preparing related coursebook        |
| 4 | Reading : Making A Successful Transition from College to Career Optional Activity: Post-Reading: A Very Interesting Case  | Preparing related coursebook        |
| 5 | Writing: Sentence Transformation Midterm Revision: (Available at the website and the photocopy centers)   | Preparing related coursebook        |
| 6 | REVISION FIRST MIDTERM Reminder (for the classes which won’t apply screening): (Watch AntZ, check out the Glossary & Everyday Use of English exercises and Comprehension Exercises until week 10)   | Preparing related coursebook        |
| 7 | Writing: Paragraph Organization Writing: Outlining  | Preparing related worksheets        |
| 8 | Reading: Your Body Clock  | Preparing related coursebook        |

9	Reading : Color Me Pink In-Class Writing 1: Writing an outline & developing a paragraph (Group Work, from the outline either on “Your Body Clock” or “Color Me Pink” ). Feedback to be given in class.	Preparing related coursebook
10	For the classes which apply screening: Warm Up : A quick look at the Glossary & Everyday Use of English Screening : AntZ (90 min.) In-Class writing 2: One paragraph for the questions given about AntZ . (Group Work). Feedback to be given in class or next week. For the classes which cannot apply screening: Warm-Up Activity : Movie Quiz & Survey Reading : ANT Z (Comprehension Check) In-Class writing 2 : One paragraph about AntZ (Group Work)	Preparing related coursebook
11	IN MONDAY CLASSES, SCHEDULE OF THE PREVIOUS WEEK WILL BE APPLIED! In other classes: Second Midterm Revision For Tuesday classes: Revision material will be available in photocopy centers and on our website ( Ss. should be announced beforehand)	Preparing related coursebook
12	SECOND MIDTERM	NA
13	Reading : English Around the World In-Class writing 3 : Opinion Paragraph on one of the ideas in the text. (Individual Work). Feedback in class, if possible.	Preparing related coursebook
14	Reading: Challenges Facing the World's Cities	Preparing related coursebook
15	Catch-Up Final Revision	Preparing related worksheets
16	FINAL EXAM	NA

## Course Books

- Material compiled by lecturers of Modern Languages Department [www.dictionary.com](http://www.dictionary.com)
- <http://www.academicvocabularyexercises.com> <http://dictionary.cambridge.org>
- <http://www.merriam-webster.com>

# Assembly Language

*To be able to write 80x86 assembly code, interface using I/O devices, inter-charging with high level programming languages like C and PASCAL. And understanding the role of assembly language as a low level programming tool.*

Week	Subjects	Related Preparation
1	Introduction to programming languages and general specifications of Assembly language	Text Book Chapter-1
2	Numbers, number systems and information coding systems. General introduction to 80x86 processor family, registers sets, flags and segmented organization	Text Book Chapter-2, 3, 4
3	Mnemonics (data transfer, arithmetic, branch)	Text Book Chapter-5
4	Mnemonics (loop, flags , logic , shift , rotate)	Text Book Chapter-5
5	Mnemonics (string operations, prefixes)	Text Book Chapter-5
6	Adressing modes, tools for Assembly programming, pseudo commands	Text Book Chapter-6, 7, 8
7	Seting up the programming environment, debug tools	Text Book Chapter-16
8	Mid Term Exam -1 & Exam evaluations	NA
9	EXE style programming	Text Book Chapter-9
10	COM style programming	Text Book Chapter-9
11	Procedures and Macros	Text Book Chapter-10
12	Sub-procedures and parameter passing methods	Text Book Chapter-11, 12
13	Mid Term Exam -2 and Exam evaluations	NA
14	Common segment usage EXTRN and PUBLIC definitions	Text Book Chapter-11, 12
15	Interrupts, vector table and integration with high level programming languages	Text Book Chapter-13, 14, 15
16	Final Exam	NA

## Course Books

- Assembly Dili, Ahmet Tevfik İNAN, Seçkin Yayıncılık, ISBN 975 02 0313 5
- IBM PC Assembler: Language And Programming, PABEL
- Assembly Language: Tools & Techniques for IBM Microcomputers, J. SANCHEZ

- The 80386/486 and Pentium Processor, Hardware and Software Int., W. TRIEBEL

# Discrete Mathematics

*To learn a particular set of mathematical facts and how to apply them and how to think mathematically*

## Week Subjects

- 1 The Language of Mathematics
- 2 Logic, Sets and Functions-I
- 3 Logic, Sets and Functions-II
- 4 Algorithms and Complexity of Algorithms
- 5 Counting Techniques
- 6 Relations-I
- 7 Relations-II
- 8 Graphs Theory-I
- 9 Graphs Theory-II
- 10 Chromatic Polynomials
- 11 Trees and their Applications-I
- 12 Trees and their Applications-II
- 13 Recurrence Relations
- 14 Finite State Machine with/without output
- 15 Midterm Exam 2 at appropriate times
- 16 Final Exam

## Related Preparation

Discrete Mathematics and Its Applications Section 1

Discrete Mathematics and Its Applications Section 2

Discrete Mathematics and Its Applications Section 2

Discrete Mathematics and Its Applications Section 3

Discrete Mathematics and Its Applications Section 7

Discrete Mathematics and Its Applications Section 8

Discrete Mathematics and Its Applications Section 8

Discrete Mathematics and Its Applications Section 9

Discrete Mathematics and Its Applications Section 9

Discrete Mathematics, R. Johnsonbaugh

Discrete Mathematics and Its Applications Section 10

Discrete Mathematics and Its Applications Section 10

Discrete Mathematics, R. Johnsonbaugh Section 5

Discrete Mathematics and Its Applications Section 12

2 Visa Exams

Final Exam

## Course Books

- Discrete Mathematics and Its Applications, Kenneth H. Rosen, McGraw-Hill
- Discrete Mathematics, R. Johnsonbaugh, Prentice Hall
- Discrete Mathematics, Kenneth A. Ross, Prentice Hall



# Programming Languages

*To teach the C programming language in advanced level*

Week	Subjects	Related Preparation
1	Structure and general properties of C	Yes
2	Variables, data types, extending data types	Yes
3	Relational, logic and bitwise operators	Yes
4	Control statements and loops	Yes
5	Arrays and pointers	Yes
6	Functions	Yes
7	Containers	Yes
8	Dynamic memory usage	Yes
9	Struct and Union	Yes
10	File Usage	Yes
11	Different I/O Methods	Yes
12	C preprocessor	Yes
13	Macros and conditional compiling	Yes
14	Include Property	Yes
15	2 Midterm Exam	Yes
16	Final exam	Yes

## Course Books

- Software Engineering in C, Peter A. Darnell, Philip E. Margolis, Springer Verlag, 1988
- How to program: C , 3rd Edition,Deitel

# Engineering Mathematics

*The aim of the lecture is to teach basic techniques to develop and solve mathematical models that are important for computer engineering.*

