MUNZUR UNIVERSITY
FACULTY OF ENGINEERING
COMPUTER ENGINEERING

Course Contents
(Starting from the 2021-2022 Academic Year)
1th Term

TRD101 TURKISH LANGUAGE-I 2 0 2 AKTS:2

The definition and functions of the language, giving information about the birth of languages; uncovering the differences between written language and spoken language; the place of Turkish in world languages; historical dialects of Turkish language, contemporary dialects, historical periods of Turkish language, works written in these periods; alphabets that Turks used throughout history.

Supplementary Textbooks
Zeynep Korkmaz ve ark., Türk Dili ve Kompozisyon Bilgileri, 6. Baskı, Ankara: Yargı Yayınevi, 2003, Yusuf Çotuksöken, Türk Dili, c. I-II, Papatya yay., 2003, Akın Önen, Türkçeyi Türkçe Konuşmak (Diksiyon - Spikerlik - Etkili Konuşma), İnkılap Yayinevi, İstanbul, 2007, Mustafa Durmuş, Türk Dili El Kitabı, Grafiker Yay., 2009, Muharrem Ergin, Türk Dil Bilgisi, Bayrak Basım Yayım Tanıtım, İstanbul,İbrahim Delice, Türkçe Sözdizimi, Kitabevi Yay., 2007, Türkçe Sözlük, Tdk Yayınları, Ankara,2011, Güncel Türkçe Sözlük ve Yazım Kılavuzu, Tdk Yayınları,2007.

YDİ101 FOREIGN LANGUAGE- I 2 0 2 AKTS:2

Verb to be Articles: A, AN, THE Subject Pronouns Possessive adjectives, There is / There are What? / Which? / Who? Have got / has got, Some / any Much / many / a lot of How many / how much Countable / uncountable nouns Possessive pronouns, Prepositions Also / too / either İmperatives The Present Continuous Tense Object pronouns, The Simple Present Tense Adjectives and adverbs (be) going to Must / have to, Verb to be (past) The Simple Past Tense The Past Continuous Tense When / While, So / because Superlatives Comparatives and Superlatives, The Present Perfect Tense Since / for Ever / never / just / already / yet Used to / be used to, The Simple Future Tense May / might Could / be able to Should / ought to Would like to Although / In spite of, The Past Perfect Tense After/ before/ until The passive Voice Noun Clauses, The Present Perfect Continuous Tense The Future Continuous Tense, Gerunds and İnfinitives Relative Clauses The future Perfect Tense

Supplementary Textbooks
Top Notch Fundamentals, New Headway, Focus On Grammar, English Language Practice-Michael Vince

TBM101 GENERAL MATHEMATICS-I 3 2 4 AKTS:6

Examination of sets and their properties. Definition of functions, finding domain and range set and special functions and graphics. Definition and properties of limit, intermediate value, Balzano and sign protection feature theorems, uncertainties in limit calculations. What is continuity? Function is continuous or not. Derivative concept, properties and derivatives of some functions, L'Hospital rule, geometric and physical interpretation of the derivative, concavity and convexity of a curve, maximum and minimum problems, curve drawings.

Supplementary Textbooks

Genel Matematik, Mustafa Balcı, Balcı yayınları, 2003.,Thomas Calculus, 11.Edition, Pearson Addison-Wesley Publishing Company– 2005, Kalkülüs Eksiksiz Bir Ders Cilt 1, Robert A. Adams , Christopher Essex, PALME YAYINCILIK

TBF101 GENERAL PHYSICS-I 3 2 4 AKTS:6

Physics and Measurement. Scalar and Vector Quantities. Motion in One Dimension. Motion in two and three dimensions. Newton's Laws of Motion. Application of Newton's Laws of Motion. Work and Kinetic Energy. Potential Energy and Conservation of Energy. Thrust, Linear Momentum and Collisions. Rotation of a Rigid Object. Rolling motion and angular momentum. Static and Balance. Vibration Motion. Law of mass-attraction.

Yardımcı Ders Kitapları

Serway Fizik 1: Mekanik, Mekanik Dalgalar ve Termodinamik, ISBN:975-8624-22-9, Çeviri Editörü: Kemal ÇOLAKOĞLU, W.E. GETTY ,KELLER MJ STOVE, 1993, Fizik I, Literatür Yayıncılılk, ISBN:975-7860-53-. Halliday,D.,Resnick,R.,Walker,J., 1997, Fundamentals of physics extended fifth edition, John Wiley and Sons. ISBN:0-471-10559-7.

BMÜ111 ALGORITHMS AND PROGRAMMING- I 3 2 4 AKTS:9

Basic concepts in computer programming. Developing algorithms by formulating and step-by-step resolving problems, creating workflow charts. Concepts related to structured programming. Data types and variable definitions. Basic command structure. Condition and loop commands. Single and multidimensional array in programming languages. Application: Experimental studies on the development of sample programs for the consolidation of basic programming concepts in algorithm and programming-1. Current structured programming language, compiler and ready-to-use software are also included within the scope of this lab to the extent possible.

Supplementary Textbooks

Java, Musa Çavuş, Seçkin Yayınları, 2010.
Java ile Programlama ve Veri Yapıları, Bülent Çoban, Pusula Yayıncılık, 2010.

BMÜ101 INTRODUCTION TO COMPUTER ENGINEERING 3 0 3 AKTS:5

Definition of Computer Engineering and introduction of department. Ethics of Engineering. Boolean Algebra. Algorithms and Flow Diagrams. Programming Languages. Operating systems. Microprocessors and Assembly Programming. Network. Data structures. Software Engineering. Database management systems. Artificial intelligence. Hardware Engineering.

Supplementary Textbooks

Elektrik ve Bilgisayar Mühendisliği'ne Giriş, C. B. FLEDDERMANN, M. D. BRADSHAW, Çeviren: Erhan AKIN, Nobel Dağıtım, Ankara, 2003.
Rıfat Çölkesen, "Bilgisayar Mühendisliğine giriş", Papatya Yayıncılık Lecture notes

DİJ111 DIGITAL LITERACY 2 0 2 AKTS:3

Internet Technologies; To be able to define the basic concepts of the Internet, to explain the development process of the Internet, to compare Web browsers, to explain the functions of search engines, to list e-Government services. Portable Technologies; To be able to list the types of portable technologies, to explain portable technologies and the features of portable technologies, to define services and protocols related to portable technologies. Social networks; To be able to explain the general features of Web 2.0 and social networks, To be able to explain the use of social networks for different purposes, To be able to list the most used social networking sites, To be able to distinguish the concepts of media literacy and media fluency. Technology; Society and Human, To be able to summarize the use of technology and people's lifestyles in hunter-gatherer, agricultural, industrial and information societies, To be able to define technology philosophies, To be able to explain socialization in social networks and people's self-presentation behaviors, To be able to explain human-computer interaction. Information Technology Ethics; To be able to explain the concept of IT ethics and its importance, to be able to define IT and Internet law, to be able to explain the approaches and theories related to ethics, to be able to explain the ethical rules that must be followed on the Internet and social networks, to be able to define Open Educational Resources, to be able to explain the types of Creative Commons (CC) licenses. Technology and Lifelong Learning; To be able to distinguish lifelong learning and its differences from traditional learning, to explain the concepts associated with lifelong learning, to explain the basic principles and strategies of lifelong learning, to identify the basic features of Massive Open Online Courses used in lifelong learning and their differences with traditional learning. Cloud computing ; To be able to explain cloud computing and its features, to define cloud computing components and infrastructure, to list cloud computing service delivery models, to list the advantages and limitations of cloud computing services, to list the applications that end users can benefit from. Technologies of the Future; To be able to explain technological development, to list the information and communication technologies that shape our day, to give examples of frontier technologies, to explain technological developments in the near future, to discuss technological developments at the thought stage, to compare ideas about the point of technological development.

Supplementary Textbooks

- Anadolu Üniversitesi Açıköğretim Sistemi tarafından hazırlanmış olan PDF, ePUB, MOBI ve HTML5 formatlarındaki elektronik kaynaklar
- Dersle ilgili her türlü kitap, video, e-kitap, v.b. kaynak

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2th Term

TRD102 TURKISH LANGUAGE-II 2 0 2 AKTS:2

Providing information about spelling rules and punctuation marks and reinforcing them with examples; giving information about correct and effective curriculum vitae and petition writing; to introduction oral expression types and giving characteristics of oral expression types; to more beautiful and impressive writing and speaking to make reading and writing applications.

Supplementary Textbooks
Zeynep Korkmaz ve ark., Türk Dili ve Kompozisyon Bilgileri, 6. Baskı, Ankara: Yargı Yayınevi, 2003, Yusuf Çotuksöken, Türk Dili, c. I-II, Papatya yay., 2003, Akın Önen, Türkçeyi Türkçe Konuşmak (Diksiyon - Spikerlik - Etkili Konuşma), İnkılap Yayinevi, İstanbul, 2007, Mustafa Durmuş, Türk Dili El Kitabı, Grafiker Yay., 2009, Muharrem Ergin, Türk Dil Bilgisi, Bayrak Basım Yayım Tanıtım, İstanbul,İbrahim Delice, Türkçe Sözdizimi, Kitabevi Yay., 2007, Türkçe Sözlük, Tdk Yayınları, Ankara, 2011, Güncel Türkçe Sözlük ve Yazım Kılavuzu, Tdk Yayınları, 2007.

YDİ102 FOREIGN LANGUAGE- II 2 0 2 AKTS:2

Introducing Yourself, The Verb "to be", Numbers, The Alphabet, Possessive Adjectives, Have/Has, The Simple Present Tense, The Time, Days of the Week, Prepositions of Time, Object Pronouns, This/That, Can

Supplementary Textbooks
Top Notch Fundamentals, New Headway, Focus On Grammar
New Headway Beginner Student's Book Joan Soars, Liz Soars, Oxford University Press New Headway Beginner Workbook Joan Soars, Liz Soars, Oxford University Press Redhouse Dictionary Basic English Grammar Betty Azar www.seslisozluk.com

TBM102 GENERAL MATHEMATICS-II 3 2 4 AKTS:6

Indefinite integral and properties, Integral of trigonometric functions, Definite integral and properties, Area, volume calculation, calculating the length of the arc, Finding the area of a rotational surface, Finding moment and center of gravity, Improper integrals, Arrays and series, Coordinate systems.

Supplementary Textbooks
Thomas Calculus 1-2, 11.Edition,PearsonAddison-Wesley Publishing Company– 2005, Genel Matematik 1-2, Mustafa Balcı, Balcı yayınları, 2003,
Kalkülüs Eksiksiz Bir Ders Cilt 1-2, Robert A. Adams , Christopher Essex, PALME YAYINCILIK

TBF102 GENERAL PHYSICS-II 3 2 4 AKTS:6

Load and matter concepts. Electric field. Gauss's law. Electrical potential. Capacitors and Dielectric. Current and resistance. Direct current circuits. Magnetic field. Sources of magnetic field. Ampere's law. Faraday's law of induction. Self-induction and RL circuits. Alternating currents. Maxwell equations, electromagnetic waves.

Supplementary Textbooks

Physics for Scientist and Engineers with Modern Physics, R. A. SERWAY, Vol. II, Sounders Collage Publishing, 1992. Fundamentals of Physics, H. RESNICK, Vol II, John Wiley and Sons, 1981.

BMÜ112 ALGORITHMS AND PROGRAMMING- II 3 2 4 AKTS:9

Basic concepts in object oriented approach. Introduction to learning an object oriented programming language. Class, object, inheritance, polymorphism, abstract class and interface, contrary concepts. Application: Experimental studies on developing sample programs for consolidation of basic programming concepts, application on computer and documentation in report form. Some of the current structural and object oriented programming language, compiler, and ready-to-use software are also included within the scope of this lab to the extent possible.

