KARADENIZ TECHNICAL UNIVERSITY

OF FACULTY OF TECHNOLOGY

SOFTWARE ENGINEERING DEPARTMENT

UNDERGRADUATE PROGRAM COURSE CONTENTS

1. SEMESTER COURSE CONTENTS

AITB1001 ATATÜRK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION– I (2+0+0) ECTS:2

Course content

Historical concepts, descriptions, descriptions of resources and methods, French Revolution and Industrial Revolution, Collapse of the Ottoman Empire, Tanzimat and Islahat Firman (order) , I. and II. Constitutional Monarchy, Tripoli and Balkan Wars, I. World War, Mondros Truce, Wilson principles, Paris Conference, Atatürk, Samsun and Anatolia, Amasya Notice, National Congress, Opening the Mebusan Assembly, Foundation of Turkish National Assembly (TBMM) , Internal rebellions, 1921 Organic Law, Foundation of the Army, I. Inönü, Sakarya, Kütahya, Eskişehir Wars and the Last Attack, Pacts during the Turkish War of Independence, Lozan Pact, Abrogate of Saltanate.

Textbook / Material

Additional Resource

- M. Goloğlu , Turkish Revolution History, Trabzon 2010
- Mustafa Kemal, 1932, Speech, Ankara
- Commission, 2006, History of the Republic of Turkey, Atatürk Research Center Publications

TDB1001 TURKISH LANGUAGE – I (2+0+0) ECTS:2

Course content

Language and languages; (Language-Nation Relations, Language-Culture) Languages in the world and the place of Turkish language among other languages; (Language families in terms of their sources) Historical Development of Turkish written language: (Old Turkish- Middle Turkish-Divanü Lügati't-Türk, Atabet'ül Hakayık, Harezm Turkish) . Old Turkey Turkish (Old Anatolian Turkish) ; The era new Turkish, Modern Turkish era, West (West eastern Turkish) Turkey's Turkish, East (North-eastern Turkish) Karatay Turkish Phonetics; (Sound and the formation of sound the harmony of vowel sounds) , Fundamental sound Features in Turkish; (Features sound of Turkish, Spelling structure of Turkish, Sentence Emphasis) . Morphology; (Words in terms of form, prefixes, suffixes, roots) . Enumeration and words in respect to their functions; (Noun, pronouns, and adjectives) Verbs; (Shape and Tense supplements). Prepositions-Gerunds; (Derived from nouns-verbs). Meaning Science: Meaning in word, The frame of word meaning. Sentence Knowledge: (Kinds of Sentences). The analysis of sentences.

Textbook / Material

- İnce, Yılmaz et al., 2006; Turkish Language and Composition Information, Celebler Printing, Trabzon

Additional Resource

- Ergin, Muharrem Prof. Dr. 1986; Turkish Grammar, Boğaziçi Publishing House, Istanbul
- Eker, Süer. 2003; Contemporary Turkish Language, Graphicer Publications, Ankara
- Çotuksöken , Yusuf. 2001; Applied Turkish Language Volume-1, Papatya Publishing, Istanbul
- Çotuksöken , Yusuf. 2002; Applied Turkish Language Volume-2, Papatya Publishing, Istanbul
- Banguoğlu, Tahsin. 1974; Grammar of Turkish, Baha Printing House, Istanbul
- TDK Writing Guide - Dictionary

YDB1001 ENGLISH – I (3+0+0) ECTS:3

Course content

Unit 1) Present Simple / Present Progressive Unit 2) Articles / Nouns Unit 3) Some-Any-No-Every / Much-Many-A lot of-A few-A little / How much?-How many? Unit 4) Object Pronouns / Possessive Adjectives / Possessive Pronouns / Possessive Case Unit 5) Adjectives / Adverbs / Comparisons -- Revision Units 1-5 -- Unit 6) Past Simple / Past Progressive Unit 7) Prepositions of Time / Prepositions of Place / Prepositions of Movement ARA SINAV Unit 8) Relative Clauses / Relative Pronouns (who, which, that, whose) Unit 8) Relative Clauses / Relative Pronouns (who, which, that, whose) Unit 9) Reflexive ? Emphatic Pronouns / Which? / One - Ones -- Revision Units 6 ? 9 -- Unit 10 Present Perfect Simple Unit 11) Present Perfect Simple vs. Past Simple / The verb used to DÖNEM SONU SINAVI