Week	Subjects	Related Preparation
1	Introduction to Matlab programming, data types, functions, graphs etc.	Related chapter of the book
2	Meaning and use of differential equations. Solving differential equations analytically and numerically. Initial value problem.	Related chapter of the book
3	Solving differential equations analytically and numerically. Coding Euler and Runge Kutta methods using Matlab.	Related chapter of the book
4	Modelling physical systems involving velocity, force, acceleration and solving those differential equations analytically and numerically	Related chapter of the book
5	Modelling electric circuits via differential equations.	Related chapter of the book
6	Modelling and solving spring-mass systems using differential equations.	Related chapter of the book
7	1 /midterm Laplace transforms, transfer functions, inverse Laplace transform.	Related chapter of the book
8	Introduction to control theory, PID control definition, applications on real physical systems.	Related chapter of the book
9	Z transform and its applications, Z transform of difference equations	Related chapter of the book
10	Z transform and its applications, Z transform of difference equations	Related chapter of the book
11	Fourier transform, FFT and application	Related chapter of the book
12	Fourier transform, FFT and application	Related chapter of the book
13	Optimization, Gradient descent algorithm, Newton algorithm	Related chapter of the book
14	Application examples	Related chapter of the book
15	Application examples	Related chapter of the book
16	Final Exam	Related chapter of the book

## Course Books

- Advanced Engineering Mathematics, Erwin Kreyszig, Wiley; 10 edition (August 16, 2011)

# Logic Circuits

*This course is intended to provide information on combinational and sequential analysis and design and to apply these information in the lab.*

Week	Subjects	Related Preparation
1	Introduction to binary systems	No
2	Fundamentals of Boolean Algebra	Main course book Section 1
3	Logic functions, canonical and standard forms	Main course book Section 2
4	Logic gates. Function implementation with NAND, NOR gates	Main course book Section 3
5	Logic function minimization. Karnaugh maps	Main course book Section 4
6	Combinational logic, adders, subtractors, code converters	Main course book Section 5
7	Mid Term Exam	Yes
8	MSI logic, parallel adders, BCD adders, magnitude comparators	Main course book Section 6
9	Decoders, multiplexers	Main course book Section 7
10	Flip flops, RS, D, T, J-K Flip flops	Main course book Section 8
11	Analysis of synchronous sequential circuits	Main course book Section 9
12	Design of synchronous sequential circuits	Main course book Section 10
13	Design of synchronous sequential circuits	Main course book Section 11
14	Counters, latches, registers	Main course book Section 12
15	Counters, latches, registers	Main course book Section 12
16	Final Exam	Yes

## Course Books

- Logic and Computer Design Fundamentals, M. Morris Mano and Charles R. Kime, Prentice Hall.
- Digital Design, M. Moris Mano, Prentice Hall
- Lojik Devre Tasarımı, Taner Arsan, Rifat Çölkesen, Papatya Yayıncılık

# Object Oriented Concepts

*The concepts and usage of the object-oriented paradigm is taught along with the Unified Modeling Language.*

Week	Subjects	Related Preparation
1	Objects and Classes	NA
2	Object Identity, Interface, Encapsulation and Attributes	NA
3	UML Class Schemas	NA
4	Object Behaviour and Methods	NA
5	UML Interaction Diagrams	NA
6	Object and Class Collaborations and Relations	NA
7	Inheritance and Abstract Classes	NA
8	1st Midterm Exam	NA
9	Interfaces and Multiple Inheritance	NA
10	Polymorphism, Method Overriding and Overloading	NA
11	Object-Oriented Design Concepts and Their Application	NA
12	Object-Oriented Design Concepts and Their Application (continued)	NA
13	2nd Midterm Exam	NA
14	Make-up exams and course rehearsal	NA
15	Presentation of the Students' Term Projects	NA
16	Final Exam	NA

## Course Books

None formally given.

# Reading and Speaking English

*Students will be able: To analyse texts in relation to the daily topics with different reading strategies To improve students' oral skills in English and to enable them to express their thoughts and opinions appropriately To enable students to interpret texts on their own and to convey their opinions individually or in group activities*

Week	Subjects	Related Preparation
1	Introduction to the course	Giving information about the course
2	The News Media UNIT 1 READING 2 1st hour: Skills and Strategies 2 (pp.20-23) 2nd and 3rd hours: The History of Electronic Media	Preparing related coursebook
3	Ethical Reporting UNIT 1 READING 4 1st hour: Skills and Strategies 1 (pp.1-6) 2nd and 3rd hours: Ethical Reporting	Preparing related coursebook
4	Education UNIT 2 READING 3 1st hour: Skills and Strategies 2 (pp. 20-23)& Skills and Strategies 4 (pp.60-63) 2nd and 3rd hours: Alternative Education	Preparing related coursebook
5	The World of Business UNIT 3 READING 2 1st hour: Skills and Strategies 5 (pp.84-86) 2nd and 3rd hours: The Workforce of the Twenty- First Century	Preparing related coursebook
6	The World of Business UNIT 3 READING 3 1st and 2nd hours: Communication Technology and Global Business 3rd hour: Making Connections (pp.122-124)	Preparing related coursebook
7	Catch-up (for the missed classes) Revision for the Midterm (provided by teachers, if necessary)	Preparing related coursebook
8	MIDTERM / Revision	NA
9	Population Change and Its Impact UNIT 4 READING 3 1st and 2nd hours: Growth of Cities 3rd hour: Making Connections (pp.162-164)	Preparing related coursebook
10	Design in Everyday Life UNIT 5 READING 1 1st and 2nd hours: The Design of Everyday Objects 3rd hour: Making Connections (pp.201-202)	Preparing related coursebook
11	The Brain and Behavior UNIT 6 READING 3 1st hour: Skills and Strategies 11 (pp.204-207) 2nd and 3rd hours: The Male and Female Brain	Preparing related coursebook
12	REVISION ORAL EXAMS	NA

13	REVISION ORAL EXAMS	NA
14	REVISION ORAL EXAMS	NA
15	REVISION ORAL EXAMS	NA
16	FINAL EXAM	NA

### **Course Books**

- “Making Connections Intermediate- A Strategic Approach to Academic Reading”, Jo McEntire, Jessica Williams. 2009, Cambridge University Press.

# Turkish Language I

*Structure of Turkish and acquisition of basic grammar rules, comprehension of reading texts, expanding learners' vocabulary knowledge.*

Week	Subjects	Related Preparation
1	Introduction of the content of the the course and references of course.	Textbook
2	Communication.	Textbook
3	Definition of language, characteristics of languages, the relationship between language and culture, relationship between language and nationality. Formal and informal language.	Textbook
4	Languages of the world . Historical development of Turkish and the place of Turkish among the languages of the world.	Textbook
5	Current problems of the Turkish in light of the modern texts. The problems with the spelling of the words in Turkish accompanied by compiled texts.	Article
6	Spelling rules. Punctuation. The importance of the punctuation. Application of punctuation.	Textbook
7	Spelling rules accompanied by contemporary texts.	Column
8	Mid-term exam.	Textbook
9	Text analysis: Article	Textbook
10	Writing.	Textbook
11	Writing exercises,text analysis.	Textbook
12	Formal writing styles.	Textbook
13	Expression disorders. Exercises.	Textbook
14	Analysis of expression disorders accompanied by contemporary texts.	Textbook
15	Turkish as the language of science , accompanied by sample texts.	Textbook
16	Final exam.	Textbook

## Course Books

- Yusuf Çotuksöken, Üniversite Öğrencileri İçin Uygulamalı Türk Dili 1. ve 2. Cilt, Papatya Yayıncılık, İstanbul 2001.