Supplementary Textbooks

Java Tasarım Şablonları ve Yazılım Mimarileri, Özcan Acar, Pusula Yayıncılık, 2009.
Java Programlarma Teknikleri, Bora Güngören, Seçkin Yayıncılık, 2004.

BMÜ106 ELECTRIC CIRCUITS FOR COMPUTER ENGINEERING 3 0 3 AKTS:5

Passive direct current circuits; resistance elements and circuits; Kirsof voltage and current laws; analysis of loop currents and node voltages, linearity, superposition, Thevenin and Norton equivalents; operational amplifiers; and energy storage elements: inductance and capacitance, analysis of first order circuits, time constant, sinusoidal steady-state analysis; phasors, resistors, average power flow, AC power, maximum power transmission.

Supplementary Textbooks

Elektroteknik-2 Ders Notları (Fotokopi), Prof. Dr. Şevki HOŞAĞASI.
Linear and Nonlinear Circuits, O. L. CHUA, C. A. DOSER, E. S. KUH, Mcgraw-Hill, 1987.
Elektrik ve Bilgisayar Mühendisliği'ne Giriş, Çeviren: Erhan AKIN, Nobel Yayın Dağıtım, 2003.

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3th Term

BMÜ231 DIGITAL DESIGN 3 0 3 AKTS:5

Digital systems, number systems, binary codes, error detecting and error correcting codes. Boolean algebra, switching algebra, binary operations and Boolean functions. Minimization of Boolean functions. Combinational logic, logic gates, analysis of combinational circuits, circuit design with logical gates. Integrated circuits, design with MSI chipsets, ROM, PLA. Synchronous sequential circuits, memory elements, analysis and design procedures. Registers, counters, RAM. Asynchronous sequential circuits.

Supplementary Textbooks
Sayısal Tasarım, M. Morris Mano, Litaratür Yayıncılıki 2002
Lojik Tasarımın Temelleri Ve Uygulamaları, Şirzat Kahramanlı Muciz Özcan, Dünya Kitapevi, 2002

BMÜ241 DISCRETE STRUCTURES FOR COMPUTER SCIENCE 3 0 3 AKTS:4

Logical implications of logic, qualifiers and qualitative expressions, Theorems and proofs, Set theory, Relations; sorting and equivalence, Functions; Cardinality and bijection, Mathematical Induction, Basic counting rules; Permutation and combination, Binomial coefficients, Pigeonhole principle, Discrete probability, plots.

Supplementary Textbooks
Ralph P. Grimaldi, Discrete and Combinatorial mathematics, Addison-Wesley, 2006, 2 edition
Kenneth H. Rosen, Discrete Mathematics and Its Applications McGraw-Hill.
Richard Johnsonbough, Discrete Mathematics 6. Edition, Pearson,Printice-Hall

BMÜ242 SIGNALS AND SYSTEMS 3 0 3 AKTS:5

Classification of systems and signs. Basic system analysis approaches. Analysis of linear and time-invariant systems. System analysis with Laplace transforms. Block diagrams and stability. Introduction to information systems. System development life cycle, System concept. Information system analysis and modeling. Contingency study. Management function. Data and information concepts, determination of information requirements. System analysis and modeling tools. Languages used in system modeling. Classification of information systems. Computer aided software engineering tools. Ensuring user interaction. The importance of software maintenance. Examination of information system examples.

Supplementary Textbooks
Sinyaller ve sistemler, Hwei P. Hsu, Nobel Yayın Dağıtım, 2002.

BMÜ221 DATA STRUCTURES 3 2 4 AKTS:5

Asymptotic notation, performance measurement, memory / time complexity. Recursive algorithms, recursive relations, introduction to algorithm analysis. Multi-dimensional / triangle / sparse matrix representations. Stack and queue data structures, prefix / infix / postfix expressions. Single / dual-connector (loop) lists. Binary tree, binary search tree, recursive and iterative binary tree traversals, generalized lists. Heaps, priority queues, data structures for discrete sets. Graph representations, Breadth first search and depth first search, spanning tree, shortest path problem. Selection, placement, bubbles, counting, quick, merge, heap, radix sorting algorithms and analysis. AVL trees.

Supplementary Textbooks

Veri yapıları ve algoritmalar, Rifat Çölkesen, Papatya Yayıncılık, 2008.
Data Structures and Algorithms, Alfred V. AhoJeffrey D. Ullman, John E. Hopcroft, Addison Wesley, 1983

TBM203 LİNEER CEBİR 3 0 3 AKTS:4

Matrix theory, determinants, systems of linear equations, solution of systems of equations with matrices, vector spaces, linear transformations, matrix of linear transformation, the change of basis matrix, scalar and vector products, characteristic equations, eigenvalues and eigenvectors, inner product spaces.

Supplementary Textbooks

Uygulamalı Lineer Cebir , Bernard Kolman , David R. Hill, PALME YAYINCILIK
L. Lineer cebir,(Eds. Hilmi Hacısalihoğlu), Schaum serisi, Nobel Yayınevi,

AİT201 THE HİSTORY OF ATATURK PRİNCİPLS AND REVOLUTİON-I 2 0 2 AKTS:2

Basic Concepts. Causes of the Collapse of the Ottoman Empire. Turkish Modernization Movement. The First World War. Turkish National Struggle.

Supplementary Textbooks

AKŞİN, Sina; Türkiye Tarihi, 4. Çağdaş Türkiye, İstanbul, 1989, ATATÜRK, Mustafa Kemal; Nutuk, 3 Cilt, İstanbul, 1973.,Atatürk İlke ve İnkılap Tarihi I-II, Yüksek Öğretim Kurulu, Anakara, 1986, Atatürk'ün Söylev ve Demeçleri, 3 Cilt, Ankara, 1981, AYDEMİR, Şevket Süreyya; Tek Adam, 3 Cilt, İstanbul 1976, BAYAR, Celal; Ben de Yazdım, İstanbul 1972, BERKES, Niyazi, Atatürk ve Devrimler, İstanbul, 1982, AYBARS, Ergün; Atatürk, Çağdaşlaşmak ve Demokrasi, İzmir, 1994, KARABEKİR, Kazım; İstiklal Harbimiz, İstanbul 1969, KOÇAK, Cemil; Türkiye'de Milli Şef Dönemi(1938-1945), Ankara, 1986, ÖZALP, Kazım; Milli Mücadele Dönemi 1919-1922, 2 Cilt, Ankara 1971, TANSEL, Selahattin; Mondros'tan Mudanya'ya Kadar, 4 Cilt, Ankara 1977, TEZEL, Yahya Sezai, Türkiye Cumhuriyeti Döneminde Türkiye Ekonomisi, Ankara, 1988, TUNÇAY, Mete; Türkiye Cumhuriyeti'nde Tek Parti Yönetiminin Kurulması(1923-1931), İstanbul, 1992, TURAN Şerafettin; Türk Devrim Tarihi 5 Cilt, Ankara 1999.

BMÜ201 PROFESSIONAL ENGLISH-I 2 0 2 AKTS:3

The main aim of the course is to provide students with definitions of terminology and terminology related to the fields they are studying and to facilitate the follow up of the literature. The course is designed to improve reading comprehension. Students' critical and analytical thinking abilities are improved in order to achieve the goal. By studying the technical reading materials arranged according to the subjects, it is ensured that the students can evaluate the ideas presented in the pieces, synthesize and respond.

Supplementary Textbooks
Bölüm dersleri ile ilgili İngilizce kitaplar.

BMÜ245 INTELLECTUAL AND INDUSTRIAL PROPERTY RIGHTS 2 0 2 AKTS:3

Introduction and general information to Intellectual Property Law, Intellectual and artistic works. Types of works, Authors and their rights, Neighboring rights. Claims and lawsuits that can be brought in case of rape. Trademarks, trademark types, registration; Rights on the trademark and its protection. Patents, patent types, invention. Registration and protection of patent, Utility models. Integrated circuit topographies Designs. Geographical indications. International regulations in the field of Intellectual Property Rights.

Supplementary Textbooks
Ünal Tekinalp, Fikri Mülkiyet Hukuku, 5. Basım, İstanbul: Vedat Yayıncılık, 2012. Prof. Dr. Sami Karahan, Dr. Cahit Suluk, Doç. Dr. Tahir Saraç, Dr. Temel Nal, Fikri Mülkiyet Hukukunun Esasları; Arıkan, Türk Hukukunda Patent Verilebilirlik Sartları Kaan Dericioğlu, Fikri Haklar Ders Notları

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4th Term

BMÜ234 COMPUTER ORGANIZATION AND DESIGN 3 0 3 AKTS:6

Computer abstraction and technology. Computer language. Instruction set architecture (ISA), ISA design principles, RISC and CISC architectures, assembly and machine language, programming of a RISC machine. Computer arithmetic, arithmetic-logic units, floating-point numbers and arithmetic applications. Processor design, datapath and control applications, micro-programmed control, exception detection. Pipeline and hazardous conditions, pipelined processor design, identify of dangerous situations, ramification estimates and exception handling. Memory hierarchy, principles and structure. Cache performance, virtual memory and segmentation. Input-output devices, I / O performance, I / O interfaces.

Supplementary Textbooks
Sayısal Tasarım, M. Morris Mano, Litaratür Yayıncılıki 2002
Bilgisayar Mimarisi, Şirzat Kahramanlı, Nobel Yayıncılık, 2006

BMÜ236 NUMERICAL METHODS 3 0 3 AKTS:4

Methods employed in engineering problem solving. Error analysis and Taylor series. Roots of equations - The graphical method; The bisection method; The false-position method. Roots of equations - The modified false-position method; Simple fixed-point iteration; The Newton-Raphson method. Roots of equations - The modified Newton-Raphson method; The Secant method; The modified secant method; Muller's method. Methods for solving systems of linear algebraic equations - Mathematical background; Cramer's rule; Gauss-elimination. Methods for solving systems of linear algebraic equations - Gauss-Jordan; LU decomposition; Jacobi and Gauss-Seidel. Curve fitting. Interpolation. Numerical differentiation. Numerical integration. Numerical methods for ordinary differential equations.

Supplementary Textbooks
Yazılım ve Programlama Uygulamalarıyla Mühendisler İçin Sayısal Yöntemler, Raymond P. Canale, Steven C. Chapra, Litaratür Yayıncılık, 2003
Steven C. Chapra, Raymond P. Canale, Numerical Methods for Engineers, McGraw-Hill Education, 2020
Richard L. Burden, J. Douglas Faires, Annette M. Burden, Numerical Analysis. Cengage Learning, 2015

İST201 PROBABILITY AND STATISTICS 3 0 3 AKTS:4

Definition of probability. Probability actions. Application areas of probability and statistics. Discrete probability, randomness, finite probability space, probability measure, conditional probability, Bayes theory. Discrete random variables, binomial, poisson, geometric distributions. Mean and variance. Integer random variables. Continuous random variables, exponential and normal distribution, probability density functions. Mean and variance calculation, central limit theory, composite distributions. Linear regression and correlation. Multiple linear regression. Statistical prediction theory. Chi-square test. Curve fitting. Sampling distributions, nature and means of sampling, random approaches to sampling, simple method, flattened sampling, clustering. Data analysis, graphical and numerical operations. Markov chains, queuing.

Supplementary Textbooks

İstatistiğe Giriş, Vasfi Nadir TEKİN, Seçkin Yayıncılık, 2006.
İstatistik Yöntemleri, Murat KARAGÖZ.
Mühendisler İçin İstatistik, Mehmetçik BAYAZIT, Beyhan OĞUZ, Birsen Yayınevi, 2005.
Uygulamalı Temel İstatistik Yöntemler, Özkan ÜNVER, Hamza GAMGAM, Seçkin Yayınevi, 2006.