Textbook / Material

- Mitchel , Parker. 2004, Live English Grammar Elementary , European Union

Additional Resource

YZM1001 INTRODUCTION SOFTWARE ENGINEERING (2+0+0) ECTS:3

Course content

Basic concepts: abstraction, problem solving, reuse, and system decomposition. Overview of software engineering: life cycle, systems, customers, users, requirements, design, implementation, software quality assurance, testing and maintenance.

Textbook / Material

- I.Sommerville , "Software Engineering", Addison -Wesley, Seventh Edition, 2004, ISBN 0-321-21026-

Additional Resource

- S. L. Pfleeger and J. M. Atlee , "Software Engineering: Theory and Practice ", Pearson Education , Third Edition, 2006, ISBN: 0-13-198461-6
- Arifoğlu and A. Doğru,, ?Software Engineering?, SAS Bilişim Yayınları, 2001, 975-97197-2-X
- R.Pressman , ?Software Engineering: APractitionar?s Approach?, McGraw Hill, Sixth Edition, 2005, ISBN:0-07-285318-2

YZM1003 INTRODUCTION TO PROGRAMMING AND ALGORITHM (3+1+0) ECTS:5

Course content

General classification of programming languages. Introduction to Algorithms. Flow diagrams. Pseudo-codes. C programming environment. C Building Blocks. Variables, data types. Arithmetic, relational and logical operations. Input / output procedures, Loops. Decision structures. Functions. Arrays and Strings. Pointers. Structers. File I/O.

Textbook / Material

- P. Deitel , H. Deitel , "How to Program C", Deitel

Additional Resource

YZM1005 MATHEMATICS – I (4+0+0) ECTS:5

Course content

Functions, inverse functions, plotting the graphs of basic curves, transformation of graphs. Trigonometric functions, inverse trigonometric functions, logarithmic and exponential functions . Limit, rules of limit, continuity . Derivative of function, geometric meaning of derivative, rules of derivative, derivative of trigonometric functions, inverse trigonometric functions, logarithmic and exponential functions. Higher order derivative, chain rules, derivative of implicit functions, applications of derivative, concept of derivation. L?hospital rule, limit at infinity, Rolle Theorem and Mean Value Theorem, extrema of functions . Asymptotes, plotting graphs by observation of changes in functions . Indefinite integrals . Methods of integration, change of variable, integration by parts, integration of polynomials, algebraic and trigonometric (rational) functions . Riemann sums, definite integration and properties, fundamental theorem of analysis. Applications of definite integrals: areas of regions, length of curves, volumes of rotating objects, surface arease, calculation of mass, moment, gravitational center and work. Change of variables for definite integrals. Generalization of integration . Sequences, series, alternating series, power series, series expansion of functions (Taylor and Maclaurin series)

Textbook / Material

- Thomas, GB, Weir , MD, Hass , J., Thomas' Calculus , 12th Edition, 2009, Pearson , USA.