# Theory of Computation

*Acquire a full understanding of Automata Theory as the basis of all computer science languages design, and learn classification of problems.*

Week	Subjects	Related Preparation
1	Basic Concepts and Definition	NA
2	Computability Theory, Complexity Theory, Automata Theory	NA
3	Set Theory, Relations	NA
4	Proof By Construction, Proof By Contradiction, Proof By Induction	NA
5	Regular Expressions	NA
6	Finite Automata	NA
7	Deterministic and Nondeterministic Finite Automata	NA
8	Epsilon Transition, Equivalence of Automata, Pigeonhole Principle	NA
9	Midterm	NA
10	Pushdown Automata	NA
11	Context Free Grammar, Parse Tree, Ambiguity, Pumping Theorem	NA
12	Turing Machines, Recognition and Computation, Church-Turing Hypothesis	NA
13	Time Complexity, Class-P Problems, Class-NP Problems,	NA
14	NP-Complete Problems	NA
15	Space Complexity, Class-PSPACE, Class-L and Class -NL	NA
16	Final Exam	NA

## Course Books

- Daniel I. A. Cohen, Introduction to Computer Theory, Prentice-Hall, Second Edition, 1997.
- Michael Sipser, Introduction to the Theory of Computation, PWS Pub. Co, Second Edition, 2005



# Data Structures and Algorithms

*The aim of the course is to provide students how to select and design data structures and algorithms that are appropriate for problems that they might encounter.*

Week	Subjects	Related Preparation
1	Fundamentals of Algorithmic Problem Solving	NA
2	Fundamentals of the Analysis of Algorithm Efficiency	NA
3	Lists and Linked Lists	NA
4	Queues and Stacks	NA
5	Tree Structures	NA
6	Binary Trees - Midterm Exam 1	NA
7	Huffman Tree	NA
8	Search Algorithms, String Search Algorithms	NA
9	Sorting Algorithms 1	NA
10	Sorting Algorithms 2	NA
11	Divide and Conquer Algorithms 1	NA
12	Divide and Conquer Algorithms 2	NA
13	Graph Algorithms (Shortest Path, Critical Path)	NA
14	Graph Algorithms ( Minimum Spanning Tree, Maximum Flow)- Midterm Exam 2	NA
15	Recurrence Relations	NA
16	Final Exam	NA

## Course Books

- Introduction to Algorithms, Third Edition, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, The MIT Press
- Algorithms, 4th Edition by Robert Sedgewick and Kevin Wayne, Addison-Wesley Professional, 2011

# Object Oriented Programming

*Teaches programming in Java in such a way that the contemporary requirements of a stand-alone application can be met.*

Week	Subjects	Related Preparation
1	Introduction of the course.	NA
2	Exception handling	NA
3	Working with Files and Streams (Text I/O and Serialization)	NA
4	Generic Data Structures: Lists	NA
5	Generic Data Structures: Maps	NA
6	1st Midterm Exam	NA
7	Enum classes and inner classes	NA
8	Introduction to Multithreading	NA
9	2nd Midterm Exam	NA
10	GUI Programming, Part 1 (Creating simple windows with JFrame and JPanel)	NA
11	GUI Programming, Part 2 (Handling keyboard, mouse and window events)	NA
12	GUI Programming, Part 3 (GUI I/O with Swing)	NA
13	GUI Programming, Part 4 (Layout management with BorderLayout and GridLayout)	NA
14	GUI Programming, Part 5 (Layout management with GridBagLayout)	NA
15	Make-up exams and course rehearsal	NA
16	Final exam	NA

## Course Books

None formally given.

# Computer Hardware

*This course is intended to overview of combinational and sequential circuits and to give information about the technology of computer hardware like memory systems, pipeline processing, cache memories and virtual memory.*

<b>Week</b>	<b>Subjects</b>	<b>Related Preparation</b>
1	Combinational Logic Circuits	NA
2	Sequential Logic Circuits	NA
3	Registers and Counters	NA
4	Memory Units (RAM, ROM, PLD, PLA, PAL)	NA
5	Register Transfer Operations and Common Bus Design	NA
6	Hardwired and Microprogrammed Control Unit Design	NA
7	Midterm Exam-I	NA
8	Instruction Set Architecture and Addressing Modes	NA
9	Central Processing Unit Design and Pipeline Processing	NA
10	Input-Output and Communication- Data Transfer Methods: Program controlled Data Transfer, Interrupted Data Transfer and I/O Processor	NA
11	Input-Output and Communication- Interrupt priority by hardware and software	NA
12	Cache Memory and 3 Cache Mapping Technique	NA
13	Cache memory blocking	NA
14	Virtual Memory and Page Tables	NA
15	Virtual Memory and TLB(Translation Lookaside Buffer)	NA
16	Final Exam	NA

## Course Books

- Logic and Computer Design Fundamentals- M.Morris Mano, Charles R.Kime, 2001, Prentice Hall

# Electronic Circuits

*To teach the functions of fundamental electronic components such as diode, BJT, FET and OP-AMPs. To analyze the circuits that have diodes, BJTs, FETs and OP-AMPs; To realize fundamental logic gates with using theses components.*

Week	Subjects	Related Preparation
1	p-n junction, ideal diode, diode characteristics	No
2	Equivalent diode models, clipper circuits	Main course book Section 1
3	Rectifier circuits, diode logic	Main course book Section 2
4	Bipolar junction transistor, characteristics	Main course book Section 3
5	DC analyze of BJT Circuits	Main course book Section 4
6	Diode Transistor Logic (DTL), Resistor Transistor Logic (RTL), Transistor Transistor Logic (TTL)	Main course book Section 5
7	Applications and Examples	Main course book Section 6
8	Midterm Exam	Yes
9	Operational amplifier (OP-AMP):comparator,inverting and non-inverting circuit structures	Main course book Section 7
10	Operational amplifier: adder, subtractor,derivative and integral circuits	Main course book Section 8
11	Field effect transistors (FET), Junction field effect transistors(JFET)	Main course book Section 9
12	Metal Oxide Field Effect Transistors (MOSFET)	Main course book Section 10
13	DC analyze of FET Circuits and applications	Main course book Section 11
14	MOS Logic	Main course book Section 12
15	MOS Logic	Main course book Section 12
16	Final Exam	Yes

## Course Books

- R.Boylestad,L.Nashelsky, "Electronic Devices and Circuit Theory", Prentice Hall.
- Jacob Millman, "Microelectronics", McGraw-Hill.
- Jacob Millman, Christos Halkias, "Integrated Electronics", McGraw-Hill.

- Adel S.Sedra, Kenneth C. Smith, "Microelektronic Circuits", Oxford University Press.