TBM204 DIFFERENTIAL EQUATIONS 3 0 3 AKTS:4

Introduction to the theory of differential equations, First order differential equations and their applications, Higher order differential equations, Higher order linear differential equations, Solution with series and series, Solution of differential equations by Laplace transform and Laplace transform.

Supplementary Textbooks

AYDIN,M., KURYEL,B., Diferansiyel Denklemler ve Uygulamaları , Barış üniversite kitabevi, YAŞAR,İ.B., Uygulamalı Diferansiyel Denklemler , Siyasal yayınları,
PALA, Y. Modern Uygulamalı Diferansiyel Denklemler Nobel Yayınları 2006,
BAŞARIR, M. TÜRKER, E.S., Çözümlü Problemlerle Diferansiyel Denklemler, Değişim Yayınları,
William E. Boyce, Richard C. Diprima, Elementary Differential Equationsand Boundary Value Problems. 9 th Ed. John Wiley&Sons, Inc. 2008, Ross, Shepley L.,Differentialequations – 3rd ed. – New York : J. Wiley, 1984.

BMÜ232 DIGITAL ELECTRONICS LAB. 0 2 1 AKTS:3

Integrated circuits, basic circuit, properties, identification of logic families, of relevant theoretical knowledge. Common test : the necessary safety precautions when working with electrical circuits, Laboratory instruments recognition, Oscilloscope, measuring instruments, Learning to use the logic analyzer , the measurement and analysis of different signs . Recognition of basic DC and AC circuit elements and measurement and analysis in a simple electrical circuit. Common test: the recognition of basic electronic circuit elements, simple electronic circuit applications for understands transistors operation in linear and switching mode, measuring the resulting signals and analysis of them in the oscilloscope. Integrated Circuit Logic families: Basic properties of the TTL, MOS, CMOS, HTL, ECL etc. families as a practical extraction and comparison. Families belonging to different applications use the same circuit. Combinational logic gates and circuits: Achievement the function equation from a combinational circuit problem, and realization this with SSI integrated gates. Only be carried out with NAND or NOR gates. Given a combinational logic circuit, removing the definition table from a given combinational logic circuit. Medium Scale Integrated Circuits and Applications: Combinational circuit design applications With MUX, DEMUX, Encoder, and Decoder MSI. Digital Arithmetic: With Adder, 4-bit parallel adder, ALU integrated circuits, mathematical operations to be performed in binary. Analysis with logic analyzer. Flip- Flops and Sequential Circuit Design: Testing of different types of integrated FF, the design of a sequential circuit problem and realization with integrated circuits and analysis. Counters and Registers: analysis of the back and forth counter and shift register integrated, counting, shifting, serial - parallel conversion and related applications and analysis of signals. Monitoring the fluctuation count through Decoder and DSPlayer. Data Conversion: ADC and DAC integrated circuits examination and analysis of input and output signals. Timer Circuits: Clock pulse generating circuit examination and application. With 555 integrated the timing signals obtained.

Supplementary Textbooks

Öğrencilere verilecek deney föyleri

Introduction to Switching Theory and Logical Design, Frederick J. HILL and Gerald R. PETERSON, John Wiley & Sons, USA,.

Fundamentals of Logic Design, H. CHARLES and Jr. ROTH, West Publishing Company, USA,

Digital Design, Morris MANO Prentice Hall, USA.

Hüseyin Ekiz, Mantık Devreleri, Sayısal Elektronik, Değişim Yayınları.

AİT202 THE HİSTORY OF ATATURK PRİNCİPLS AND REVOLUTİON-II 2 0 2 AKTS:2

Atatürk’s reforms. Turkish Foreign Policy in Atatürk’s period. Atatürk’s principles. Political developments in Turkey and the world after 1938.

Supplementary Textbooks

AKŞİN, Sina; Türkiye Tarihi, 4. Çağdaş Türkiye, İstanbul, 1989, ATATÜRK, Mustafa Kemal; Nutuk, 3 Cilt, İstanbul, 1973, Atatürk İlke ve İnkılap Tarihi I-II, Yüksek Öğretim Kurulu, Anakara, 1986, Atatürk’ün Söylev ve Demeçleri, 3 Cilt, Ankara, 1981, AYDEMİR, Şevket Süreyya; Tek Adam, 3 Cilt, İstanbul 1976, BAYAR, Celal; Ben de Yazdım, İstanbul 1972, BERKES, Niyazi, Atatürk ve Devrimler, İstanbul, 1982, AYBARS, Ergün; Atatürk, Çağdaşlaşmak ve Demokrasi, İzmir, 1994, KARABEKİR, Kazım; İstiklal Harbimiz, İstanbul 1969, KOÇAK, Cemil; Türkiye’de Milli Şef Dönemi(1938-1945), Ankara, 1986, ÖZALP, Kazım; Milli Mücadele Dönemi 1919-1922, 2 Cilt, Ankara 1971, TANSEL, Selahattin; Mondros’tan Mudanya’ya Kadar, 4 Cilt, Ankara 1977, TEZEL, Yahya Sezai.

BMÜ316 ALGORİTHM ANALYSİS 3 0 3 AKTS:5

Asymptotic growth rate and asymptotic representations. Basis tools for performance comparison and analysis. Recursive thinking, recursive relationships. At worst, average and best-case analysis. Using master theorem. An example for divide and conquer technique: The multiplication of two n-bit number. An overview to sorting and selection: Sorting in linear time (step, counting and sorting), lower bound for sorting, analysis of heap, heap sort, average-case analysis of placement and quick sort, tournament method, finding the k-th smallest element in linear time. Dynamic programming: multiplication of Matrix series, the longest common subsequence.

Supplementary Textbooks

Introduction to The Design & Analysis of Algorithms, Anany Levitin, Addison Wesley, 2003
Introduction to Algorithms, Third Edition, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, The MIT Press, 2009
Algorithms, Sanjoy Dasgupta, Christos H. Papadimitriou, and Umesh Vazirani., McGraw- Hill, 2006

BMÜ202 PROFESSIONAL ENGLISH-II 2 0 2 AKTS:3

The main aim of the course is to provide students with definitions of terminology and terminology related to the fields they are studying and to facilitate the follow up of the literature. The course is designed to improve reading comprehension. Students' critical and analytical thinking abilities are improved in order to achieve the goal. By studying the technical reading materials arranged according to the subjects, it is ensured that the students can evaluate the ideas presented in the pieces, synthesize and respond.

Supplementary Textbooks

English in Electrical Engineering and Electronics, H. ERICH Giendinning, Oxford University Press, 1985. Bölüm dersleri ile ilgili İngilizce kitaplar.

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5th Term

BMÜ333 Microprocessor 3 2 4 AKTS:6

History of computers, vacuum tubes, transistors, integrated circuits, intel and motorola family. Memory foundations and memory organization, flip-flops, common paths, RAM, ROM, EPROM structures. Differences between microcontroller and microprocessor. Microprocessor architecture and operation, PIC16F877A 8-bit microcontroller structure. 16-bit microprocessors, 8086-8088, logical and physical memories, segmented memory structure, protected. Addressing modes, data addressing modes, program memory addressing. Data transfer commands, address loading commands, string commands. Arithmetic and logic commands, addition, subtraction, division, multiplication, comparison and, or, scroll, rotation. Sequence comparison, program control commands, branch commands, subroutines. Introduction to interrupts, software interrupts, hardware interrupts. 8085 microprocessor software programming examples, use of proteus simulator. PIC16F877A microcontroller software programming examples. PIC16F877A microprocessor software programming examples.

Supplementary Textbooks
Mikroişlemciler ve Bilgisayarlar, Doç. Dr. Haluk GÜMÜŞKAYA, Alfa Yayınları, 2002.
Micropcessors Architecture, Programming, and Applications with the 8085/8080A, S. GAONKAR, Ramesh, Bell and Howell Company, USA,1984.
Mikroişlemciler-Mikrobilgisayarlar ve Assembly Programlama,Turhan ÖZKAN, Beta Yayınları, 1994.

BMÜ329 DATABASE SYSTEMS 3 2 4 AKTS:6

The conceptual and logical issues of the database are covered.For this purpose, the relationship of entity relationship, relational database design, normalization issues will be teached. Relational algebra will be discussed. The structural questioning language will be explained in order to create, query, program, backup and secure the database.

Supplementary Textbooks
Veri Tabanı Sistemleri, Ünal Yarımağan, Akademi&Türkiye Bilişim Vakfı, 2002
Bilgisayar Veri Tabanı Sistemleri, Oya Kalıpsız, Derin Yayınları, 2001
Veri Tabanı Sistemleri, Yalçın Özkan, Alfa Yayıncılık, 2006

BMÜ325 PROGRAMMING LANGUAGES 3 0 3 AKTS:5

History and evolution of languages,Defining languages,translating,basic programming tools,basic pragramming concepts,Types of data and their configuration,Structural programming concepts,subprograms,modulation of program languages, concurrency, logical, object oriented and functional programming concept.

Supplementary Textbooks
Fundamentals of Programming Languages, Ellis Horowitz, W.H. Freeman & Company, 1995

BMÜ313 FORMAL LANGUAGES AND AUTOMATA THEORY 3 0 3 AKTS:4

Finite Automata (deterministic and non-deterministic automata models, lambda-transitions, Mealy and Moore machines, simplification method). Regular sets and expressions, relationship between finite automata and regular expression. Grammar and Languages (Formal grammar and languages, grammar and language classes and properties. Regular grammar and languages, relationship between finite automata and regular grammar). Context-free grammars and languages. Push-down automata - pushdown automata model, relationship between pushdown automata and context free grammar. Turing Machines. Parsing - Parsing: Parsing types, top-down and bottom-up parsing, LL (k) and LR (k) parsing for context-free languages , using finite automata models for LR (k) parsing.

Supplementary Textbooks

Elements of the Theory of Computation (2nd Edition), Harry R. Lewis, Christos H. Papadimitriou, Prentice Hall, 1998.
Introduction to Automata Theory, Languages, and Computation (2nd Edition), John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, IAddison Wesley, 2000.
Özdevinirler Kuramı ve Bçimsel Diller, Ünal Yarımağan, Bıcaklar Kitapevi, 2003

BMÜ393 PROFESSIONAL PRACTICE I 0 2 1 AKTS:2

Professional Practice-1st lesson is taught by weekly lessons, in accordance with the principles that are set in ‘Practical Working (Training) Instruction "and" Tranining Instruction of Students in Department". The germane juries, evaulations by listening presentations on their internship and by asking questions. Giving 1st midterm mark according to the working performance around their training area and taking into consideration the paperwork filled out by job-site. The evaulation of the jury, by listening the presentations of students related with their training and by asking questions. According to the assessment made by the jury, giving the 2nd midterm exam.

Supplementary Textbooks

The student will assure the resourses according to the working subjects made in the summer training job.

BMÜ335 WORKER'S HEALTH AND WORK SAFETY 2 0 2 AKTS:2

Historical development of occupational health and safety, occupational accidents and occupational diseases and their costs, the concept of occupational safety, the importance of occupational safety studies in terms of workforce productivity, basic elements in occupational safety, sources of hazards, the concept of occupational health, psychosocial risk factors, National and International occupational health and safety. organizations related to security, ILO conventions, events that disrupt security: Fire, earthquake and flood.