Additional Resource

- Stewart , James, Calculus (Early transcendentals), 6th Edition, Thomson Brooks/ Cole , 2008, USA.
- Adams, RA, Essex , C., Calculus a Complete Course, 2010, Pearson , USA.
- General Mathematics, Mustafa Balcı

YZM1007 COMPUTER ESSENTIALS (3+0+0) ECTS:5

Course content

Introduction to Computer Analog and Digital Signals, Circuits Number Systems Codes Boolean term and simpification of boolean term Logical gates Karnaugh Maps Integrated Circuits Multivibrator and Flip-Flops synchronous sequential circuits Counters Registers Memory Circuits Programable logic circuits

Textbook / Material

- Mano, M. Morris, Digital Design, Prentice Hall, 4th edition.
- Hüseyin Ekiz, Logic Circuits, Change Publications, 5th Edition

Additional Resource

YZM1009 BASIC PHYSICS (3+0+1) ECTS:5

Course content

Vectors, Motion in One Dimension. Motion in Two Dimensions. The Laws of Motion. Circular Motion and Other Applications of Newton's Laws. Work and Kinetic Energy. Potential Energy and Conservation of Energy. Linear Momentum and Collisions. Rotation of a Rigid Object About a Fixed Axis. Rolling Motion and Angular Momentum. Static Equilibrium and Elasticity. Oscillatory Motion, Universal Gravitation.

Textbook / Material

- General Physics / Mechanics I for Science and Engineering Faculties, Kemal Kara and Nursel Kara, Avcıol Publishing, 2004.

Additional Resource

- Applied Fundamental Physics Mechanics, Kudret Özdaş and Ertuğrul Yörükoğulları , Bilim Teknik Publishing House, Istanbul.
- General Physics Problem Solutions, trans.: Mehmet Kara et al., Pegem Akademi Publishing, 2006.
- Fundamentals of Physics Electrical Problem Solutions 2, David Halliday , Robert Resnick , Dost Publications, ISBN: 9789755090252.

2. SEMESTER COURSE CONTENTS

AITB1000 ATATÜRK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION – II (2+0+0) ECTS:2

Course content

Revolutions in the political field, political parties and attempts to transition to multi-party political life, revolutions in the field of law, regulation of social life, innovations in the economic field, Turkish foreign policy in the period of 1923-1938, Turkish foreign policy after Atatürk, Principles of the Turkish Revolution: (Republican, Populism, Secularism, Revolutionism, Statism, Nationalism). Integrative Principles.

Textbook / Material

- Mumcu, A., Özbudun, E., Feyzioğlu, T., Ülken, Y., Çubukçu, A. 1992; Ataturk's Principles and History of Revolution, Higher Education Council Publications, Ankara.
- Ataturk, MK, 2005; Nutuk, Alfa Publications, Istanbul.
- Alpargu , M., Özçelik, İ., Yavuz, N., 2003; Atatürk's Principles and History of Revolution, Gündüz Eğitim ve Yayıncılık, Ankara.

Additional Resource

TDB1000 TURKISH LANGUAGE – II (2+0+0) ECTS:2

Course content

Punctuation and Composition (Punctuation Marks, Other Marks) marks of abbreviations, Spelling Rules (The spelling of capital letters, The writing of quotations. numbers, The Composition the purpose of composition, method in composition writing, planning, introduction, development and result in composition, the features of telling (purity in telling, simplicity in telling, clarity and sincerity in telling mistakes in telling (the use of synonymous words in the sentence). The use of synonymous words in the sentence, The misuse of phrases, Explanation, story, description, criticism, portray, speaking, proving. The kinds of verbal telling (daily and unprepared speaking- prepared speaking, debate, panel) The kinds of written telling (letter, telegraph, celebration, invitation, literary letter Job letters, formal letter, petition, report, decision, announcement, advertisement). Talking, criticism, memoir, travel, writing, interview, survey Autobiography biography novel- story, fable- theater tragedy, drama- scenario, poetry and its kinds.

Textbook / Material

- Turkish Language and Written-Oral Expression Knowledge, Yaşar Akdoğan, Beşir Kitabevi.