# System Analysis and Design

*To teach the concept of systems analysis and engineering of an information system.*

Week	Subjects	Related Preparation
1	Introduction to System Analysis and Design	NA
2	Information System and Information System Types, Information System Development Process	NA
3	System Analyst Duties and Capabilities, Preliminary Investigation and Feasibility Analysis	NA
4	Systems Analysis: Data Collection	NA
5	Systems Analysis: Data Modeling	NA
6	System Design	NA
7	Interface Design	NA
8	Database Design	NA
9	Mid Term	NA
10	Systems Implementation, CASE	NA
11	Lab: CASE Tool	NA
12	Towards to New System	NA
13	System Maintenance and Support	NA
14	Project Presentations	NA
15	Project Presentations	NA
16	Final Exam	NA

## Course Books

- SATZINGER - JACKSON – BURD System Analysis and Design, Course Technology

# Turkish Language 2

*Structure of Turkish and acquisition of basic grammar rules, comprehension of reading texts, expanding learners' vocabulary knowledge.*

Week	Subjects	Related Preparation
1	Introduction of the content of the the course and references of course.	Textbook
2	Communication.	Textbook
3	Definition of language, characteristics of languages, the relationship between language and culture, relationship between language and nationality. Formal and informal language.	Textbook
4	Languages of the world . Historical development of Turkish and the place of Turkish among the languages of the world.	Textbook
5	Current problems of the Turkish in light of the modern texts. The problems with the spelling of the words in Turkish accompanied by compiled texts.	Article
6	Spelling rules. Punctuation. The importance of the punctuation. Application of punctuation.	Textbook
7	Spelling rules accompanied by contemporary texts.	Column
8	Mid-term exam.	Textbook
9	Text analysis: Article	Textbook
10	Writing.	Textbook
11	Writing exercises,text analysis.	Textbook
12	Formal writing styles.	Textbook
13	Expression disorders. Exercises.	Textbook
14	Analysis of expression disorders accompanied by contemporary texts.	Textbook
15	Turkish as the language of science , accompanied by sample texts.	Textbook
16	Final exam.	Textbook

## Course Books

- Yusuf Çotuksöken, Üniversite Öğrencileri İçin Uygulamalı Türk Dili 1. ve 2. Cilt, Papatya Yayıncılık, İstanbul 2001.

# Ataturk Principles and History Of Reform I

*To inform students about essential political, economic, social and cultural facts of the historical period from the late eighteenth century through the signing of Lausanne Treaty in 1923; in other words, to inform them about the background of these facts in the course of the transition from the Ottoman Empire to the establishment of republican Turkey. To provide students with some examples of a multi-layered point in order to make them able to approach historical events in a multi-dimensional way. To introduce to students certain basic theoretical concepts, discussions and methods of thought of different social sciences, with a particular emphasis on history.*

## Week Subjects

- 1 Introduction: The Possibilities and the limitations of history: basic concepts
- 2 Social and Administrative Structure of the Ottoman State, before the attempts of modernization: From 16th to the 18th Century
- 3 Transformation in the Social and Administrative Structure of the Ottoman State, before the attempts of modernization: 18th Century
- 4 The meaning of the modernization and the formation of the modern state

## Related Preparation

Georg Iggers, "Giriş",  
Yirminci Yüzyılda  
Tarihyazımı içinde, s. 1-21  
Donald Quateert, "Osmanlı  
Tarihini incelemek Neden  
Gerekli? ", Osmanlı  
İmparatorluğu içinde, s.  
25-41 Eric Jan Zürcher,  
"Giriş: Dönemleme, Kuram  
ve Yöntem", Modernleşen  
Türkiye'nin Tarihi içinde, s.  
11-20.  
Eric Jan Zürcher,  
"Onsekizinci Yüzyıl  
Sonunda Osmanlı  
İmparatorluğu",  
Modernleşen Türkiye'nin  
Tarihi içinde, s. 23-38  
Niyazi Berkes, "İç ve Dış  
Engeller", Türkiye'de  
Çağdaşlaşma içinde, s.  
65-80  
Peter Burke, Tarih ve  
Toplumsal Kuram, s.  
129-137 Eric Jan Zürcher,  
"Gelenek ve Bid'at  
Arasında", Modernleşen  
Türkiye'nin Tarihi içinde, s.  
39-77



- 5 The Tanzimat Era (1839-1876): The Reconstruction of the centralized state Şerif Mardin, "Tanzimat Fermanı'nın Manası", Türkiye'de Toplum ve Siyaset içinde, İstanbul: İletişim Yayınları, s. 288-310. İlber Ortaylı, "Osmanlı Tarihinde Bab-ı Ali Asrı", İmparatorluğun en Uzun Yüzyılı içinde, s. 77-107
- 6 The Era of Abdülhamid II (1876-1908): Defensive Modernization Eric Jan Zürcher, "1873-1878 Bunalımı ve Sonuçları" ve "Gerici İstibdat ya da Islahatların Doruğu ? Sultan II. Abdülhamit Saltanatı", Modernleşen Türkiye'nin Tarihi içinde, s. 109-136
- 7 The Era of Second Constitutional Monarchy : A Constitutional Revolution Eric Jan Zürcher, "İkinci Meşrutiyet Dönemi", Modernleşen Türkiye'nin Tarihi içinde, s. 139-186
- 8 MIDTERM Zafer Toprak, "Milli İktisat", Tanzimat'tan Cumhuriyet'e Ansiklopedisi içinde, s. 740-747
- 9 The Era of Second Constitutional Monarchy: Pluralism in the Public Sphere NA
- 10 The First World War: "Total War" and the rise of the nationalism Eric Jan Zürcher, "İdeolojik Tartışmalar", Modernleşen Türkiye'nin Tarihi içinde, s. 186-193
- 11 The General Social and Political Situation in the world and in the Ottoman State after the First World War Gökçen-Faruk Alpkaya, "I. Dünya Savaşı", 20. Yüzyıl Dünya ve Türkiye Tarihi içinde, s. 71-79.
- 12 The War of Independence I: The Political Developments Eric Jan Zürcher, "Bağımsızlık Savaşı", Modernleşen Türkiye'nin Tarihi içinde, s. 194-196
- 13 The War of Independence I: The Military Developments Toktamış Ateş, "Savaş Dönemi", Türk Devrim Tarihi içinde, s. 71-159
- Taner Timur, "Milli Kurtuluş Savaşı", Türk Devrimi ve Sonrası içinde, Ankara: İmge Yayınevi, s. 13-61.

14	The Formation and the Contents of the Lausanne Treaty	Ahmet Mumcu, 'Kurtuluş Savaşı'nın Bitişi (Mudanya Ateşkes Antlaşması / Saltanatın Kaldırılması / Lozan Antlaşması), Atatürk İlkeleri ve İnkılâp Tarihi I içinde, Eskişehir: Açıköğretim Fak. Yay., s. 212-233.
15	General Overview and Discussion	NA
16	Final	NA

### **Course Books**

None given formally.