Supplementary Textbooks

Öğretim elemanının kendisine ait ders notları

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Course Contents
(Starting from the 2021-2022 Academic Year)
6th Term

BMÜ314 OPERATİNG SYSTEMS 3 0 3 AKTS:6

Introduction, what is an operating system, operating system structure, processes, interprocess communication, process scheduling, memory management, virtual memory, page change algorithms, security mechanism, protection mechanism, input / output (I / O) principles and programming, hardware and software deadlocks, distributed operating systems, distributed operating system communication, distributed operating system synchronization, distributed operating system process and processor, distributed filing syste

Supplementary Textbooks
Bilgisayar İşletim Sistemleri, Ali Saatçi, Bıcaklar Kitapevi, 2003
ABRAHAM SILBERSCHATZ, PETER BAER GALVIN and GREG GAGNE, "Operating Systems Concepts", Wiley Andrew S. Tanenbaum, "Modern Operating Systems". Mutlu Avcı, Buse Melis Özyıldırım, Onur Ülgen, "İşletim Sistemleri ve Sistem Programlama", Karahan Kitabevi Bilgisayar İşletim Sistemleri, Ali Saatçi, Bıcaklar Kitapevi, 2003

BMÜ332 COMPUTER NETWORKS 3 0 3 AKTS:6

Computer networks, OSI reference model, layers and functions. Protocols, protocol structures, layer protocols, TCP / IP protocols. Detailed examination of the Transport, Network and Data link layers and header structures, addressing. Static and adaptive routing algorithms. Frame structures, MAC addressing structures. Computer networking concepts, LAN, MAN, WAN topologies. LAN and WAN technologies. Network Devices, NIC, Repeater, HUB, Bridge, Switch, Router, Gateway, the basis information for configuration. WAN technologies. Structured Cabling, Campus, Building and horizontal cabling techniques. Internet addressing, subnets, IP routing, Internet services programs. Network operating systems, DNS, DHCP, FTP, etc. servers and Overview to network management software.

Supplementary Textbooks
Bilgisayar Haberleşmesi ve Ağ Teknolojileri, R. ÇÖLKESEN ve B. ÖRENCİK, 4. baskı, Papatya Yayıncılık, 2003.
Computer Networks and Internets, D. E. COMER, 4th ed., Prentice-Hall, 2004.
Bilgisayar Ağları, D. ÖREN, Papatya Yayıncılık, 2002.
Bilgisayar Ağları, N. BAYKAL, SAS Yayıncılık, 2001.

BMÜ326 SOFTWARE ENGİNEERİNG 2 2 3 AKTS:6

Software development project plan. Software development project management. Software metrics and estimation techniques. Software implementation and documentation. Software testing. Software installation and transition to implementation. Software development standards. Software quality assurance. Risk analysis. Software maintenance. Configuration management. Computer aided software modeling tools.

Supplementary Textbooks

Yazılım Mühendisliği, Erhan Sarıdoğan, Papatya Yayıncılık, 2004
Yazılım Mühendisliği, Ali Arifoğlu - Ali Doğru, Sas Bilişim, 2001

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Course Contents
(Starting from the 2021-2022 Academic Year)
7th Term

BMÜ425 INTERNET PROGRAMMING 2 2 3 AKTS:4

Define basic internet protocols, HTML, JAVA SCRIPT, ASP and ASP.NET. To explain Html and Java languages for internet programming. Defining Script Languages To explain the dynamic Html programming. Explain Server-side programming. Introduce ASP.NET technologies and improve the WEB system. Giving information about the MVC system and developing the website related to these systems. Developing applications related to html, css, js and jquery languages.

Supplementary Textbooks
H.M. Deitel et.al (2002), Internet & Word Wide Web How To Program, Prentice Hall, New Jersey.
H.M. Deitel et.al (2002), Java How to Program, Prentice Hall, New Jersey.
Jim Buyens, Microsoft Frontpage, 2002, Microsoft Press.
Matthew Pizzi, Zak Ruvalcaba, Thomas Myer, Zachariah Ruvalcaba, Greg Holden (2002), Macromedia Dreamweaver MX Unleashed, Sams.

BMÜ439 PROFESSİONAL PRACTICE II 0 2 1 AKTS:2

Professional Practice-2nd lesson is taught by weekly lessons, in accordance with the principles that are set in ‘Practical Working (Training) Instruction "and" Training Instruction of Students in Department ". The germane juries, evaluations by listening presentations on their internship and by asking questions. Giving 1st midterm mark according to the working performance around their training area and taking into consideration the paperwork filled out by job-site. The evaluation of the jury, by listening the presentations of students related with their training and by asking questions. According to the assessment made by the jury, giving the 2nd midterm exam.

Supplementary Textbooks
The student will provide the resources according to the work areas of the workplace where the Summer Internship is conducted.

BMÜ431 C O M P U T E R S Y S T E M S L A B . 0 2 1 AKTS:2

Theoretical preparation to experiments. Virtual Machine programs, features of the Linux Operating System and Shell programming. Distributed Programming with TCP-IP and JAVA. Database Usage in Client-Server Environment. LAN Technologies. Monitoring and evaluation of network traffic. Introduction to cryptography and cryptoanalysis.

Supplementary Textbooks
Experimental documents to be given to students.

BMÜ433 ENTREPRENEURSHIP 2 0 2 AKTS:3

Business, main entrepreneurship approaches, types of entrepreneurship, basic functions of entrepreneurship, motivation for entrepreneurship / motivation, business idea development, business plan and elements, entrepreneurial culture, establishment and development of business, local entrepreneurship and SMEs, international entrepreneurship, entrepreneurship ethics.

Supplementary Textbooks
Girişimcilik, Prof. Dr. Yılmaz ÜRPER
Girişimcilik, MEGEP
Girişimci Olabilirmiyim?, KOSGEB Yayınları
Bir İş Fikri Bulmak ve Test Etmek, KOSGEB Yayınları
Sorumlu Girişimcilik, KOSGEB Yayınları
Şirket yapıları ve Kuruluş Aşamaları, KOSGEB Yayınları

BMÜ401 FINAL PROJECT I 0 2 1 AKTS:4

Graduation Project studies; “Faculty of Eng. To be carried out in consultation with the Project Manager, within the framework of the principles determined in the "Graduation Project Directive" and "Intra-Department Graduation Project Operation Directive". Examining and developing project work under the supervision of the Manager. Giving the 1st midterm exam grade according to the student's study performance. Examining and developing project work under the supervision of the Manager. Giving the second midterm exam grade according to the student's study performance. Writing project studies in a thesis format in accordance with the writing rules and preparing them for presentation. Submission of the Graduation Project.

Supplementary Textbooks
The relevant faculty member will recommend the necessary resources to the student taking the Graduation Project.

BMÜ485 CYBER SECURITY 3 0 3 AKTS:5

Basic concepts related to cyber security, historical development of computer security, information security, information security standards, attack concepts, attack types and attack methods, vulnerability analysis, cyber defense methods, detection of cyber attacks, personal, corporate and national information security, IT law, computer law, cyber law and ethical issues, cyber crimes and their characteristics, protection measures that can be applied against cyber crimes, their features and implementation, computer forensics technologies, data recovery from disk and file systems, data verification, recognition and identification, analysis of file structures according to different operating systems , current developments in computer forensics.

Supplementary Textbooks

Cryptography and Network Security: Principles and Practice, William Stallings, Prentice Hall.
Computer Forensics and Cyber Crime, Marjie T. Britz, Pearson.
Defending Your Digital Assets Against Hackers, Crackers Spies and Thieves, Randall K. Nicolas, Daniel J. Ryan, Julie J.C.H. Ryan.

BMÜ435 PROJECT MANAGEMENT 2 0 2 AKTS:3

Introduction to project and project management, Knowledge areas in project management, Initiating the project, Planning the project I - time management and creating the project team, Planning the project II- estimating costs, planning budgeting and risk management, Execution of the project - CPM and PERT, Monitoring and control of the project , Closing the project, MS-Project 2016 (Working with tasks, Time planning, Time planning with resources, Formatting, Time and resource management, Project views and Reporting).

Supplementary Textbooks

Proje planlama ve yönetimi, (2016), Hulûsi Demir, Hüseyin Avunduk & Mehmet Emre Güler, Nobel Akademik yayıncılık. Proje Yönetimi, (2013), Editör: Hasan DURUCASU, Anadolu Üniversitesi Yayınları, Eskişehir. Project Management: A Managerial Approach, (2011), Jack Meredith, Samuel Mantel, Jonn Wiley and Sons. Project management handbook, (2015), Kuster, J., Huber, E., & Lippmann, R., Springer. Construction project management, (2015), Sears, S. K., Sears, G. A., Clough, R. H., Rounds, J. L., & Segner, R. O., John Wiley & Sons.

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Course Contents
(Starting from the 2021-2022 Academic Year)
8th Term

BMÜ476 VOCATIONAL EDUCATION IN BUSINESS 0 36 18 AKTS:20

It is a program that allows final semester students to receive practical training in companies serving in the field of computer engineering and information technologies. Within the scope of this course, which can also be described as a term internship or intern engineering, students not only learn current and specific technologies in working life; It is expected that the skills of taking part in projects, finding solutions to company problems and working as a team will be developed. The expected outcome of the course is for students to reinforce the knowledge and skills they have acquired during their education by applying them in a qualified workplace throughout the semester and to find solutions to real problems that will be encountered in working life in the light of these acquisitions.

Supplementary Textbooks
Necessary resources will be recommended in the enterprise where vocational training will be received.

BMÜ478 VOCATIONAL EDUCATION COMPLETION PROJECT 4 0 4 AKTS:6

It is the preparation of the vocational training outputs of the final semester students in the business administration, which they receive practically in companies serving in the field of computer engineering and information technologies.

Supplementary Textbooks
Necessary resources will be recommended in the enterprise where vocational training will be received.

BMÜ402 FINAL PROJECT II 0 2 1 AKTS:8

Graduation Project studies; “Faculty of Eng. To be carried out in consultation with the Project Manager, within the framework of the principles determined in the "Graduation Project Directive" and "Intra-Department Graduation Project Operation Directive". Examining and developing project work under the supervision of the Manager. Giving the 1st midterm exam grade according to the student's study performance. Examining and developing project work under the supervision of the Manager. Giving the second midterm exam grade according to the student's study performance. Writing project studies in a thesis format in accordance with the writing rules and preparing them for presentation. Submission of the Graduation Project.

Supplementary Textbooks
The relevant faculty member will recommend the necessary resources to the student taking the Graduation Project.

TECHNICAL ELECTIVE (A)

5th Term

BMÜ353 ARTIFICIAL INTELLIGENCE 3 0 3 AKTS:5

Entrance. Intelligent Agents. Problem Solving Methods. Knowledge and Reasoning. Don't act logically. Expert Systems. Computational methods inspired by nature. Learning from Experience. Statistical Learning Methods. Perception and Vision. Natural Language Processing

Supplementary Textbooks
Russell & Norvig, AI: A Modern Approach, 3rd Ed

BMÜ351 INTRODUCTION TO EVOLUTIONARY COMPUTATION 3 0 3 AKTS:5

Basic concepts, selection strategies, crossover strategies, mutation strategies, genetic algorithms, differential evolution algorithm, evolutionary strategies, evolutionary programming, application development.

Supplementary Textbooks
Instructor's lecture notes

BMÜ357 OBJECT-BASED PROGRAMMING 3 0 3 AKTS:5

Basic principles of object-oriented programming, concepts such as structured programming, object-oriented programming with classes, methods, inheritance, polymorphism, error handling and templates.

Supplementary Textbooks
Instructor's lecture notes

BMÜ359 DIGITAL COMMUNICATION 3 0 3 AKTS:5

Pulse modulation, sampling theorem. Pulse amplitude, pulse duration, pulse site modulation, quantization, coding, converters. Delta modulation, linear delta modulation, adaptive delta modulation. Fixed step adaptive delta modulation, bit memory adaptive delta modulation. Differential pulse code modulation. Baseband digital information transmission, systems, spectrum of baseband signal. Encoding, decoding, modification of the receiver and compatible filters. Intersymbol interference and pulse shaping. Bit error rate in baseband information transmission, bit error probability for binary signals. Error probability for Q-level signals. The relationship between the probability of error and the ratio of signal to noise, adaptive filter. Digital modulation systems, amplitude shift keying, frequency shift keying. Phase shift keying. Differential phase shift keying, Quadrature phase shift keying.

