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I. SEMESTER

PHYS113 Physics-I

Vectors, kinematics, Newton's laws of motion, work and energy, conservation of energy, linear momentum and its conservation, rotation of rigid bodies about a fixed axis, angular momentum and its conservation.

MATH113 Mathematics I

Real numbers. Functions, graph of functions Limits and continuity. Differentiation, chain rule, implicitdifferentiation. Applications of derivatives, mean value theorem, indeterminant forms, curve sketching.

CENG103 Introduction to Computer Engineering

Numerical systems, detailed analysis of the coding phase in software development lifecycle. Algorithm design. Programming languages. Introduction to object oriented methodologies. Database management systems. Computer networks and communication. Internet and World Wide Web. Programming technologies for the World Wide Web. Computers and security. Computers and social topics.

CENG101 Introduction to Algorithms and Programming

Basics concepts of programming and algorithm development. History, classification, and features of programming languages. Structural programming with C, constants, variables, expressions, and functions. Operations on arrays and matrices. Pointers: the relation between variables and memory addresses. Strings and structs. Basic search and sort algorithms. Dynamic memory allocation.

ING111 English I

The course offers a balanced mixed of language input, skills work and oral tasks. It enriches students' topic-based vocabulary and develops their awareness of lexical patterns. In this course students have functional language lessons which are useful to them in their daily lives. Besides,basic medical terminology is given supported by medical texts.

II. SEMESTER

PHYS114 Physics-II

Charge and matter, the electric field, Gauss law, electrostatic potential, capacitance, current and resistance electromotive force and circuits, The magnetic field, Ampére's law, Faraday's law, Inductance, Magnetic properties of matter.

MATH114 Mathematics II

Integration, fundamental theorem integral calculus. Application of definite integrals; area between curves, volumes calculation, lengths of plane curves, area of surfaces of revolution.

Transcendental functions; exponential functions, logarithms, hyperbolic functions. Techniques of integration.

CENG106 Object Oriented Programming-I

Introduction to object based analysis, different object based software development processes. A general overview on object based software technologies object based analysis methods and notation, object based design methods and notation. Object based implementation methods and notation, examples using C++ , Java, programming language.

CENG110 Discrete Structures

Logic and sets, functions. Mathematical reasoning, counting, relations, graphs, trees, algebraic structures, Boolean algebra. Modelling computation.

CLP001 Career and Life Planning

Professional and personal development, seminars, workshops, specialized certification programs, industry and business-field demonstrations, meetings with professionals, on-site training sessions, social-sporting events.

ING112 English II

In this course students will be able to develop their language skills. They will be able to practice all four skills. The course is a follow up to ING 111, so students will continue to learn and enhance their existing knowledge on reading and writing techniques, various grammar points and participate in listening and speaking activities. Besides, basic medical terminology is given supported by medical texts.

III. SEMESTER

MATH265 Probability &Statistics I

Combinatorial methods; product rule, permutation, combination. Probability; sigma algebra, probability axioms, conditional probability, Bayes formula. Random variable; distribution function, probability function, Chebyshev inequality. Discrete and continuous distributions; uniform, Bernoulli, Poisson, geometric, hypergeometric, normal, exponential, gamma and beta distributions. Generating functions. Decision theory. The notion of estimation. Hypothesis testing. Non-parametric testing. Correlation and regression.

MATH215 Mathematics III

Matrices and systems of linear equations.Determinants.Vector spaces.Linear transformations.Eigenvalues.

CENG203 Data Structures

Algorithm analysis. Array stacks and queues. Linked lists, trees, sorting, hashing. Heap structures, search structures. Complexity. Parallel algorithms. File organization.

CENG215 Digital Electronics Circuits

Semiconductor, the energy levels of electrons, doping, p and n-type semiconductors, diodes, p-n junctions (p-n Junctions), diode applications. Bipolar junction transistors. DC biasing bipolar junction transistors. Operational amplifiers (op-amps), and the op-amp applications.

CENG213 Object Oriented Programming –II

Introduction to object based analysis, different object based software development processes. A general overview on Java technologies, object based analysis methods and notation, object based design methods and notation. Object based implementation methods and notation, examples using Java programming languages.