Additional Resource

- Turkish Language, Kemal Ateş, İmge Kitabevi Publications, 2007.
- Çotuksöken , Yusuf. 2001; Applied Turkish Language Volume-1, Papatya Publishing, Istanbul
- Eker, Süer. 2003; Contemporary Turkish Language, Graphicer Publications, Ankara
- Çotuksöken , Yusuf. 2002; Applied Turkish Language Volume-2, Papatya Publishing, Istanbul
- Banguoğlu, Tahsin. 1974; Grammar of Turkish, Baha Printing House, Istanbul
- TDK Writing Guide - Dictionary

YDB1004 ENGLISH – II (2+0+0) ECTS:2

Course content

Reading texts related to the department; grammar activities; related vocabulary and translation between two languages; listening actitivites; discussions over the related current topics in the field

Textbook / Material

- Velioğlu, A., Kandiller, B. 1996; Reader at work-1-2, METU, Ankara

Additional Resource

- Malarcher C., Janzen A. 2004; Reading for the Real World 1-2, Great Britain

YZM1000 SOFTWARE REQUIREMENTS ENGINEERING (2+0+0) ECTS:4

Course content

Principles of software requirements. Requirements from the perspective of the customer. Requirements engineering applications. Requirements analyst role. Product development vision and scope of the project. Understanding the needs of customers and users. Requirements to be documented. Prototyping risk reduction method. Need for setting priorities. Validation requirements. Software requirements management. Engineering application requirements. Formal reasoning and specification of requirements engineering.

Textbook / Material

- Leffingwell , D. Widrig , D., Managing Software Requirements: A Use Case Approach, Addison Wesley, 2nd edn , 2003.

Additional Resource

- Chenuturi M, Requirements Engineering and Management for Software Development Projects , 2013, Springer
- Hull , E et al., Requirements Engineering, 2011, Springer

YZM1002 LINEAR ALGEBRA (3+0+0) ECTS:5

Course content

Vectors in R^n and C^n, Space Vectors, Matrix Algebra, Systems of Linear Equations, Gaussian Elimination Method, Vector Spaces, Base and Size, Rank of a Matrix, Linear Transformations, Matrix Representation of a Linear Operator, Base Change, Permutations, Determinants, Minors and Cofactors, Cramer's Rule, Finding Inverse Matrix, Diagonalization: Eigenvalues and Eigenvectors, Canonical Forms.

Textbook / Material

- Seymour Lipschutz , Ph.D. , Marc Lipson , Ph.D .; Linear Algebra, Nobel Academic Publishing, Ankara, 2013

Additional Resource

- Hacısalihoğlu, HH, 1982; Linear Algebra, Bizim Büro, Ankara

YZM1004 MATHEMATICS – II (4+0+0) ECTS:5

Course content

Matrices, determinants, eigenvalues and eigenvectors, inverse matrix. Systems of lineer equations and solutions by reduction to echelon form and Crammer rule. Conic sections and quadratic equations, polar coordinates and plotting graphs, parameterization of curves on plane. Three dimensional space and Cartesian coordinates. Vectors on the plane and space. Dot, cross and scalar triple product. Lines and planes on three dimensional space. Cylinders, conics and sphere. Cylindrical and spherical coordinates. Vector valued functions, and curves on the space, curvature, torsion and TNB frame. Multi variable functions, limit, continuity and partial derivative. Chain rule, directional derivative, gradient, divergence, rotational and tangent planes. Ekstremum values and saddle points, Lagrange multipliers, Taylor and Maclaurin series. Double integration, areas, moment and gravitational center. Double integrals in polar coordinates. Triple integrals in cartesian coordinates. Mass, moment and gravitational center in three dimensional space. Triple integrals in cylindrical and spherical coordinates. Change of variables in multiple integrals. Line integrals, vector fields, work, flux. Green?s theorem on plane. Areas of surface and surface integrals. Stokes theorem, divergence theorem and applications.

Textbook / Material

- Thomas, GB, Finney , RL. (Translated by : Korkmaz, R.), 2001. Calculus and Analytic Geometry, Volume II, Beta Publications, Istanbul.

Additional Resource

- Balcı, M. 2009. General Mathematics 2, Balcı Publications, Ankara
- Kolman , B., Hill, D. L. (Trans. Edit : Akın, Ö.) 2002. Applied linear algebra. Palme Publishing, Ankara.