Supplementary Textbooks
Sayısal Haberleşme, Ahmet H.KAYRAN,Erdal PANAYIRCI,Ümit AYGÖLÜ,Sistem Yayıncılık, 1996.
İletişim Kuramı, Haluk DERİN, Murat AŞKAR, ODTÜ Yayını,1987.

BMÜ361 NUMERICAL CONTROL 3 0 3 AKTS:5

Units of continuous and discrete time control systems. Converting continuous-time systems containing zero-holding circuits to discrete-time systems. Pulse transfer function (PTF). PTF of PID controls. Staring of systems containing Laplace and starred Laplace transform. Conversion from s-plane to z-plane. Stability of discrete-time systems. Methods developed for the stability of discrete-time systems. Frequency analysis of discrete time systems. Transient and steady-state responses and performances of discrete-time systems. Variation of characteristic polonum roots of discrete-time systems according to system gain and sampling period. Discrete time controller design with root locus diagram. Frequency response of discrete-time systems. Discrete time controller design with Bode diagram. Time-optimal controller design of discrete-time systems using analytical method. State space model of discrete-time systems. State feedback controller design for discrete time systems.

Supplementary Textbooks

Discrete-Time Control Systems, K. OGATA, Prentice Hall, 1987.
Digital Control System Analysis and Design, C. N. PHILIPS and H. T. NEGLE, Prentice Hall, 1984.
Computer Controlled Systems, K. J. ASTROM and B. WITTENMARK, Prentice Hall, 1984.
Digital Control Systems, P. N. PARASKEVOPOULOS, Prentice Hall, 1996.
Digital Signal Processing, V. K. INGLE and J. G. PROAKIS, PWS Publishing Company, 1997.

BMÜ363 METROLOGY 3 0 3 AKTS:5

Definition and History of Metrology, International Metrology System, National Quality Infrastructure and Metrology System, Basic and General Concepts related to Metrology, International System of Units (SI), Measurement Uncertainty, Calibration.

Supplementary Textbooks

Instructor's lecture notes

TECHNICAL ELECTIVE (B)

6th TERM

BMÜ350 ARTIFICIAL NEURAL NETWORKS 3 0 3 ECTS:5

Artificial Intelligence, Machine Learning, Biological neural networks. ANN usage purposes and history. Training of ANN. Applications of ANNs in various fields. Network topologies, Multilayer perceptron, backpropagation algorithm, Radial Basis Function Networks, genetic algorithms and ANN integration. Matlab applications.

Supplementary Textbooks
Lecture notes belonging to the instructor.

BMÜ352 MOBILE PROGRAMMING 3 0 3 ECTS:5

Developing application software using new technologies for mobile devices. Software development for the Android platform. Using the software development environment. Interface development. Network applications development. Using sensors (GPS, camera, compass, etc.).

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ354 ROBOTIC SYSTEMS 3 0 3 ECTS:5

Description of robots. Classification. Robot characteristics. Kinematics of robots. Rotational movements. Homogeneous transformations. Examples. Inverse kinematic transformations. Workspace analysis and trajectory planning. Differential motion and statics of robots. Manipulator dynamics. Lagrange equations. Examples. Control of robots. State equations. Fixed solutions. Linear feedback systems. Linear feedback systems. Single axis PID control. Special topics.

Supplementary Textbooks

Robotic Systems Lecture Notes, H. ALLİ, F.Ü., 2007.

Robot Analysis and Control, H. ASADA and J. J. E. SLOTINE, Wiley-Interscience 1986.
Fundamentals of Robotics, R. J. SCHILLING, Prentice Hall, 1990.
Industrial Robotics, M. P. GROOVER and at all, McGraw-Hill, 1986.

BMÜ356 MANAGEMENT INFORMATION SYSTEMS 3 0 3 ECTS:5

Management Information Systems basic concepts, information levels, formation, storage, reporting, use in decision-making and security of information. Decision making methods and comparisons. Information about information security and information systems management.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ358 SMART METHODS 3 0 3 ECTS:5

An overview of basic intelligent system structures. Data mining. Decision trees. Neural computing, biological neural networks and learning algorithms. Application areas of Artificial Neural Networks (ANNs). Learning tasks as classification and regression problems. Error calculations. Single Layer Detectors (SPOs). Perceptron learning rule. Incremental learning algorithm for perceptron, error corrected learning. Delta rule, incremental slope descent algorithm. Sigmoidal sensors. Training of sigmoidal sensors on steep slope descent. Multilayer Perceptrons (MCAs). Back propagation learning algorithm. Exemplary and collective learning. Problems that may arise in learning with back propagation. Momentum, and learning rate factor. Learning example. ANN design using a software (MATLAB, C++ etc.). Sharp and blurry clusters. Basic set operations. Fuzzy relationship and combination. My inference is blurry. Fuzzy control and fuzzy expert systems. Mathematical similarity between ANNs and fuzzy systems. Design of fuzzy systems using software. Basic structures of Genetic Algorithms (GAs). A simple GA structure and application.

Supplementary Textbooks

Neural Networks. A Comprehensive Foundation, S. Haykin, Second Edition, Prentice-Hall, Inc., New Jersey, 1999.

Neoro-Fuzzy and Soft Computing, J. S. R. JANG, C. T. SUN, and E. MIZUTANI Prentice Hall,1997.

Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms: Industrial Applications, Lakhmi C. JAIN and N. M. MARTIN, CRC Press, 1998.Digital Signal Processing, V. K. INGLE and J. G. PROAKIS, PWS Publishing Company, 1997.

BMÜ360 COMPUTERIZED GRAPHICS 3 0 3 ECTS:5

Input: Display devices, hard-copy devices, interactive input devices. Point and line: Representation and transformation of points. 2-dimensional translation and homogeneous coordinates. 3-dimensional transformation and projection: Scaling, cutting, translation, rotation and perspective transformations. Plane curves. Space curves: Cubic curves, Parabolic mixture, Bezier curves, B-spline curves. Surface generation: Representation of curvilinear surfaces, two linear surfaces, Lofted surface, Linear Coans surface, bi-cubic surface patch, Bezier and B-splayed surfaces. Roster raster graphics: Line drawing algorithms, Bresenham algorithm, Raster transformation, Area filling, Sampling errors and their removal methods.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ362 COMPUTER ARCHITECTURE 3 0 3 ECTS:5

Principles of computer design and basic computing concepts. The mechanics of running a program. Superscalar operation. Intel Pentium and Pentium Pro processors. PowerPC processors: 600 Series, 700 Series and 7400 processors. Comparison between Intel Pentium 4 and Motorola G4E: Approach and design philosophy. Comparison between Intel Pentium 4 and Motorola G4E:The back end. 64-bit computing and X86-64. G5 processors: IBM PowerPC 970. Caches and performance evaluation. Intel Pentium M, Core Duo and Core2 Duo processors.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ364 COMPILER DESIGN 3 0 3 ECTS:5

Introduction, basic concepts. Programming languages and their features. Lexical analysis. Syntax analysis. Symbol tables. Error detection and correction. Intermediate code generation. Code optimization. Data flow analysis. Code generation. Advanced topics.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ366 FUNCTIONAL PROGRAMMING 3 0 3 ECTS:5

Structure concept. Design and creation of programming language. Syntax, semantics, data concepts. Control structures, parameters, structures at the time of program flow. Functional and logical programming concepts.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ368 SYSTEM SIMULATION 3 0 3 ECTS:5

Dynamic Simulation. User data types, operators and control structures in simulation. Model Generators. Simulation Programming. Simulation Problems.

Supplementary Textbooks

Lecture notes of the instructor himself

TECHNICAL ELECTIVE (D)

6th TERM

BMÜ456 DIGITAL IMAGE PROCESSING 3 0 3 ECTS:5

Introducing the human visual perception system. Sampling and Quantization. Basic gray level transformations. Histogram synchronization and customization. Spatial filtering: Smoothing filters. Spatial filtering: Sharpening filters. Derivative based filters. Introduction to Fourier transform and its basic properties. Low pass filters in the frequency domain. High pass filters in the frequency domain. Fundamentals of morphology. Discontinuity determination. Edge joining and border determination. Thresholding and region-based segmentation.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ462 DATA MINING 3 0 3 ECTS:5

Entrance. Data warehouse and OLAP Technology for data mining. Data Preprocessing. Classification: Basic Concepts, Model Evaluation. Classification: Alternative Techniques (Rule Based, Nearest Neighbor Classifiers). Association Analysis: Basic Concepts and Algorithms. Association Analysis: Advanced Concepts. Cluster Analysis: Basic Concepts. Clustering Analysis: Algorithms, Anomaly Detection. Regression.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ451 MACHINE LEARNING 3 0 3 ECTS:5

Entrance. Concept learning and sorting from general to specific. Decision tree learning. Artificial neural networks. Evaluating Hypotheses. Bayesian Learning. Computational Learning Methods. Example-based learning. Genetic Algorithms. Reinforcement Learning.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ453 SOFTWARE PROJECT MANAGEMENT 3 0 3 ECTS:5

Project management context, project management processes, project integration management, project scope management, project time management, project cost management, project quality management, project human resources management, project communication management, project risk management, project procurement management.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ455 SOCIAL NETWORK ANALYSIS 3 0 3 ECTS:5

Examining and modeling the working mechanisms of different social networks, Fundamentals of graph theory, Basic social network analysis, Adapting these concepts to new web and social network applications

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ457 INFORMATION SECURITY 3 0 3 ECTS:5

What is information security? Protection steps. Information security services, Confidentiality, integrity, Authentication, Accessibility, Accountability, Access control, non-repudiation, Reliability and security in these dimensions. Attacks on security, Passive: Listening, Active: Interrupting, changing, producing, Security mechanisms. Overview of Encryption, Decryption, Conventional (symmetric) encryption, Classical techniques and modern techniques, Public key encryption. Modern Encryption Techniques - LUCIFER, DES, IDEA, BLOWFISH, RC5, RC4, Triple DES. Advanced encryption techniques, US NIST standard basic structures. 128, 192, 256 bit block and key. Key distribution, authentication, Attack resistance. Public Key Cryptography, Asymmetric, creation of a public and a private key pair for encryption and decryption, RSA algorithm. Public key encryption for authentication and session key creation. Symmetric Encryption, Continuous encryption of information at high speeds. Key Distribution, Distribution of public keys, Public Key Authorities (AAO), Public Key Certificates. Certificate validity period (X.509), Distribution of private keys, Needham-Schroeder Protocol, Diffie-Hellman Key Exchange. Digital Signatures, Digest Codes, MD4, MD5, SHA-1, RIPEMD-160, HMAC, RSA digital signatures (RSA encryption), DSS (Digital Signature Standard) digital signatures. Services and Protocols, Authentication Services; Kerberos, X.509 authentication (certificate) service, Electronic Mail services; PGP (Pretty Good Privacy), S/MIME Transport and Network Layer services; SSL and Secure IP (IPsec). Details of services and protocols. Operating systems and network security. Information security policies.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ461 NATURAL LANGUAGE PROCESSING 3 0 3 ECTS:5

Introduction to natural language processing; Semantic processing; Linguistic evaluation (background), Grammar and parsing, Features and augmented grammars, grammars for natural language processing, efficient parsing, and ambiguity resolution. Semantic interpretation; semantic and logical forms, syntax and grammatical association, ambiguity resolution, strategies for ambiguity resolution, and interpretation of noun expressions. Content and Content and world knowledge; knowledge representation and reasoning, local speech contexts and reference, using world knowledge, speech structure, weighing, identifying an agent.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ463 SATELLITE COMMUNICATION 3 0 3 ECTS:5

Introduction to satellite communications. Structures and types of satellites and satellite antennas. Basic concepts such as LNA, LNC, LNB, transponder, footprint, band. TV satellites, GPS satellites, special satellites. Satellite orbits, satellite ground stations. Circuit switched services, packet switched services. Modulation techniques, code division multiplexing. MPEG Distribution Switchboards. Diseq-C switch, cable types. Data broadcast, voice broadcast. VSAT-mobile communication systems. Software techniques in satellite systems. Modeling and simulation. Future developments and applications.