IE367 Occupational Health and Safety

Worker health and safety of the historical development, general information, business security concept, work-related accidents definition, causes and methods of prevention, safety studies, labor productivity in terms of importance, job security studies economic significance, the occurrence of industrial accidents and classification, hazards and dangers varieties accident research methods and solutions.

IV. SEMESTER

MATH216 Mathematics IV

Definition of a differential equation, families of curves. First order differential equations. Linear differential equations. Nonhomogeneous equations, undetermined coefficients, variation of parameters. Systems of linear equations. Laplace transform.

MATH220 Numerical Methods

Problems are solved numerically using MATLAB. Types of problems solved are linear and nonlinear equations, numerical differentiation, integration, optimization, differential and partial differential equations, interpolation, polynomial approximation, curve fitting and eigenvalues and eigenvectors.

CENG210 Digital Circuit Design

Number systems. Boolean algebra, logic networks and their simplification. Logic design with gates. MSI and LSI technologies. Combinatorial circuits, sequential circuits. Counters, shift registers, arithmetic logic, memory and control units.

CENG218 Programming Languages and Applications

A general overview on visual software technologies object based analysis methods and notation, object based design methods and notation. NET Platform, NET Programming. Developing applications with using C# programming language.

CENG216 Computer Networks – I

Overview of computer networks. Network architecture and the ISO model. Network topology, connectivity analysis, delay analysis and backbone analysis. Physical layer, transmission and multiplexing, terminal handling, errors. Data link layer and link protocols. Network layer, routing and congestion, satellite and packet radio networks, local networks. Transmission and session layer, presentation layer, application layer.

CENG214 Operating Systems

Operating Systems, History of operating systems, Process Concept: States & process control blocks, OS Kernel, Concurrent Processes, Mutual exclusion, Process Synchronization, Semaphores, Memory Management & Schedoling, Fixed & Multiple Portitioned multiprogramming, Virtual Memory, Faging & Segmentation, On demond paging & segmentation, Operations on Moving Head Disks, Disk Scheduling Policies, File & Database Systems, File System Functions, Blocking and Buffering, File Organization, Back-up & optimization, Database Systems & Models, Caoe Studies: UNIX, NT, UNUX, MACH.

V. SEMESTER

TRD111 Turkish-I

What is language? Importance of language and its place in a nation's life, language-culture relationship. Definition of grammar, function of grammar and departments of grammar. Phonetics: sounds and audio features of Turkish. Morphology; formal properties of Turkish (roots-adds). Words and word phrases. General information about composition, subject, perspective, ideas, main and ancillary ideas, paragraphs, intellectual order. Written expression, paragraph, the content and types (entrance, development and conclusion paragraphs). Expression forms, explanatory, descriptive, argumentative, narrative expression. Written expression; petition writing, quoting, footnotes and bibliography writing. Oral expression; speech and speech types (prepared speeches, panel, and discussion policies). Literary types; artistic (poetry, short stories, novels, theater and intellectual (articles, paragraphs, essays, criticism, interviews…). Reading and studying the works that about literature and idea world. Analyzing an editing text (story, novel, theater).

CENG317 Computer Architecture

Computer organization and development. Basic components of a computer. Instruction sets and their implementation. Addressing techniques. ALU, hardwired and microprogrammed controllersI/O structures and interrupt handling.

CENG313 Automata Theory

Overview of Automata Theory: The Church-Turing thesis, decidability, reducibility, time complexity, space complexity, intractability. Probabilistic machines. Quantum computation.

CENG319 Algorithm Analysis

Complexity theory, P, NP, NP-complete and NP-hard class of algorithms, computational complexity, complexity of recursive solutions, advanced data structures (red-black trees, hashing, etc.), dynamic programming.

1 x Program Elective Course

1 x Faculty Elective Course

VI. SEMESTER

TRD112 Turkish-II

The place of Turkish language among the world languages, alphabets that Turks are used. The historical development of Turkish language, dialects of Turkish language. Turkish's syntax features, sentence analysis studies. Etymology, Semantics I (basic meanings, connotations) and Sense Events (meaning contraction, meaning expansion, meaning shift), Words' meaning relationship. Semantics II, metaphors, transfers (name transfer, phrase transfer) words, idioms, proverbs, slogans and terms. Expression (language) mistakes and applications. Oral expression, speech and speech types (panel, discussion principles). Written expression; business letters, minutes, report and news writing techniques. Ways to improve thinking in the paragraph, identification, sampling, comparison, utilization of numerical data, producing a witness. Literary types; artistic(poetry, short stories, novels, theater) and intellectual (articles, paragraphs, anecdotes, essays, criticism, travel, biography, memoirs, letter…) Reading and studying the selected sample texts from the literature and idea world. Reviewing a scientific text.