YZM1006 WEB DESIGN AND PROGRAMMING (2+2+0) ECTS:5

Course content

1 History of The Internet , Internet Infrastructure, Browsers, HTML , XHTML and HTML Text Formatting Tags 2 Lists and Links on HTML 3 Images and Tables on HTML 4 Frames, Forms and Form Elements on HTML 5 Form Elements on HTML 6 HTML5 and HTML5 Tags 7 HTML5 Tags 8 Introduction to CSS and CSS Selectors 9 Background , Font / Tag Formatting on CSS and Box Model (Border Lines) 10 Lists and Tables Formatting on CSS 11 Classification and Positioning on CSS 12 Pseudo Classes and Pseudo Elements on CSS 13 Sections of XML Document and Basic Structure of DTD 14 XML Schemas, Formatting XML Document and Using XSL

Textbook / Material

- Aydemir, M. 2013; Web Design Guide, Kodlab Publishing House

Additional Resource

- Çiçek, M. 2013 ; Web Design Fundamentals, Kodlab Publications
- Balaban, E. 2013; Web Design Guide, Pusula Publishing

YZM1010 DATA STRUCTURES (2+2+0) ECTS:5

Course content

The foundations of Java, Object-Oriented Programming, Arrays, Linked Lists, and Recursion, Analysis Tools, Stacks, Queues, and Deques, List and Iterator ADTs, Trees, Heaps and Priority Queues, Hash Tables, Search Trees, Sorting, Sets, and Selection, Strings and Dynamic Programming, Graph Algorithms, Memory Management and B-Trees.

Textbook / Material

Additional Resource

3. SEMESTER COURSE CONTENTS

YDI2001 READING AND WRITING IN ENGLISH (2+0+0) ECTS:3

Course content

Reading texts related to the department; grammar activities; related vocabulary and translation

Textbook / Material

- METU Publications, Reader at Work I
- Brumby Paul and Sheila , 1985, A Reading Skills Course, Ankara University Press, AnkaraMosback Gerald, Mosback Vivienne , 1988, Practical Faster Reading, Cambridge University Press , Cambridge

Additional Resource

- Öztürk Cesur, 2000, Fundamentals of English Grammar , Hacettepe Taş, Ankara

YZM2005 DIFFERENTIAL EQUATIONS (4+0+0) ECTS:5

Course content

Differential equations and basic concepts. Differential equations as mathematical models . (Ordinary-partial differential equations, degree and order of differential equations. Obtaining differential equations). General, special and singular solutions of differential equations. Existence-Unity theorems. Direction fields and solution curves. Differential equations that can be separated into their variables and transformed into homogeneous, exact and exact forms . Linear differential equation, Bernoulli differential equation and applications (population model, acceleration-velocity model, heat problems). Variable substitution method. Reducible equations (non-linear differential equations that do not include one of the variables). General solution theory of n-th order linear differential equations (linear independence of solutions, superposition principle for homogeneous equations, special and general solution concepts). General solutions of n-th order homogeneous differential equations with constant coefficients. Non-homogeneous equations with constant coefficients and solution methods. (Uncertain coefficients method, Variation of parameters method). Initial and boundary value problems. (Eigenvalues, eigenfunctions for boundary value problems. Physical applications, mechanical vibrations, Electrical circuits). Homogeneous and non-homogeneous differential equations with variable coefficients (Cauchy -Euler, Legendre differential equations). Demotion method. Solution of differential equations with the help of series around the common point. Laplace and inverse Laplace transforms. Solutions of initial value problems with constant and variable coefficients and differential equations involving Delta- Dirac and translation

functions using the Laplace method. Systems of differential equations. Conversion of higher order differential equations to first order system. Solution of homogeneous systems of differential equations using eigenvalue and eigenvector methods. Solutions of non-homogeneous systems of constant coefficient differential equations. Application of Laplace transforms to systems of differential equations. Numerical solution methods for differential equations (Euler and Runge -Kutta method).