Supplementary Textbooks

Satellite and Cellular Mobile Communication Systems, Prof. Dr. Ergun BAYRAKÇI, Birsen Publishing House, 2002.

Mobile Satellite Communications, S. OHMORI, H. WAKANA and S. KAWASE, Artec House Publishers, 1997.

BMÜ467 WIRELESS COMMUNICATION 3 0 3 ECTS:5

Introduction to wireless communication systems. Wireless communication systems and mobile communication. Mobile cellular communication, capacity, frequency reuse, transmission techniques. Structure of cellular communication systems, public telephone network and subsystems. Radio base station subsystem. switching subsystem (ss), omc subsystem. Cell definitions, cell coverage, selection of cell groups and frequency reuse. Examination of interference effects, channel capacity and traffic calculation, antennas used in cellular communication systems. Propagation rf link analysis in mobile cellular communication systems. Modeling of digital RF communication, source coding, vocoders, channel coding, linear block codes, convolution codes, interleaving, multiple access technique, walsh codes, pn codes. RF link structure, asymmetric links, forward link, reverse link, traffic channels. Speech realization, speech creation, communication stages, speech. transfer, traffic characteristics. Power control and network planning. New generation wireless communication systems and the future of wireless communication systems.

Supplementary Textbooks

Universal System in Mobile Communication, Taner KOÇ, Nuhi BAYIR, BETA Publications, 2003. Satellite and Cellular Mobile Communication Systems, Prof. Dr. Ergun BAYRAKÇI, Birsen Publishing House, 2002. Wireless, Internet Access over GSM and UMTS, M. TAFERNER and E. BONEK, Springer-Verlag, New York, 2002.

GSM: Evolution Towards 3rd Generation Systems, Eds: Zonar ZVONAR, Peter JUNG and Karl KAMMERLANDER, Kluwer Academic, 1998.

BMÜ469 INFORMATION SYSTEMS 3 0 3 ECTS:5

Introduction to Information Systems, Software and hardware, Organization of data and information, Telecommunications, Internet, Intranets and Extranets, Electronic commerce and shopping systems, Information and Decision Support Systems, Private Business Information Systems, System development, Security, privacy and ethical issues in information systems.

Supplementary Textbooks

Lecture notes of the instructor himself

BMÜ471 GRID PROGRAMMING 3 0 3 ECTS:5

Introduction to Grid Computing; Virtualization of Compute Resources, Sample Grids, OGSA, WSRF, Web Services and Grid. Grid Architecture; Virtual Organizations, Sharing of Resources, Web Services: Advantages, Disadvantages, Web Services Architectures, Service Oriented Architecture, Web Service Standards: WSDL, SOAP, UDDI, WS-Addressing, Grid Services, Grid Service Factories, OGSA-Open Grid Services Architecture, OGSI - Open Grid Services Infrastructure, GT3. Grid Technologies; Globus, Nexus, Condor, MDS-Metacomputing Directory Service, Remote File and program operation and management, Resource Management. Grid security infrastructure/Authentication, Parallel Computing; Peer to Peer Computing, Peer-to-Peer networks, Algorithms, Grid Applications, Semantic Grid.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ473 DISTRIBUTED SYSTEMS 3 0 3 ECTS:5

Introduction to distributed systems: purpose, hardware and software concepts, client-server models. Communication: layer protocols, remote procedure access, remote object handling, message-oriented communication, stream-oriented communication. Processes: channels, clients, servers, code migration, software agents. Naming: naming entities, placement of remote entities, destruction of non-referenced entities. Synchronization: clock synchronization, logical clocks, global state, selection algorithm, mutual exclusion, distributed transactions. Consistency and replication: introduction, data-centric consistency models, client-centric consistency models, distributed protocols, consistency protocols. Fault tolerance: entry, process resilience, reliable client-server communications, reliable group communications, distributed validation, recovery. Security: login, secure channels, access control, security management. Distributed object-oriented systems: Corba, Distributed COM, GLOBE, CORBA and comparison of DCOM and GLOBE. Distributed file systems: Sun network file system (SNFS), CODA file system, Other distributed file systems. Distributed document-based systems: WWW, LOTUS NOTES, WWW vs. LOTUS NOTES.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ477 BIOINFORMATICS 3 0 3 ECTS:5

Entrance. Basic concepts. Biological structures, sequences. Protein synthesis and analysis. Sequence alignment. Multiple sequence alignment. Motif representation. Motif search and discovery. Protein structure prediction. Gene expressions. Gene regulatory networks

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ479 GAME PROGRAMMING 3 0 3 ECTS:5

Computer Graphics, Introduction to game engines, Computer Graphics 2D and 3D applications, Computer Graphics and Modeling, User interface (GUI) design, Game design, Game engine design, Game bots, Game Artificial Intelligence, Game Artificial Intelligence and Networked multi-user games , Scenario preparation for computer games, Game physics, Game programming tools and environments.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ481 WIRELESS AND MOBILE NETWORKS 3 0 3 ECTS:5

Introduction to wireless networks and mobile communications: wireless transmission. Medium Access Control TDD/FDD and channel transportation (TDMA/CDMA/FDMA/Hybrids), basics of wireless communication (Cell reuse, spectrum, sectoring, etc.), Cellular networks (GSM/IS-95), General and advanced mobile networks studies (UMTS/IMT-2000/Satellites), localization, Handoff, Connection management, Satellite networks: Introduction to satellite communications, GEO/MEO/LEO satellite systems, satellite architecture, satellite routing, satellite channel transportation, Handoff, Protocols , Applications. Ad Hoc Networks: Fundamentals of mobile radio networks, Architecture and protocols, Ad Hoc problems (Routing/Handoff), Ad Hoc routing structure, other approaches and applications. Wireless LANs, Broadband wireless Transport, WiMax: Architecture/Topologies of Wireless LANs and WSLs. Mobile IP: Wireless IP problems (Routing/Handoff), Mobile IP principles, other approaches and applications. Mobile transport layer, WAP, requirements for multimedia applications on wireless networks, introduction to sensor networks.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ483 QUANTUM COMPUTING 3 0 3 ECTS:5

Introduction and fundamentals, linear algebra and Dirac notation, qubits and quantum mechanical framework, quantum model of computation, superdense coding and quantum teleportation. Introduction to quantum algorithms, super polynomial acceleration algorithms, amplitude boost based algorithms. Quantum computing complexity theory and lower limits. Quantum error correction.

Supplementary Textbooks
Lecture notes of the instructor himself

TECHNICAL ELECTIVE (C)

6th TERM

BMÜ459 ARTIFICIAL NEURAL NETWORKS AND FUZZY MATIC 3 0 3 ECTS:5

Control Theory overview. Mathematical models in control systems. Fuzzy Logic. Fuzzy Control. Artificial Neural Networks (ANN). Control with ANN. Fuzzy ANN and Neural Fuzzy Control. Fuzzy logic and ANN Applications.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ465 MULTIMEDIA COMPUTING 3 0 3 ECTS:5

Multimedia knowledge and applications: Is multimedia rare? Multimedia and personal computing. Introduction of emerging applications. Combination of computer, communications and entertainment products: Technology trends. Architecture and publishing of distributed multimedia systems: Distributed multimedia systems, Role of standards; synchronization, QOS architecture, framework for multimedia systems. Digital audio presentation and processing: Basic digital audio signal processing, MIDI introduction. Image and video technology: Scanning principles and sensors for TV cameras, Color fundamentals and color video. Audio and video compression. System and architecture support for continuous media applications: boundaries in workstation operating systems and new operating systems, multimedia system service architectures, multimedia device data models and system support, communications publishing.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ475 COMPUTER AIDED DESIGN 3 0 3 ECTS:5

Computer Aided Design (CAD) and Manufacturing (CAM). CAD basics. CAD architecture and hardware. Java 3D. Fundamentals of Geometric Modeling Theory. Introduction and functions of modeling and CAD (general purpose and special purpose) software. Curves and Curvilinear Surfaces (Bezier, B-Splines, NURBS). Solid Modeling (B-rep, CSG, Sweep). General Engineering Applications. Virtual Reality and VRML.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ450 EMBEDDED SYSTEM DESIGN 3 0 3 ECTS:5

Introduction to embedded systems. Hardware fundamentals for software engineering. Advanced hardware fundamentals. Interrupts. A look at software architectures. Real-time operating systems. Operating systems services. Designing using real-time operating systems. Embedded software development tools. Debugging techniques. Example systems.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ452 WEB PROGRAMMING WITH LINUX 3 0 3 ECTS:5

Basic Concepts, Moodle Installation and Usage, EasyPHP Installation and Usage, PHP Basic, PHP Database, MySQL, PHP - CGI – MYSQL, web applications and projects with PHP.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ454 NETWORK SECURITY 3 0 3 ECTS:5

What is network and computer security? Security policies. IP addressing mechanisms (IPv4, IPv6), Summary of physical and IP address translation protocols (ARP, RARP). Details of the Internet protocol, Routing of Datagrams. Details of ICMP protocol, IP Datagram Routing Protocols (RIP, OSPF etc.). Examination of transport layer protocols. Examination of Network Configuration protocols (Bootp, DHCP etc.). Domain Naming System, DNS protocol, WWW concept. Examination of SMPT, IMAP, POP3, TELNET, FTP, TFTP, NFS, SNMP protocol structures. Firewall and Gateway structures. Security of Network Devices. Examination of VPN networks. Intrusion Detection systems. Attacks on ARP and TCP protocols, DNS protocol security. Attacks on the Network and Services. Coordinated dispersed attacks. Information Collection Techniques, Security Policies.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ458 MACHINE VISION 3 0 3 ECTS:5

Image acquisition, spatial domain processing, texture analysis, edge detection, color image processing, image segmentation. Various applications.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ460 SEMANTIC WEB 3 0 3 ECTS:5

What is semantic web, semantic web architecture, ontology, xml, rdf, ontology query, semantic web application areas, semantic web applications.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ464 COMPUTER APPLICATIONS IN MEDICAL IMAGING 3 0 3 ECTS:5

Image Creation in Computed Tomography, Multislice Tomography, Flat Detector Technology, Positron Emission Technology, Magnetic Resonance Imaging, Image Processing in Nuclear Medicine, Noise Reduction in Nuclear Medicine Images, Color Flow Imaging, Clinical Tomography, Archiving of Medical Images: PACS and DICOM Standards, WEB-based Image Transmission, Compression of Medical Images.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ466 SENSOR NETWORKS 3 0 3 ECTS:5

Vision and hardware technologies for Sensor Networks, Sensor Networks Applications, Sensor Networks Software, Programming in Sensor Networks, Wireless Integrated Sensor Networks, Monitoring the Environment with Sensors, Data management in Sensor Networks, Sensor Networks Software (TinyOS, TinyVM etc.), New Sensor Networks Programming Models, nesC Language. Design and Application Problems; TinyOS and Motes, Network architecture and services, Programming Languages and Abstraction, Programming Tools and System Development Resources, Evaluation Problems; Modeling and Simulation, Control and analysis of Hybrid Systems, Topology Problems; Topology control and maintenance, Routing, Location services and techniques, Data manipulation problems; Storage, Indexing and Querying, Abstract data structures, Propagation and diffusion, Intra-network flow control, Coordination problems; Synchronization and calibration, Distributed algorithms for coordination

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ468 NETWORK PROGRAMMING 3 0 3 ECTS:5

Client-server interaction, socket interface, client and server examples, naming with DNS, DNS client-server model, server model, server hardware, electronic mail definition and transmission, file transmission and remote file access, world wide web page and display (browsing).), CGI for dynamic web pages, java for active web pages, network administration, network security, system deployment

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ470 ELECTRONIC COMMERCE 3 0 3 ECTS:5

Introduction to electronic commerce and electronic business concepts. Interactions of electronic commerce/business with other disciplines other than computers. Electronic business models. Internet marketing, Security, SET, SSL, electronic signature protocols. Legal, social and moral approaches to electronic business/commerce. E-Commerce and E-Business Applications.