CENG318 Microprocessors

Elements of microprocessor systems. Hardware and software analysis. Addressing techniques. Input/Output devices. Communication busses and links. Design of microprocessor based systems. Laboratory experiments and applications of microprocessor based systems and single board microcomputer systems: Arithmetic operations, loops, moving blocks of memory, stack and subroutines, parallel I/O, interrupts, timer operations in Assembly Language.

CENG314 Software Engineering

Introduction, Computer-based system engineering, Project management, Requirements engineering, Software prototyping, Software design, Architectural design, User interface design, Software reliability, Programming for reliability, Verification and validation, Defect

testing, Static verification, Software reuse, Software maintenance, Configuration Management, Term project.

ECO102 Macroeconomics

This is an introductory course. The aim of the course is to develop an understanding of elementary economic analysis and its applications. By the end of the term, the student should have acquired a basic understanding of the main microeconomic and macroeconomic topics, including supply and demand model,costs,market structures,national income, aggregate demand and supply, an introduction to the real economy and money and prices in the long run and some basic concepts about inflation and unemployment trade-off. The material covered in this course will help the student to organize his/her ideas about economics.

The lecturer will put less emphasis on algebraic modelling techniques and more room for contextual discussions. This course in economics will include critical issues such as price determination under different market structures,relevance of microeconomic variables to macroeconomic environment,macroeconomic stabilization, distributional equity, the quality of employment, environmental considerations, the adequacy of living standards. This course will cover standard concepts and models, focuses on the crucial aspects of human well-being. The course also includes serious investigation of the environmental impacts of economic growth and the role of unpaid work in economic life.

1 x Program Elective Course

1 x Faculty Elective Course

VII. SEMESTER

INT001 Internship 1

ATA111 History of Turkish Revolution-I

This course covers the analysis of the causes and the consequences of the First World War; the searches for independence of the Turkish nation in Anatolia and salvation of the Turkish lands that were occupied after the Armistice of Montrose; the development and activities of Nationalist militias and the societies against them; the evaluation of the congress administrations that were formed after 19 May 1919 in terms of their form and content; the structure of the Grand National Assembly and the process through which it gained legitimacy; the leadership of Turkish War of Independence; Treaty of Lausanne, and the Establishment of the Republic

BBA222 Entrepreneurship Applications

Examples from entrepreneurial successes; role models; development of an entrepreneurial culture and awareness; entrepreneurial eco-system; entrepreneurial finance.

CENG413 Software Quality Standards

Introduction to software quality and security. Software quality factors, software quality assurance system components, reconciliation review, development and quality plans, projects to integrate quality activities in the production cycle, revisions, to ensure the software quality of care, to assure the quality of parts of the external participants, procedures and working conditions.

CENG497 Computer Engineering Design

In this course which consists of the design of a complex system, process, device or product, within the framework of preferrably a multi-disciplinary engineering problem, under realistic constraints, and taking into consideration social, economic and environmental conditions as well as relevant national and international standards and characteristics of sustainability and manufacturability, without compromising ethical principles, the student is required to document the requirements specification and the design in conformance with international standards.

1 x Program Elective Course

VIII. SEMESTER

INT002 Internship 2

ATA112 History of Turkish Revolution-II

Lausanne Peace Treaty resulting success that is being converted to a modern state via announcement of Republic, and being gained to this state a modern, convenient to development identity, and placing Ataturk's Thought System to the memories precisely by the following revolutions of this process, so that our young people are made conscious and durable against to the threats to their personalities and to their countries.