Textbook / Material

- Edwards, CH, Penney , DE (Translated by Ed. AKIN, Ö). 2006; Differential Equations and Boundary Value Problems (Chapter 1-7), Palme Publishing, Ankara.

Additional Resource

- COŞKUN, H. 2002; Differential Equations, KTÜ Publications, Trabzon.
- BAŞARIR, M., TUNCER, ES 2003; Differential Equations with Solved Problems, Change Publications, Istanbul.

YZM2007 OBJECT-ORIENTED PROGRAMMING (2+2+0) ECTS:5

Course content

Basic principles of object-oriented programming. Basics of programming in C++, data types, array and string structures. Decision structures, loops, functions. Template structured functions with overloading. Object oriented programming with class. Constructor and destructor functions. Inheriting in classes. Interclass relations. Classes and pointers. Polymorphism, virtual and friend functions. Overload constructs in classes. Template structures in classes. STL. File input/output operations.

Textbook / Material

- Malik, D.S. 2002; "C++ Programming from Problem Analysis to Program Design", Course Technology, Thomson Learning.

Additional Resource

YZM2011 OPERATING SYSTEMS (3+0+0) ECTS:4

Course content

1. Introduction, Development of Operating System , Some Operating System Concepts 2. Processes and Process Status 3. Process Scheduling , Process Scheduling Algoritms 4. Interprocess Communication 5. Deadlock 6. Thread 7. Memory Management 8. Virtual Memory 9. Operating System Policy for Memory Mangement 10. File System 11. Input/Output 12. Security 13. Multimedia 14. Distributed and Network Operating Systems

Textbook / Material

- http://user.ceng.metu.edu.tr/~genc/334/334.html
- Andrew S. Tanenbaum (2008), Modern Operating System, Prentice Hall.
- Andrew S. Tanenbaum (2001), Operating Systems Design and Implementation , Prentice Hall.

Additional Resource

YZM2017 DATABASE AND MANAGEMENT (2+2+0) ECTS:5

Course content

Basic concepts of database, data models, relational data model, components and characteristics of relational data model, entity-relational model, entity-relational diagrams, transaction from e-r diagram to tables, normalization, tables and its characteristics, SQL Server software and its components, design and implementation physical database, data integrity, constraints, structured query language, simple queries, advanced queries, views, index theory and management, stored procedures, triggers, backup and back from backup.

Textbook / Material

- Gözüdeli , Yaşar. 2014. SQL Server and Database Programming, Seçkin Publishing House.

Additional Resource

- Aslan, Bora. 2013. Veri tabanı ilkeleri ve yönetim sistemleri, Paradigma yayınları.

USEC0005 GENERAL SOCIOLOGY (2+0+0) ECTS:4

Course content

In this course, students will learn about introductionary sociology, history of sociological thinking, basic concepts of sociology, contemporary sociological theories, sociological research techniquies, social groups, social crime, socialization, policy, religion, family, economy and society, globalizaton.

Textbook / Material

Additional Resource

YZM2025 DEVELOPING SCIENTIFIC PROJECT (2+0+0) ECTS:4

Course content

What is a scientific project, data, what are the definitions of knowledge, science, scientific research, scientific study, approach, method, technical and research originality concepts, Scientific research methods, Finding the project idea, TUBITAK projects and research project 2209-A for undergraduate students, Preparation of the problem definition section and its examples, Preparation of the purpose section and its examples, Preparation of the research question and / or hypothesis section and its examples, Preparation of the methods and methods used in the project section and its examples, Preparation of the project work time plan and its examples, Preparation of summary and conclusion section and its examples, Information about TUBITAK projects for industry.