# Operating Systems

*This course aims at teaching the students the hardware and software architecture of operating systems*

Week	Subjects	Related Preparation
1	History of operating systems and introduction to operating systems	NA
2	Hardware requirements of operating systems	NA
3	Processes and process management mechanisms	NA
4	Basic process scheduling algorithms and their comparison	NA
5	Interprocess communication	NA
6	Midterm	NA
7	Memory management, real and virtual memory	NA
8	Mechanisms for creating virtual memory	NA
9	Paging and segmentation in memory management	NA
10	I/O systems and memory hierarchy	NA
11	Basic principles of the operation of I/O systems, sequential and random access techniques	NA
12	Sharing of I/O systems between user processes and virtual I/O systems	NA
13	Midterm	NA
14	Basic file system structure for operating systems	NA
15	Logical file system and its mapping to physical I/O, sharing and security concerns	NA
16	Final exam	NA

## Course Books

- Operating Systems, Internals and Design Principles, W. Stallings, Pearson - Prentice Hall
- Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin, Addison-Wesley
- Learning the UNIX Operating System, Fifth Edition, O'Reilly Media

# Algorithm Analysis

*The aim of the course is to enable the students to design algorithms for various applications, and to analyze the algorithms.*

Week	Subjects	Related Preparation
1	Introduction	NA
2	Fundamentals of the Analysis of Algorithms, Algorithm Complexity	NA
3	Asymptotic Analysis	NA
4	Analysis of Divide and Conquer Algorithms	NA
5	Priority Queues	NA
6	Depth-first and Breadth-first Search	NA
7	Balanced Search Trees (2-3 trees, B-trees, Red-Black Trees)	NA
8	Dynamic Programming-1 - Midterm Exam 1	NA
9	Dynamic Programming-2	NA
10	Linear Programming	NA
11	Backtracking	NA
12	Branch and Bound	NA
13	Midterm Exam - 2	NA
14	NP, NP-Complete, NP-hard Problems	NA
15	Advanced Algorithms	NA
16	Final Exam	NA

## Course Books

- Introduction to the Design and Analysis of Algorithms (3rd Edition) by Anany Levitin, 2011
- Introduction to Algorithms, Third Edition, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, The MIT Press, 2009

# Statistical Data Analysis

*Solve basic probability problems including finding properties of distribution function.*

Week	Subjects	Related Preparation
1	Probability: definition and interpretation, Bayes theorem	Yes
2	Distributions of random variables: random variables, probability density functions, expectation values, variance, normalized distribution	Yes
3	Distributions of random variables: Chebychev-inequality, transformation of variables, matrix formalism, error propagation	Yes
4	Examples of probability functions: binomial, multinomial, Poisson, uniform, exponential, Gaussian, chi-square	Yes
5	The Monte Carlo methods	Yes
6	Parameter estimation	Yes
7	The method of maximum likelihood	Yes
8	The method of least square	Yes
9	Use of SAS	Yes
10	Midterm Exam	Yes
11	Simple Linear Regression and Correlation	Yes
12	Multiple Linear Regression	Yes
13	Testing the goodness-of-fit: the chi-squared distribution, degrees of freedom	Yes
14	Presentation of project	Yes
15	Presentation of project	Yes
16	Final Exam	Yes

## Course Books

- An Introduction to Statistical Methods and Data Analysis, R. Lyman Ott, Micheal T. Longnecker

# Microprocessor Systems

*Design microprocessor based systems and implementing various applications in the lab.*

Week	Subjects	Related Preparation
1	Introduction, number systems, fundamental logic components	NA
2	Memory and design	NA
3	Structure of CPU	NA
4	Structure of embedded system	NA
5	Instruction, programming, addressing methods	NA
6	Instructions (continue)	NA
7	Parallel Interface Adaptor	NA
8	Serial Interface Adaptor	NA
9	Subroutine, interrupt and stack concept	NA
10	Mid Exam	NA
11	Digital Analog Converters, sample applications	NA
12	Analog Digital Converters, sample applications	NA
13	Peripheral devices	NA
14	Samples of fundamental application	NA
15	Samples of fundamental application	NA
16	Samples of fundamental application	NA

## Course Books

- Mikroişlemci Sistemler, Eşref Adalı

# Database Systems

*To learn the basics of database systems and administration*

Week	Subjects	Related Preparation
1	Introduction to fundamentals of database concepts and main architecture of db systems.	Ch 1,2
2	DB conceptual design with ER	Ch 3
3	DB conceptual design with EER and UML	Ch 4
4	Relational Model, RM Design	Ch 5,7
5	Relational Algebra	Ch 6
6	SQL	Ch 8
7	SQL, SQL Programming	Ch 8,9
8	SQL Programming	Ch 8,9
9	Physical Design: Indexing	Ch 13
10	Physical Design: Indexing	Ch 13,14
11	functional dependency, normalization	Ch 10
12	normalization	Ch 11
13	DBMS Security	Ch 23
14	Enhanced Data models	Ch 24
15	2 midterms	exam prep.
16	Final exam	exam prep.

## Course Books

None given, but a book is referenced in the course contents.

# Introduction to Expert Systems

*Expert system has been mostly used application field in Artificial Intelligence. The course presents principles of an expert system and its parts in details. In this course, students will learn the concept of expert systems and, how to design an expert system.*

Week	Subjects	Related Preparation
1	Introduction, History	NA
2	Basic concept: inference engine	NA
3	Knowledge base	NA
4	Knowledge elicitation	NA
5	Representation and control of knowledge	NA
6	Automated reasoning	NA
7	Representing uncertainty	NA
8	Practical problem solving	NA
9	First Visa	NA
10	Development of the theory and practice of expert systems	NA
11	Software tools and architectures for building expert systems	NA
12	Implementation of an expert system	NA
13	Well known samples of expert systems-1	NA
14	Well known samples of expert systems-2	NA
15	Project evaluation-1	NA
16	Project evaluation-2	NA

## Course Books

None formally given.



# Database System Implementation

*To learn the system implementation concepts of database systems.*

Week	Subjects	Related Preparation
1	Skeleton DBMS: SimpleDB, system overview	Ch. 12
2	Disk and File Management, performance issues	Ch. 12
3	Memory management: Log and buffers	Ch. 13
4	Memory management: SimpleDB Memory management	Ch. 13
5	Transaction management: overview	Ch. 14
6	Transaction management: Recovery Techniques	ch. 14
7	Transaction management: Concurrency Management	Ch. 14
8	Transaction management: SimpleDB TX management	Ch. 14
9	Record Management: Techniques, simpleDB record mangement	Ch. 15
10	Metadata management: Techniques, SimpleDB metadata management	Ch. 16
11	Query Processing	ch. 17
12	Query Processing: Relational Algebra, Pipeline processing	Ch. 17
13	Query Processing: Cost Prediction	ch. 17
14	Query Optimization: Cost-based, Enumeration techniques	Ch. 19
15	2 midterms	exam prep.
16	final	exam prep.