CENG498 Computer Engineering Graduation Project

This course consists of the implementation based on accessible resources, then testing and validation of the level of satisfaction of the requirements followed by the documentation of all this process in conformance with international standards, and its defense in front of a jury, of a complex system, process, device or product, designed within the framework of preferrably a multi-disciplinary engineering problem, under realistic constraints, and taking social, economic and environmental conditions as well as relevant national and international standards and characteristics of sustainability and manufacturability into consideration, without compromising ethical principles.

3 x Program Elective Course

ELECTIVE COURSE

CENG391 Database Management Systems

Introduction to database systems. Entity-relationship modeling. Relational model. Data description and query languages. Normal forms and database design. Physical design and access strategies. Security, integrity and reliability. Database design and implementation project.

CENG371 File Organization and Management

Secondary Storage Devices, Fundamental File Structure Concepts , Memory and Buffer Management, Sequential Access, External Sorting Methods, Organizing Files for Performance, Random Access, Indexing, Tree Indexes, Hashing, Extendible Hashing.

CENG379 Graphical Interface Design

Basic principles of user interfaces, human capabilities and limitations. Usability paradigms and principles. User and task analysis. Design process, prototyping and evaluation. Color and typography. New User Interface technologies.

CENG389 Operating Systems Applications

The difference between user-oriented applications with the operating system, applications, transition unless the application, processes, work segmentation, operating system calls, and use of, inter-process communication methods: signals, shared memory, pipes, FIFO, document locking, soketlet, processes and work segmentation between timing methods: mutex, semaphore, deadlock problem, the manufacturer of consumer-based applications structures, operating systems, application security, environment variables, document I / O.

CENG393 Computer Networks-II

Local and wide are network Technologies. Integrated Services Digital Network (ISDN), Frame Delay, Asynchronous Transfer Mode (ATM), Routing and routing protocols. General information about Computer Networks Operating Systems.

CENG372 Object Oriented Design

Object oriented concepts, analysis and design, Unified Modeling Language (UML), object oriented languages and environments, visual programming, rapid application development.

CENG374 Internet Programming

Introduction to HTML, intermediate HTML 4, Javascript control structures, functions, arrays, objects, dynamic HTML - CSS, object model and collections, event model, filters and transitions.

CENG376 Image Processing

Image formation and reproduction, Image sampling and quantization, two-dimensional systems and transforms, Image enhancement, Image filtering and restoration, image reconstruction, image segmentation and analysis, random image models and power spectra, image coding, image compression standards.

CENG396 Artificial Intelligence

Introduction to Artificial Intelligence. Heuristic problem solving. State spaces. Serching at state spaces. Games. Minimum spanning tree. Knowledge modeling. Representing knowledge. Logic. Neural networks. Fuzzy Logic.

CENG382 Computer Graphics

Survey of Computer Graphics, Overview of Graphics Systems. Output Primitives. Attributes of Output Primitives. 2-D Transformations. Windowing and Clipping, Segments. 3-D Concepts, OpenGL.

CENG394 Data Mining

Data Mining and Knowledge Discovery, Data Preprocessing, Clustering, Classification, Association Rules, Outlier Detection, Data Warehouses.

CENG471 Game Software Development

History of games and current trends in games. The main concepts on game design and development. Evaluating commercial games. Main game design issues. Creating simulations. Using artificial intelligence in games. Using physics and mathematics in games. Main computer graphics concepts used in games. Human computer interaction concepts for developing a game.

CENG473 Quantum Computer Engineering

Quantum Computer Engineering The aim of the course, the students, to introduce quantum mechanics, atomic quantum computer that is being developed under the physical level and the theoretical foundations of information, quantum algorithms, quantum cryptography and quantum communication to teach.

CENG475 Application Development Frameworks

C # and Java programming languages, such as current and advanced application development environment (IDE) promotion and use of project management with these IDEs, project development and advanced debugging techniques.

CENG485 Business Process Management

Business concepts and management, business formalization and algorithm development step by step solutions, implementation of the model in workflow diagram creation and programming languages.

CENG487 Advanced Computational Methods

Simulation approach and contributions to the development of their solutions are used in engineering disciplines, modeling approaches, multi-dimensional visualization, statistical analysis methods, approaches for improvement.

CENG489 Pattern Recognition

The definition and purpose of pattern recognition, learning and classification, supervised and unsupervised classification, neural networks, support vector machines, decision trees, statistical pattern recognition, nearest neighbor approach, meanshift, Bayesian-based classification.