Textbook / Material

- https://www.tubitak.gov.tr/tr/burslar/lisans/burs-programlari/2209-a/icerik-onemli-hususlar
- fbclid=IwAR0F_ANHfu9DI-ialK62FxMI1xaNnT9CiZ4k52BRB2lgYSG0JLYKd8LkZh0
- http://www.tubitak.gov.tr/tubitak_content_files/BIDEB/Yurutme_kural_ve_ilkeler/2209_kural.pdf
- http://www.manas.edu.kg/BAP/PROJE_YAZMA_EGITIMI_1-bolum.pdf
- http://tubitak1000.org/files/proje_yazma_egitimi-2._bolum.pdf

Additional Resource

YZM2015 ENGINEERING AND IT ETHICS (2+0+0) ECTS:4

Course content

Introduction to Ethics and information technology, ethical values and concepts, the structure of ethical theories. Professional ethics and responsibility. Security and network ethics. Personality and Internet environments, privacy, and security. Intellectual property and waste values. Copyright protection methods patent rights, copyrights, and professional responsibility, and license agreements. Security issues, hacking and cracking. Internet computing environments to be problems in the trial. Internet and criminals. Electronic Commerce.

Textbook / Material

- Herman T. Tavani , (2007) Ethics and Technology: Ethical Issues in an Age of Information and Communication Technology, Wiley .

Additional Resource

USEC0007 PROTECTION OF PERSONAL DATA (2+0+0) ECTS:4

Course content

Personal data law. Personal data and data controller concept. General principles in the processing of personal data. Terms of processing personal data. Obligations of the data controller. Relevant person and their rights. Right of application and complaint. Data Controllers Registry (Verbis). Offenses and misdemeanors within the scope of protection of personal data. Precedent and decisions of the Personal Data Protection Board.

Textbook / Material

- .Personal Data Protection Authority Publications (kvkk.gov.tr)

Additional Resource

4. SEMESTER COURSE CONTENTS

YZM2000 PROBABILITY AND STATISTICS 3+1+0 ECTS:5

Course content

Axiomatic approach to probability, probability axioms, conditional probability and statistical independence, independent variables, probability distributions, means, and standard deviations, variance, shared variables, Binomial, Gaussian, Uniform, Rayleigh, Rician, Exponential, Gamma distributions and their models, characteristics. Functions, probability functions, conversion techniques, multivariate probability distributions, the general input processes, correlation functions and their applications

Textbook / Material

- . Probability and Statistics; Fikri Akdeniz, Nobel Publishing House

Additional Resource

- Ziemer RE, 1997; Elements of Engineering Probability and Statistics , Prentice -Hall, USA

YZM2002 MICROPROCESSORS 2+0+2 ECTS:5

Course content

Definition of microprocessors/microcontrollers, Selection of suitable microprocessors/microcontrollers for the task, Expressing the algorithm with flowchart symbols and converting it to code by applying program development steps, Compilation of the program and the process of troubleshooting errors, Testing and verifying the written code in a simulation environment, Loading the program onto the microprocessor/microcontroller, Developing programs using basic I/O functions with microprocessors/microcontrollers, Creating applications for microprocessor/microcontroller-based 7-segment displays and matrix LED displays, Developing applications for DC and stepper motors based on microprocessors/microcontrollers, Creating applications for keypads based on microprocessors/microcontrollers, Developing applications for LCDs based on microprocessors/microcontrollers and integrating them with other learned applications, Interrupts, their necessity, and applications, Developing ADC applications based on microprocessors/microcontrollers, Developing applications for comparison, capture, and pulse-width modulation based on microprocessors/microcontrollers, Developing applications for servo motors based on microprocessors/microcontrollers, Developing applications for ultrasonic distance sensors based on microprocessors/microcontrollers, Developing applications for various sensors based on microprocessors/microcontrollers.

Textbook / Material

- Yazıcı, R., 1998, Microcomputer Hardware and Software, KTÜ Publications, Trabzon, 345 p.
- Brey , B., B., 1984, Microprocessor /Hardware Interfacing and Applications, Merrill, 414 p.