## Course Books

- Edward Sciore, Database Systems and Implementation, John Wiley, 2009

# Information Systems Security

*This course aims at making the students to achieve basic security skills and how to use them in the design and implementation of computer systems and networks*

Week	Subjects	Related Preparation
1	Introduction to security and basic security concepts	NA
2	Basic elements of security	NA
3	Basic elements of security	NA
4	Cryptography and its use in security	NA
5	Cryptography and its use in security	NA
6	Network security	NA
7	Security in operating systems	NA
8	Securing the data	NA
9	Midterm	NA
10	Web security	NA
11	Web security	NA
12	Secure identity management	NA
13	Compliance and Certification	NA
14	Security Audits	NA
15	Midterm	NA
16	Final exam	NA

## Course Books

- Cryptography and Network Security (4th Edition) Principles and Practices, William Stallings
- Network Security Essentials: Applications and Standards (3rd Edition), William Stallings
- Network Security: Private Communication in a Public World (2nd Edition), Charlie Kaufman

# Ataturk Principles and History of Reform

*To inform students about political, economic, social and cultural facts of the historical period beginning from 1923 to the present. To provide students with some significant examples of a multi-layered point of view in evaluating historical events. With an interdisciplinary perspective, to introduce to students some basic theoretical concepts, discussions and methods of thought of different social sciences, with particular emphasis on history.*

## Week Subjects

- 1 An overview of the 20th century
- 2 Political Life between 1923-1945
- 3 The formation of the Republican Ideology and the Kemalist Principles
- 4 The Social and Cultural Transformation between 1923-1950
- 5 The Turkish Economy between 1923-1945
- 6 International Relations of Turkey between 1923-1945
- 7 The Passage of Turkey to the plural political system: 1945-1950
- 8 MIDTERM

## Related Preparation

Eric Hobsbawm, "Kuşbakışı 20. Yüzyıl", Kısa 20 Yüzyıl: Aşırıliklar Çağı içinde , s. 13-31

Cemil Koçak, "Siyasal Tarih: 1923-1950", Çağdaş Türkiye 1908-1980 içinde,s. 85-154

Şerif Mardin, 'Atatürkçülüğün Kökenleri', Cumhuriyet Dönemi Türkiye Ansiklopedisi içinde, s. 86-88

Seçil Deren, "Kültürel Batılılaşma", Modern Türkiye'de Siyasi Düşünce: Modernleşme ve Batıcılık içinde,s.382-402

Korkut Boratav, "Türkiye'de Devletçilik", Cumhuriyet Dönemi Türkiye Ansiklopedisi içinde, s. 412-418

Ahmet Mumcu, "Türkiye Cumhuriyeti'nin Dış Siyaseti", Atatürk İlkeleri inkılap Tarihi içinde, s. 302-319

Eric Jan Zürcher, "Demokrasiye Geçiş, 1945-1950", Modernleşen Türkiye'nin Tarihi içinde, s. 299-320

NA

9	1950-1960: Political Developments During the Years of Democratic Party	Eric Jan Zürcher, "Demokrat Parti İktidarı, 1950-1960", Modernleşen Türkiye'nin Tarihi içinde, s. 321-350
10	Politics in Turkey between 1960-1980	Eric Jan Zürcher, "İkinci Türkiye Cumhuriyeti: 1960-1980", Modernleşen Türkiye'nin Tarihi içinde, s. 351-404
11	Economic Development and Social change in Turkey between 1960-1980	Çağlar Keyder, "İktisadi Gelişmenin Evreleri", Cumhuriyet Dönemi Türkiye Ansiklopedisi içinde, s. 1065-1073
12	The Military Intervention in 1980 and the Rise of the Neo-Liberalism	Tülay Arın, "Serbest Piyasa Mitosu", Yüzyıl Biterken Cumhuriyet Dönemi
13	Gender Politics in Turkey	NA
14	The Constitutions in Turkey	Mümtaz Soysal ve Fazıl Sağlam, "Türkiye'de Anayasalar", Cumhuriyet Dönemi Türkiye Ansiklopedisi içinde, s. 18-54
15	General Overview and Discussion	NA
16	FINAL	NA

## Course Books

None formally given.

# Computer Project

*Make students to gain experience about hardware and software related subjects with projects that combine them.*

<b>Week</b>	<b>Subjects</b>	<b>Related Preparation</b>
1	Project topic research	Yes
2	Determination of the project topic	Yes
3	Evaluation of related works about the project topic	Yes
4	Preparation of the feasibility report	Yes
5	Determination of application details and modules	Yes
6	Database design	Yes
7	Implementation	Yes
8	Submission of the first progress report	Yes
9	First project consultation	Yes
10	Implementation	Yes
11	Implementation	Yes
12	Implementation	Yes
13	Submission of the second progress report	Yes
14	Second project consultation	Yes
15	Implementation	Yes
16	Presentation of project	Yes

## Course Books

None given formally. Every student receives an individual project, of which the responsibility of finding appropriate resources are due to the student.

# Software Engineering

*Teaching the processes and methods of implementing high-quality and economic software*

Week	Subjects	Related Preparation
1	Introduction to Software Engineering	NA
2	Software Development Life Cycle Models	NA
3	Software Requirement Engineering	NA
4	Software Architecture	NA
5	Object Oriented Analysis and Design	NA
6	Laboratory: UML Modeling Tools	NA
7	Software Testing	NA
8	Software Quality Management	NA
9	Software Maintenance - Reuse - Configuration Management	NA
10	Mid Term	NA
11	Software Project Management I	NA
12	Software Project Management II	NA
13	Agile Software Development Process Model	NA
14	Software Process Improvement, CMMI, SPICE	NA
15	Presentation of the Students' Term Projects	NA
16	Final Exam	NA

## Course Books

- Pressman R., Software Engineering, 6th ed., Mc Graw Hill.
- Sommerville I., Software Engineering, 8th ed. (2006), Prentice Hall
- Larman C., Applying UML and Patterns, 2nd ed. (2002), Prentice Hall.

# Occupational Terminology I

*The aim of the lecture is to teach basic terminology in Computer Engineering area*

Week	Subjects	Related Preparation
1	Programming Languages concepts, evaluation criterias, classes and realization techniques	NA
2	Basic concepts and applications of Remote Sensing	NA
3	Database management systems, models, data warehouse and data mining	NA
4	Basic concepts and applications of Multimedia Systems	NA
5	Basic concepts and applications of Pattern recognition	NA
6	Midterm Exam	NA
7	Basic concepts and applications of System Simulation	NA
8	Basic concepts and applications of Machine Learning	NA
9	Basic concepts and applications of bioinformatics	NA
10	Green technology and electronics disposal	NA
11	IT laws and basic concepts	NA
12	Midterm Exam	NA
13	Basic concepts and applications on Wireless Sensor networks	NA
14	Examination of sample papers	NA
15	Examination of sample papers	NA
16	Final exam	NA

## Course Books

None formally given. The lecture consists a semester of presentations made by various teachers and professionals thus not required.