CENG491 Computer Security

Information security concepts and models, semiotic models, cryptographic techniques and algorithms, public cryptography, authentication, digital signatures, secure payment systems. Risk and recovery definitions, risk analysis and management.

CENG477 Analysis and Design of Computer Systems

System concept, system type, system models, system analysis, information systems, computer-based information systems.

CENG474 Engineering and Informatics Ethics

Students of the employer, to make them aware of their responsibilities towards its customers and society. Letting students know about the professional conduct of professional organizations regarding information technologies. Ethical and moral issues related to vocational students in the absence of an opinion and to be able to express their opinions orally and in writing. Students moral issues to keep in mind throughout professional life, morally correct, legal and professional rules provide that they must comply hearing.

CENG482 Embedded Systems

Embedded systems and their applications, Metrics of embedded systems, Components of embedded systems, Realization of embedded systems, PCB technologies, Simulation, emulation, rapid prototyping, Testing and certification examples of realizations optimized for different applications, Analysis of development costs and times, Lab work on specific realizations.

CENG476 Project Management

Project planning. Project organization and staffing. Feasibility and cost/benefit analysis. Project management techniques.

CENG484 Parallel Programming

Models of parallel computing – dependence on architecture, trade-off between computation cost and communication cost. Performance measures for parallel computation – computational complexity. Techniques for parallel computation – divide and conquer, partitioning, pipelining,

etc. Parallel algorithms for merging, sorting and searching. Parallel computation involving matrices.

CENG486 Compiler Design

Compilers and translators; lexical and syntatic analysis, top-down and bottom up parsing techniques, semantic analysis, symbol tables, error detection and recovery, code generation and optimization. Related algorithms.

CENG488 Advanced Topics in Computer Engineering

Current computer engineering issues on the project.

CENG478 Medical Informatics

The human body as a machine, physiological systems, measurement systems, and the latest case related to diagnostic techniques, new technologies in patient care and treatment. Computers in medicine: clinical data, information databases in healthcare, electronic patient data, tele-medicine, tele-health. Ethical issues in medical informatics.

SWE473-Embedded Software Development

Embedded Software Development course is primarily intended for students interested in learning how embedded software is to be designed efficiently and correctly. A student taking this course will be introduced to embedded systems, fundamentals of hardware design and architecture, different architectures for embedded software, the tools to get you started on embedded software design, the typical pitfalls of embedded software design and how to avoid them, real-time and embedded operating systems, how embedded software is to be designed in an RTOS-based system, and how embedded software is to be debugged.

SWE488-Advanced Topics in Software Engineering

Advanced topics related to the analysis, design, and development of large software projects.

SWE486- Software Project Line Management

Fundamental concepts of software product lines are introduced. These include commonality and variability; domain and application management; variability modeling and management; reference architectures. Approaches to SPL development, SPL organisation and SPL adoption are discussed. The concept of SPL maturity is also introduced and the Family Evaluation Framework is studied, together with case studies of hypothetical and real life organisations.

CENG490 OCOOP-I

Our students can work in any company in the last period of the last year during their education. They can work for a period of time without ever coming to the school in the last period. During this period they receive a certain amount of salary and this period is also considered for 3 courses in their curriculum. The purpose of O'CO-OP Education is to increase the experience and skills of our students by working in the field. Most of our students

are generally employed by the companies after the training. In this way, our students are getting job before they graduate.

CENG492 OCOOP-II

Our students can work in any company in the last period of the last year during their education. They can work for a period of time without ever coming to the school in the last period. During this period they receive a certain amount of salary and this period is also considered for 3 courses in their curriculum. The purpose of O'CO-OP Education is to increase the experience and skills of our students by working in the field. Most of our students are generally employed by the companies after the training. In this way, our students are getting job before they graduate.

CENG494 OCOOP-III

Our students can work in any company in the last period of the last year during their education. They can work for a period of time without ever coming to the school in the last period. During this period they receive a certain amount of salary and this period is also considered for 3 courses in their curriculum. The purpose of O'CO-OP Education is to increase the experience and skills of our students by working in the field. Most of our students are generally employed by the companies after the training. In this way, our students are getting job before they graduate.