Supplementary Textbooks
Lecture notes of the instructor himself

BMÜ474 BIG DATA ANALYTICS 3 0 3 ECTS:5

Big data manipulation, storage, analysis and analysis, fundamentals of Hadoop Cluster and Ecosystem, project and application development.

Supplementary Textbooks
Lecture notes of the instructor himself

SOCIAL ELECTIVE COURSES

FALL SEMESTER - SOCIAL ELECTIVE (A) – I – 5th Term

MSS101 Philosophy of Science (2-0-2) ECTS:2

The aim of this course, while emphasizing the differences between philosophy and science, is to provide students with the basic values, concepts and arguments of philosophy of science in general and philosophy of social science in particular, as a philosophical field, from a critical perspective and by considering methodological and epistemological pluralism. In addition, understanding the nature of science, distinguishing between scientific and non-scientific. It is aimed to ensure that students are taught, to learn scientific methods and these methods, to learn scientific thinking methods and techniques and to gain application habits.

Supplementary Textbooks

Philosophy of Science-Lecture Notes, Doğan Özlem, Inkilap Kitabevi, Istanbul, 2003. Contemporary Philosophy of Social Sciences-A Multicultural Approach, Brian Fay, translated by İsmail Türkmen, Ayrıntı Publications, Istanbul, 2005. Veysel Sönmez, 2008, Philosophy of Science.

MSS 103 Public Relations (2-0-2) ECTS:2

Public relations, marketing management, integrated marketing communications, corporate communication, public relations writing, public relations practices and case studies, public relations and application techniques, public relations management, corporate social responsibility, brand and management, crisis communication and management, communication research, Defining the basic concepts of advertising and media sociology. It is aimed to provide students with the ability to define problems, recognize and analyze opportunities, interpret and evaluate them by using the basic knowledge and skills acquired in the field of public relations.

Supplementary Textbooks

Research in Public Relations, Pınar Eraslan Yayınoğlu, Birsen Publishing House, Istanbul, 2005. How Advertising Works: The Role of Research, John Philip Jones, Advertising Foundation Publications, Istanbul, 2003. Defining Advertising Targets for DAGMAR Measured Advertising Results, Advertising Foundation Publications, Istanbul, 2002.

MSS105 Business Management (2-0-2) ECTS:2

To be able to examine concepts and ideas in the field of business with scientific methods and thus to identify and analyze problems and to propose solutions based on data and research, to follow current and developing trends in business with professional English proficiency, to be able to engage in professional activities and projects in the field, for the professional development of employees under his/her responsibility. It is aimed to gain skills in planning and managing events.

Supplementary Textbooks

Hatch, M. J., & Cunliffe, A. L. (2006). Organization Theory (2nd Edition), Oxford University Press: Oxford.Hill, C. W. L. (2002). Global Business Today (2nd Edition), McGraw-Hill/Irwin: NY.Ireland, R. D., Hoskisson, R. E., and Hitt, M. A. (2011).

MSS 107 Web Technologies (2-0-2) ECTS:2

HTML language, design with Dreamweaver, image processing with Fireworks, animations with Flash, publishing the web page, sample web designs.

Supplementary Textbooks

Lecture notes of the instructor himself

MSS 109 Illumination and Art (2-0-2) ECTS:2

Definition of illumination art, traditional pattern sources of Turkish illumination art, usage areas of Turkish illumination art, sources of motifs in Turkish Illumination art, drawings of Turkish Illumination art, general groups of motifs in Illumination Art, 10. Simple teyzin pattern, one of the motifs in Turkish illumination art.

Supplementary Textbooks

A.Birol, İnci (2010) Pattern Design, Drawing Technique and Types in Turkish Thesis Arts.

MSS 111 Eloquence and Oratory (2-0-2) ECTS:2

Preparation for good speech, Importance of Good Speech, Points to be considered in speaking, Using Turkish correctly, beautifully and effectively, Breath and voice training, strengthening expression, Stress and intonation, Stress and its types.

Supplementary Textbooks

Ö.Göçgün (2016), The Art of Beautiful and Effective Speaking, Nisan Kitapevi

MSS 113 Visual Arts (2-0-2) ECTS:2

Basic Drawing, Imaginative Design, Pattern I-II, Anatomy I-II, Visual Intelligence, Art History, General Knowledge, Portfolio Design

Supplementary Textbooks
Lecture notes of the instructor himself

MSS 115 Music (2-0-2) ECTS:2

Definition of Sound, Definition of Music, Rhythm, Notes, Note Values, Sustain Signs, Concept of Measure, Major and Minor Scales, Tempo in Music.

Supplementary Textbooks
Lecture notes of the instructor himself

MSS 117 Kurdish (2-0-2) ECTS:2

Language and Culture: Language-Culture Relationship, Getting to Know the Culture in which Kurdish Lives, Grammar of Kurdish: Phonology, Morphology, Vocabulary, Word Groups, Sentence Knowledge.

Supplementary Textbooks
Lecture notes of the instructor himself

MSS 119 Oral Expression (2-0-2) ECTS:2

Basic features of verbal communication, communication theory, basic features of speaking skills, basic principles of a good speech, basic characteristics of a good speaker, points to avoid during speaking, factors affecting speech, important issues in correct pronunciation of Turkish, types of speech (mutual conversations, conversation, self-introduction) , answering questions, interviewing someone…), debate, panel discussion, panel, forum, symposium, conference. Prepared speech and stages of prepared speech, Unprepared speech, Making an impromptu speech on different topics, working on speech samples, Language and expression mistakes in speeches, Logical errors in speeches and Correct emphasis; poetry reading techniques.

Supplementary Textbooks

Nüzhet Şenbay, The Art of Words and Diction, YKY., 1993, İst. Şükrü Ünalan, Oral Expression, Nobel Publication, 2007, Ist. Hüseyin Ağca, Oral Expression, Gündüz Yay, 1999, Ank. Özden Bayramians, Oral, Written and Scientific Expression Techniques, ITU, 1990, Ist. Nuri Çevik, Speech Technique, Ministry of Culture Publication, 2002, Ank.

MSS 121 Political Science (2-0-2) ECTS:2

Within the scope of the Political Science course, firstly the theoretical framework of the political phenomenon is discussed, the concepts of politics, power, authority and legitimacy are evaluated and the state problem is approached within the framework of the transformations it has undergone from the historical background to the present day. The emergence of the state and theories about the state are also included in the course. While the social and institutional dimensions of politics, which is one of the main areas of interest in political science, are examined, political culture, political parties, election systems, public opinion and pressure groups are also explained in detail on a historical and sociological basis.

Supplementary Textbooks

Ali Yaşar Sarıbay, Süleyman Seyfi Öğün; Political Science, Alfa Aktüel Publishing House, Bursa, 2006. Eddie J.Girdner; People-Power An Introduction to Politics, Literatür Yayıncılık, İstanbul, 1996.

MSS 123 Development and Learning (2-0-2) ECTS:2

Developmental Task, Growth, Maturation, Readiness, Development, Critical Period, Behavior, Learning Basic Principles of Development Basic Factors Affecting Development Developmental Characteristics According to Developmental Areas: Physical Development, Motor Development, Cognitive Development, Language Development, Moral Development, Personality Development Learning Theories : Classical Conditioning, Learning Theories Focusing on Contiguity, Conjunctionism, Operant Conditioning, Social Cognitive Theory, Gestalt Theory, Information Processing Theory. Characteristics of a Qualified Teacher.

Supplementary Textbooks

Senemoğlu, N. (2009). Development, learning and teaching. (Improved 14th Edition). Ankara: PegemA Publishing. Ulusoy, A. (Ed.). (2008). Education psychology. (2nd Edition). Ankara: Anı Publishing.

MSS 125 Industrial Sociology (2-0-2) ECTS:2

Pre-industrial societies. The industrial Revolution. Causes of the industrial revolution and its technological, economic, social and cultural effects. Basic features of industrial society. The phenomenon of social stratification. Working life, employee and employer relations. Unions and unionization. Labor market, employment and unemployment. Industrial occupations and industrial organization. Taylorism, Fordism, Post-Fordism. Flexible production. Lean manufacturing. Post-industrial society and information society.

Supplementary Textbooks

Lecture notes of the instructor himself

MSS127 Archeology and Earth Sciences (2-0-2) ECTS:2

The place of findings obtained from earth sciences and natural sciences research in the conduct of archaeological research and the evaluation of their findings. Archaeological methods used in earth science studies and earth scientific methods used in archaeological studies. Sediment types, stratigraphy, geoarchaeological environments, caves, coasts, methods in geoarchaeology, field methods, laboratory methods. The effects of nature and natural change on human and cultural development. Environmental determinism.

Supplementary Textbooks
Lecture notes of the instructor himself

MSS129 Report Preparation Techniques (2-0-2) ECTS:2

Definition of science. Scientific thought. Induction and deduction. Principle of causality. The functioning of the scientific process. Recognizing and defining the problem. Collection of preliminary data. Establishing hypotheses. Design and conduct of the research. Qualitative and quantitative research methods. Dependent and independent variable. Data collection techniques. Data analysis techniques. Key elements of the research report. Creation of the interim plan. Identifying and narrowing down the topic. Aim. Determination of scope, constraints, key assumptions and results. Fast reading and effective note taking. Types of scientific sources. In-text citation and bibliography preparation methods. Basic language and spelling rules in the research report.

Supplementary Textbooks
Lecture notes of the instructor himself

MSS131 Theater and Performing Arts (2-0-2) ECTS:2

Definition and types of art. Historical development of fine arts. Types of performing arts. Traditional and modern performing arts. Theatre, opera, ballet, dance, cinema, pantomime, stand up, musical, puppet, middle play, shadow play. Theater history and types, tragedy and comedy. Basic principles of acting. To make, to show, to diversify. Awareness and development. Improvisation and spontaneity. Dramaturgy. Breathing, speaking and diction exercises. Performing artists in the world and Turkey.

Supplementary Textbooks
Lecture notes of the instructor himself

SPRING TERM - SOCIAL ELECTIVE (B) –II – 6th Term

MSS 102 Engineering Ethics (2-0-2) ECTS:2

Engineering profession and ethics, responsibilities of the engineer; Security and risk, protection of public safety. Legislation regarding the protection of employees. Engineering ethical codes and their importance. Ethics in information technology; Ethics in scientific studies and consultancy. It is aimed to teach ethical issues related to genetically modified organisms.

Supplementary Textbooks

1.Charles B. Fleddermann, Engineering Ethics, Last edition, Prentice Hall 2.Mike W. Martin, Roland Schinzinger, Introduction to Engineering Ethics, McGraw-Hill, Second Edition 2010.

MSS104 History of Science and Technology (2-0-2) ECTS:2

It is aimed to teach some basic concepts on science and technology, technological progress and technological change, science and technology system and national innovation system, invention, discovery and innovation, internal and external dynamics of human creativity, technology, information and innovation concepts.