# Economics

*In this course, the aim is to inform the students on the basic principles of the economy and economic practices in terms of economics as a discipline.*

Week	Subjects	Related Preparation
1	What is science? Economics and the problems of an economy.	Ekonomi Konusunda Temel Bilgiler I, p. 1-43.
2	Units of production and the aim of the producer, factors of production, the concept of 'term' in economics.	Ekonomi Konusunda Temel Bilgiler I, p. 43-55.
3	Production function and isoquant curves, economies of scale.	Ekonomi Konusunda Temel Bilgiler I, p. 55-70.
4	The law of diminishing returns, decision making with respect to the long-run.	Ekonomi Konusunda Temel Bilgiler I, p.70-87.
5	Costs in the short-run and in the long run.	Ekonomi Konusunda Temel Bilgiler I, p. 87-112.
6	Income of the supplier, the principle of profit maximization, producer's equilibrium.	Ekonomi Konusunda Temel Bilgiler I, p. 112-123.
7	Supply curve of the single supplier and the market, shifts in the supply curve, supply elasticities.	Ekonomi Konusunda Temel Bilgiler I, p.123-134.
8	1st midterm exam.	NA
9	The consumer and the aim of the consumer, consumer's equilibrium, the concept of 'utility'.	Ekonomi Konusunda Temel Bilgiler I, p. 134-142.
10	Utility function and budget line.	Ekonomi Konusunda Temel Bilgiler I, p. 142-150.
11	The explanation of consumer's behaviors with the utility function and budget line.	Ekonomi Konusunda Temel Bilgiler I, p. 150-165.
12	2nd midterm exam.	NA
13	The demand function, total demand curve, demand elasticities.	Ekonomi Konusunda Temel Bilgiler I, p. 165-208.
14	Price formation and markets, perfect competition market.	Ekonomi Konusunda Temel Bilgiler I, p. 208-243.
15	Monopoly market, imperfect competition markets.	Ekonomi Konusunda Temel Bilgiler I, p. 243-261., p. 272-300.
16	Final Exam.	NA

## Course Books

- Ekonomi Konusunda Temel Bilgiler I, Prof.Dr. Naci Kepkep, 2nd Edition, Filiz Kitabevi, Istanbul, 1997.



# Artificial Intelligence

*Gain the ability to problem solving with artificial intelligence algorithms.*

Week Subjects		Related Preparation
1	Course Introduction	NA
2	The history of AI	NA
3	Blind Search Algorithms	NA
4	Heuristic Search Algorithms	NA
5	Local Search Algorithms	NA
6	Genetic Algorithms	NA
7	Game Algorithms	NA
8	Reasoning Mechanisms	NA
9	First Visa	NA
10	Prolog Programming Language	NA
11	Knowledge Representation	NA
12	Expert Systems	NA
13	Machine Learning Algorithms-1	NA
14	Machine Learning Algorithms-2	NA
15	Project Presentations	NA
16	Final Exam	NA

## Course Books

None given

# Introduction to Natural Language Processing

*Introduce Natural Language and its applications; Show its possible applications/realizations and associated constraints*

## Week Subjects

- 1 Introduction to Natural Language Processing
- 2 Linguistic Essentials
- 3 Language Models
- 4 Grammar and Languages
- 5 Syntactic Analysis
- 6 Morphological Analysis
- 7 Hidden Markov Models
- 8 Introduction to Machine Learning
- 9 Midterm Exam
- 10 Text Categorization
- 11 Information Retrieval
- 12 Text Indexing and Retrieval
- 13 Question Answering
- 14 Collocations
- 15 Presentation of Term Project

## Related Preparation

Foundations of Statistical Natural Language Processing Section 1  
Foundations of Statistical Natural Language Processing Section 3  
Foundations of Statistical Natural Language Processing Section 6  
Foundations of Statistical Natural Language Processing Section 11  
Foundations of Statistical Natural Language Processing Section 10  
Foundations of Statistical Natural Language Processing Section 10  
Foundations of Statistical Natural Language Processing Section 9  
Introduction to Machine Learning, MIT  
Midterm Exam  
Foundations of Statistical Natural Language Processing Section 16  
Foundations of Statistical Natural Language Processing Section 15  
Foundations of Statistical Natural Language Processing Section 15  
Speech and Language Processing Section 23  
Foundations of Statistical Natural Language Processing Section 5  
Presentation of Term Project

**Course Books**

- Natural Language Understanding, J.Allen, Benjamin-Cummings
- Speech and Language Processing, Jurafsky and Martin, Prentice Hall
- Foundations of Statistical Natural Language Processing, C. D. Manning, H. Schütze, MIT
- Handbook of Natural Language Processing, R. Dale, H. Moisl, H.Somers, Marcel Dekker

# Introduction to Data Mining

*The objective of data mining is to find useful patterns in bulky data and to use discovered patterns to help explain behavior or to predict future outcomes.*

## Week Subjects

Week Subjects		Related Preparation
1	Introduction to Data Mining	Textbook1- Chapter 1
2	Data Mining Concepts	Textbook 2-Chapter 1
3	Preparing the Data	Textbook 2-Chapter 2
4	Data Reduction	Textbook 2-Chapter 3
5	Statistical Classification Method (Naïve Bayes)	Textbook 2-Chapter 4
6	Decision Trees and Decision Rules	Textbook 2-Chapter 7
7	Clustering and Similarity Measures	Textbook 2-Chapter 6
8	Clustering Methods(K-Means)	Textbook 2-Chapter 6
9	Clustering Methods(Hierarchical)	Textbook 2-Chapter 6
10	Evaluation of Classification Methods	Textbook 2-Chapter 4
11	Midterm Exam	NA
12	Association Rules	Textbook 2-Chapter 8
13	Classification with Artificial Neural Networks	Textbook 2-Chapter 9
14	Project Presentation	NA
15	Project Presentation	NA
16	Final Exam	NA

## Course Books

- Textbook1: Data Mining , J. Han – M. Kamber, Morgan-Kaufman, Academic Press, 2001, ISBN: 1-55860-901-6
- Textbook2: Data Mining – Concepts, Models, Methods and Algorithms, Mehmed Kantardzic, ISBN:0-471-22852-4

# Occupational Terminology 2

*The aim of the lecture is to teach basic terminology in Computer Engineering area*

Week	Subjects	Related Preparation
1	Advanced approaches on software development, basic concepts and terminology	NA
2	System analysis and design. Basic conceptson on management information systems. Object oriented analysis and design.	NA
3	Social networks	NA
4	Basic concepts on robotics	NA
5	Autonomous Robotic applications	NA
6	Midterm Exam	NA
7	Probabilistic Mapping Algorithms	NA
8	Basic concepts and applications on artificial intelligence	NA
9	Basic terminology and applications on signal processing	NA
10	Compilers, language processors, compiler methods and termimology	NA
11	Processing biomedical signals	NA
12	Midterm Exam	NA
13	E-commerce and digital signiture	NA
14	Advanced applications of wireless sensor networks	NA
15	Examination of sample papers	NA
16	Final exam	NA

## Course Books

None formally given. The lecture is structured as semester long presentations on various topics by various teachers and professionals, thus not required.