Supplementary Textbooks

History of Technology, Ergun Türkcan, Hasan Çalışkan (editor), T.R. Anadolu University Publication No: 2404, Open Education Faculty Publication No: 1395. Science and Technology in World History, James E. McClellan III, Harold Dorn, 2nd Edition, Translation Haydar Yalçın, Dost Publishing House, 2008, ISBN: 978-975- 509- 453-3

MSS106 Scientific Research Methods (2-0-2) ECTS:2

It is aimed for students to acquire basic theoretical knowledge about research methods and techniques and to be able to transfer this knowledge into practice. Science and basic concepts (fact, knowledge, absolute, true, false, universal knowledge, etc.), basic information about the history of science, structure of scientific research, scientific methods and different views on these methods, problem, research model, universe and sample, collection of data and data collection methods (quantitative and qualitative data collection techniques), concepts of recording, analysis, interpretation and reporting of data are taught.

Supplementary Textbooks

Scientific Research Methods, Pegem Akademi Publishing, Şener Büyüköztürk Research Methods and Techniques, Nobel Academic Publishing, Rauf Arıkan

MSS108 Total Quality Management (2-0-2) ECTS:2

To develop a common understanding of the basic concepts of quality management systems. To inform and raise awareness about ISO 9001:2008 Quality Management System. To inform and raise awareness about accreditation, JCI and EFQM.

Supplementary Textbooks

Total Quality Management, Prof. Dr. Hasan Şimşek, Seçkin Publishing. Quality Assurance and Standards, H. Baki Buzlu, License Publishing, Istanbul, January 2008.

MSS 110 Directional Action Research (2-0-2) ECTS:2

One of the most important responsibilities of managers in businesses is decision-making. Today's competitive conditions require optimal decisions to be supported by numerical methods. The aim of this course is to provide students with the knowledge and skills to formulate a problem encountered in decision making, establish a mathematical model, obtain the solution from the model, control and evaluate the model and its solution, and apply the obtained solution.

Supplementary Textbooks

Taha , H.A. (Translation) Operations Research. Çağlar, Nazan, Operations Research, Turkmen bookstore. Moore,J.H.(2001) Decision Modeling with Microsoft Excel

MSS112 Social Responsibility (2-0-2) ECTS:2

Identifying current problems of society and preparing projects to produce solutions. Voluntarily taking part in various projects within the framework of social responsibility. Being participatory and democratic individuals, reinforcing solidarity and cooperation, taking responsibility and developing/implementing projects. Non-governmental organizations. Current discussions in the fields of youth and social responsibility projects carried out at European level.

Supplementary Textbooks

Philip Kotler, Nancy Lee, Corporate Social Responsibility, Mediacat Books, 2006 Ceyda Aydede, Rising Trend Corporate Social Responsibility, Mediacat Books, 2007

MSS 114 Handicrafts (2-0-2) ECTS:2

The Handicrafts course is designed as a course that introduces the works of art produced over the centuries in terms of their basic qualities, materials and construction techniques, and examines them through examples, benefiting from the rich and multi-layered accumulation of Turkish culture. Calligraphy, binding, illumination (decoration), depiction (painting), marbling, fine carving arts, tile-ceramic, fabric, carpet, rug, metal, wood, stone and other small handicrafts related to manuscripts constitute the main topics of the course. Visits to museums, galleries and exhibitions organized within the scope of the course provide the opportunity to encounter the examples seen in the course more closely. In addition, current and modern applications of all traditional arts are introduced; Developments regarding the change and transformation process in the elements that form the basis of handicrafts are conveyed.

Supplementary Textbooks
Lecture notes of the instructor himself

MSS116 Disaster and Disaster Management (2-0-2) ECTS:2

To prevent, reduce damage, prepare, intervene and improve events or accidents that threaten the environment, operations, production, property and human life before, during and after the emergency, by making emergency planning, executing and supporting these plans and programs. The aim is to ensure that students are familiar with emergency plans and emergency management as team members who will manage emergencies.

Supplementary Textbooks

Filiz, E. (2007). Crisis Management in Turkish Public Administration. Istanbul: Alfa Aktüel Publishing. Tutar, H. (2000). Management in a Crisis and Stress Environment. Istanbul: Hayat Publications. Yılmaz, (2003). Disaster Management. Ankara: Pegem Publications, Ankara. Luecke, R. (2008). Crisis management. Istanbul: Türkiye İş Bankası Publications.

MSS 118 History of Civilization (2-0-2) ECTS:2

The basic events and facts that constitute the civilization process from the beginning to the present, which people transfer from one generation to the next. Ancient Asia Minor and Egyptian civilizations, Ancient Greek and Hellenic civilizations and culture, Roman civilization, Middle Ages, Renaissance and reforms, Age of Enlightenment, American and French revolutions, Industrial revolution, XIX. The movements that emerged in the century and the 20th century. The most important events of the century. I. and II. World Wars and subsequent developments.

Supplementary Textbooks

Server Tanilli The Truth and Legacy of the Centuries, Peter N.Stearns, Michael Adams, Stuart B.Schwartz, Marc Iason Gilbert, 2004 World Civilizations.

MSS 120 Zazaki (2-0-2) ECTS:2

In this course, it is planned to discuss topics such as Zaza sentence elements, sentence types, ergative syntax and morphological syntax structure, verb tenses, mood and structural features with scientific methods.

Supplementary Textbooks

Lecture notes belonging to the instructor.

MSS122 Physical Education (2-0-2) ECTS:2

Basic concepts in physical education and sports, the place of physical education and sports in education and training, its function, purposes, philosophy, relationship with other sciences, the future of professional fields in physical education and sports, its place and function within Turkish Education and Sports institutions. The concept of training, the basic and auxiliary principles, fatigue, recovery, training sections, talent selection in sports. Knowledge and skills about the history of Football, Volleyball and Basketball, game rules, basic techniques and tactics. General Gymnastics, definition, basic stances, formations, use of space, rhythmic bounces, jumps, turns, transitions and connections, movements with and without equipment, pyramids, rule information. Demonstration walks, order, rhythm, skipping rope, gymnastic stick, pin floor mat exercises, rule information and teaching skills.

Supplementary Textbooks

Introduction to Physical Education and Sports Education, Ali Niyazi İnal, Selçuk University, Konya, 1999Physical Activity Sciences, C. Bouchard, B. McPherson, A.W. Taylor, Human Kinetics Books, Champaign, 1991. Physical Education and Sport A Contemporary Introduction, A. Lumpkin, Second Edition, Times Mirror/Mosby College Publishing, St-Louis, 1991. Introduction to Sports Sciences, N. Mirzeoğlu, Spor Yayınevi, Ankara , 2011.

MSS 124 Photography (2-0-2) ECTS:2

Nature of the Photographic Tool, Introduction of the Camera and auxiliary equipment, their functions, variables (depth of field, control of movement, focal length, film sensitivity, etc.), framing methods and interventions with these methods, devices and equipment. Composition and Reading Photography: Composition of the still image, basic rules of composition, an introduction to how to analyze the photographic narrative from aesthetic, social, historical and ideological perspectives. The relationship between photography and reality. Early Art Photography 1850-1917, Early Art Photography 1917-1950. Document Photography: The importance of photography in the formation of Historical Visual Memory is discussed within the framework of the concept of Document Photography. In this context, examples of documentary photographers working institutionally and independently, especially in the first half and early second half of the 20th century, are included. Portrait Photography: The concept of Portrait Photography will be discussed in the light of the artistic origins of the concept. The ontological roots that nourish the classical portrait style in photography are exemplified by the traces of tradition in Classical, Renaissance, Rococo, Baroque, Romantic, Neo-Classical and modern art movements. Applications regarding content and form in portrait photography, such as the idealization of the

subject, the use of space, and the function of lighting, are discussed with examples.

Supplementary Textbooks

Lecture notes belonging to the instructor.

MSS 126 Management Sociology (2-0-2) ECTS:2

Scope of management sociology. Management theories and history. Management relations. Management in organizations. Management types. Organizational Culture, Organization types and Organizational Analysis Techniques.

Supplementary Textbooks

Management Sociology, Omer Bozkurt, Turkey and the Middle East Public Administration Institute Publications, Ankara 1977.

MSS128 Business Administration (2-0-2) ECTS:2

Fundamentals of the design, implementation, control and strategic use of modern computer-based information systems for business data processing, office automation, information reporting and decision-making. Electronic data transfer, supply chain management, global information systems, decision support and geographic information systems, artificial intelligence, expert systems, risk, control and security measures. Basic concepts regarding the analysis of business processes: Business processes, functional structuring and processes, reengineering, measurement of processes, analysis techniques, improvement, the place of information technologies in business processes. The strategic and organizational management techniques required to keep up with global competition in international markets, the reasons for the emergence of multinational companies, their fields of activity, the strategic motifs required to compete in international markets, and international business strategies are discussed. Strategic and organizational management techniques that companies in international markets will use for global competitive advantage; the scope of multinational companies, their activities, the reasons for their emergence and the strategic motives that drive them to international markets; It includes topics such as international competitive environment forces, business strategies, design and management of joint ventures.

Supplementary Textbooks

General Business Information, Demet Varoğlu, Doğan Yaşar Ayhan, Doğan Tuncer, Siyasal Kitabevi, 2007.

MSS130 Innovation and Project Management (2-0-2) ECTS:2

Innovative problem solving. Decision. Analysis. It aims to make students understand and apply design and processes. Introduction to active learning: teamwork. Team dynamics. Team norms and communication. Preparing effective meetings and evaluating quality. Innovative problem solving methods: problem recognition/definition. Creating solutions. Solution selection methods. Selection methodology. Solution implementation. Evaluation of the

application. Levels of learning and degrees of internalization. Ethical decisions. Business and design diary organization. Reverse engineering and design projects. Patent generation methods. TRIZ applications.

Supplementary Textbooks

Project management step by step, 4th Edition, Richard Newton, Optimist Publications, 2014. Project management and analysis, 1st Edition, Burhan Albayrak, Nobel Publishing Distribution, 2009. Entrepreneur's handbook, 2. Edition, Steve Blank & Bob Dorf, Siz Publishing, 2014. Innovation: The most effective management ideas from Harvard Business Review, 1st Edition, Translated by Melis İnan, Optimist Publications, 2014. Reverse innovation, 1st Edition, Vijay Govindarajan & Chris Trimble, Modus Kitap, 2013. R&D and Innovation, Assoc. Serhat Çakır, METU Open course material, 2012. Managing Innovation and Entrepreneurship, Fiona Murray, MIT Open Course Ware, 2008.

MSS132 Human Resources Management (2-0-2) ECTS:2

General Information on Human Resources Management, Historical Development of Human Resources Management, Basic Philosophy of Human Resources Management and Its Place in Business, Changing Roles and Responsibilities of Human Resources Professionals, Strategic Human Resources Management, Definition, Scope, Objectives, Principles, Functions of Human Resources Management, Its Place and Importance in the Organizational Structure, Strategic Dimension of Human Resources Management, Environment of Human Resources, Job Analysis and Job Design, Human Resources Planning

Supplementary Textbooks

Gary Dessler, Human Resource Management, 13t. Edition (2012), International Edition, 12th Edition (2011), Course Book, Pearson Higher Education Publications, ISBN: 9781408279083, or Gary Dessler (2008), Human Resource Management, Int. Edition (International Edition), 11th Edition, Textbook, Pearson Higher Education Publications, ISBN: 9780138142735 or 10th, or 9th, or 8th International Edition.(International Edition), Video, Gary Dessler, Human Resource Management Management), Int. Edition (International Edition), 8th Edition, HRM web pages and/or portals such as www.humanresource.com , http://www.recruitment.com , http://www.hr.com , Tutorial lecture notes/explanations , Aydın Yılmazer , Human Resources Management

MSS134 Tennis (2-0-2) ECTS:2

Examining School, Club and Family relations in tennis, basic tennis techniques, competition rules, field tools and equipment, Provincial, National and International Tennis Competition Organizations.

Supplementary Textbooks

Tennis federation publications, Tennis (ümit urartu), Turkish tennis federation seminar information, Tennis federation advanced tennis coach book.