# Data Communication

*Students will obtain a detailed view of the first four layers of OSI reference model and understand how LAN and WANs are operating. The problems concerning data transmission will be discussed. Students will learn recent data communication technologies*

Week	Subjects	Related Preparation
1	Introduction to data communication (Standards used on data communication, Architectural models)	Related reading form reference books
2	OSI Referens model , Layers and their functions	Reading on OSI Ref Model
3	Signaling and signal encoding	Related reading form reference books
4	Parallel and serial transmission, Communication media and their technical specs	Related reading form reference books
5	Multiplexing (TDM, FDM)	Related reading form reference books
6	Error detection and error correction techniques	Related reading form reference books
7	Data Link Control Techniques , Flow control	Related reading form reference books
8	Mid Term Exam- 1 and evaluation & Subject Assignment	
9	Synchronous and asynchronous data link protocols	Examples on HDLC
10	LAN technologies IEEE 802 project and IEEE 802.3	Related reading form reference books
11	LAN technologies continued, IEEE 802.4, 802.5, 802.11	Related reading form reference books
12	Connectionless and connection oriented services, Switching	Related reading form reference books
13	Mid Term Exam- 2 and evaluation & Report Submission	
14	Presentations on different communication technologies (X.25, ISDN, FR, ATM, xDSL.)	Related reading form reference books
15	Communicaition Equipments, TCP/IP Model, Security issues	Related reading form reference books
16	Final Exam	NA

## Course Books

- Introduction to Data Communications & Networking, Behrouz Foruzan

- Computer Networks 2e, Andrew S. Tanenbaum
- Data Networks: Concepts, Theory and Practice, Uyles D. Black
- Routing & Switching: Time of convergence, Puzmanova

# Compiler Design

*Basic knowledge of fundamentals of programming languages, compiler functions and stages, interaction between compilers and programs/programming languages.*

Week	Subjects	Related Preparation
1	Definition of course and basic terms	NA
2	Introduction to Compiling, Phases of Compiling	NA
3	Defining functions of Compilers by a Single Pass Compiler	NA
4	Lexical Analysis, Production of Tokens	NA
5	Programming Language Definitions using BNF and CFG	NA
6	Syntax Analysis, Parse Tree	NA
7	Semantic Analysis	NA
8	Type Checking, Symbol Tables	NA
9	Midterm	NA
10	Intermediate Code Representation	NA
11	Intermediate Code Production	NA
12	Target Code Production	NA
13	Machine Independent Code Optimization	NA
14	Instruction Level Parallelism	NA
15	Review	NA
16	Final Exam	NA

## Course Books

- Aho, Sethi, Ullman, "Compilers: Principles, Techniques, and Tools 2E", Addison-Wesley, 2006



# Computer Networking Techniques

*This course aims at teaching the students the analysis, design and implementations of computer networks*

Week	Subjects	Related Preparation
1	Network layer, its definitions and fundamentals of operation	NA
2	Routing in the network layer	NA
3	Congestion in the network layer	NA
4	Analysis of IP protocol	NA
5	Analysis of ICMP, BOOTP, DHCP protocols in the IP protocol	NA
6	Midterm	NA
7	Definition of the transport layers, its functions and principles of operation	NA
8	Connection-oriented and connection-less transport layers	NA
9	Quality of service and its effect in the transport layer	NA
10	User Datagram Protocol as an example of connection-less transport layer protocol	NA
11	Transmission Control Protocol as an example of connection-oriented transport layer protocol	NA
12	Session and presentation layers	NA
13	Midterm	NA
14	Application layer	NA
15	Example TCP/IP applications	NA
16	Final exam	NA

## Course Books

- Computer Networks, Andrew S. Tanenbaum, Prentice Hall
- The Communications Handbook, Jerry D. Gibson, CRC Press
- Unix Network Programming Volume 1, 2, W. Richard Stevens, Prentice Hall

# Formal Language and Automata

*To improve programming language skills by achieving basic knowledge of classification and definition of languages, and relation to automata and their functions.*

Week	Subjects	Related Preparation
1	Course Introduction and Basic Terms	NA
2	Grammars And Chomsky Hierarchy	NA
3	Regular Grammars	NA
4	Context Free Grammars, Parse Trees	NA
5	CFG Notation	NA
6	BNF Notation	NA
7	Left Recursion and Elimination, Pumping Dilemma	NA
8	Decision Problem, Normal Forms, Pushdown Automata	NA
9	Midterm	NA
10	Context Sensitive Grammars, Linear Bounded Automata	NA
11	Unrestricted Grammars, Turing Machines	NA
12	Turing Machines, Church-Turing Hypothesis	NA
13	Codes, Schutzenberger Criteria	NA
14	Prefix Codes, Bounded Delay Codes	NA
15	Optimum Codes, Huffman Algorithm	NA
16	Final Exam	NA

## Course Books

- John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman "Introduction to Automata Theory, Languages, and Computation 2E."
- Harrison, M.A.: Introduction to Formal Language Theory. Addison-Wesley
- Ü. Yarimağan, "Özdevinirler (Otomatlar) Kuramı ve Biçimsel Diller, 2E", Seckin Yayınevi

# High Performance Programming

*This class is not listed in the course list, though it is present in my courses studied. This is probably by mistake. The course introduced elementary ideas regarding the parallelization of algorithms and modern big data processing tools.*

# **The Social Structure of the Ottoman Empire**

*To provide the students with some of the main concepts, problems and informations of Ottoman history and to improve their understanding present problems of the Balkan and Middle Eastern States.*

Contents of course is not available.

## **Course Books**

- Osmanlı Devleti ve Medeniyeti Tarihi, 2 cilt, ed. E. İhsanoğlu, İstanbul 1994.
- Osmanlı İmparatorluğu'nun Ekonomik ve Sosyal Tarihi, 2 cilt, ed. Halil İnalcık ve D. Quataert, İstanbul 2001-2004.
- Ömer Lütfi Barkan, Osmanlı Devleti'nin Sosyal ve Ekonomik Tarihi, Tedkikler, 2 cilt, İstanbul 2000.
- Suraiya Faroqhi, Osmanlı Tarihi Nasıl İncelenir?, İstanbul 2001.

# Graduation Thesis

*Make students to gain experience about hardware and software related subjects with projects that combine them.*

<b>Week</b>	<b>Subjects</b>	<b>Related Preparation</b>
1	Project topic research	Yes
2	Determination of the project topic	Yes
3	Evaluation of related works about the project topic	Yes
4	Preparation of the feasibility report	Yes
5	Determination of application details and modules	Yes
6	Database design	Yes
7	Implementation	Yes
8	Submission of the first progress report	Yes
9	First project consultation	Yes
10	Implementation	Yes
11	Implementation	Yes
12	Implementation	Yes
13	Submission of the second progress report	Yes
14	Second project consultation	Yes
15	Implementation	Yes
16	Presentation of project	Yes

## Course Books

None formally given.

# Multimedia Systems

*This course will give information about principles and current technologies of multimedia systems. Representing, processing, and retrieving multimedia data such as sound, music, image, animation, video and graphics will be discussed.*

Week	Subjects	Related Preparation
1	Introduction to Multimedia Systems	NA
2	Multimedia Tools and Libraries (Matlab, SDL, OpenCV and Others)	NA
3	Information Theory and Transmission	NA
4	Lossless Compression	NA
5	Lossy Compression	NA
6	Image Processing and Analysis in Multimedia Applications	NA
7	Audio Analysis, Compression and Standards	NA
8	Midterm-1	NA
9	Motion and Video Compression	NA
10	Content based Multimedia Retrieval	NA
11	Adobe Flash and vectorized drawing and animation	NA
12	Adobe Photoshop and pixel based drawing	NA
13	Processing Software: Basic open source software to get ready simple drawing and animation <a href="http://www.processing.org/">http://www.processing.org/</a>	NA
14	Processing Software: <a href="http://www.processing.org/">http://www.processing.org/</a>	NA
15	Hot topics of designing Graphical User Interface	NA
16	Final Exam	NA

## Course Books

- Fundamentals of Multimedia by Li and Drew, Prentice Hall, ISBN-13: 978-0130618726