Additional Resource

- Şahin, H. and Dedeoğlu, KS, PIC Programming with MikroC , Altaş Publishing.

YZM2008 DISCRETE MATHEMATICS 2+1+0 ECTS:4

Course content

Sets. Functions. Logic and Proofs. discrete and continuous probability. Enumerative combinatorics. Recurrence Relations. Graph Theory, Representing graphs. The 4-color problem. Boolean Algebra and Combinatorial Circuits. Sets. Formal systems. Hamilton and Euler loops. Counting and relations.

Textbook / Material

- Kenneth H. Rosen , Discrete Mathematics and Applications, Palme Publishing, 2005, translation from the seventh edition (Prof. Dr. Ömer Akın and Assistant Prof. Dr. Murat Özbayoğlu)
- Nabiyev V. 2009, Algorithms. Kombinatorika , Seçkin Y., 864 p.

Additional Resource

- Taurus Rifat Çölkesen , Informatics Mathematics: Applied Discrete Mathematics, papatya publishing 2015

YZM2010 PROFESSIONAL ENGLISH 2+0+0 ECTS:3

Course content

Companies, contacts, visitors, new products, employers, customer service, travel, orders, sales, new ideas, motivation, performance, new trends, time and training

Textbook / Material

- Business Result Intermediate , Oxford University Press .

Additional Resource

YZM2016 ADVANCED WEB APPLICATIONS 2+2+0 ECTS:5

Course content

1. Introduction to PHP, Client Server Architecture, Application Softwares Installation and Testing 2. Variable Concept, Constants, Operators and Predefined Variables 3. Predefined Mathematical Functions and Decision Control Structures 4. Arrays 5. Text Operations and Predefined Text Functions 6. Loop Control Structures 7. File Management 8. Session and Cookies Concepts 9. Working with Forms on PHP, Date and Time Functions 10. Functions, Sending Mail with PHP 11. MySQL and PhpMyAdmin, Make MySQL Database Connectivity with PHP, Insert Data to Table on MySQL Database with PHP 12. Make Query, Erase Data, Update Data on MySQL Database Table with PHP 13. Object Oriented Programming on PHP 14. Inheritance Concept on PHP with Respect Object Oriented Programming

Textbook / Material

- Balaban, E. 2013; Php and MYSQL, Pusula Publishing

Additional Resource

- Şamlı, M. 2013; Php For Experts, Kodlab Publications
- Çelik, R. 2012; Php from A to Z, Seçkin Publications

YZM2020 RESEARCH METHODS 2+0+0 ECTS:4

Course content

The basic concepts related to the research, research methods, data collection instruments, data analysis (qualitative-quantitative), resource-making, literature, problem solving, validity and reliability, basic statistics, research report writing.

Textbook / Material

- Büyüköztürk, Ş., Çakmak, EK, Akgün, Ö. E., Karadeniz, Ş. and Demirel, F. 2008; Scientific Research Methods, Pegem Academy, Ankara

Additional Resource

- Karasar, N. 1999; Scientific Research Method, Nobel Publication Distribution, 9th Edition, Ankara.
- Çepni, S. 2007; Introduction to Research and Project Work. Expanded 3rd edition, Celepler Printing, Trabzon.

USEC0004 PROFESSIONAL ETHICS 2+0+0 ECTS:4

Course content

Morality and ethics, ethical theories, professional ethics, engineering ethics, scientific and publication ethics, professional corruption, discussion

Textbook / Material

Additional Resource

YZM2006 PRESENTATION TECHNIQUES 2+0+0 ECTS:4

Course content

The importance of presentation, presentation planning, presentation excitement, presentation process, nice and effectual speaking, answering the questions, the use of visual material, the use of support materials

Textbook / Material

- Lecturer course presentation notes

Additional Resource

- The art of effective and beautiful speaking, Sırrı Er, Hayat Publishing.
- Diction and the art of eloquence, Ö. Faruk Reca , Tutku Publishing.
- Meeting and presentation techniques, Erhan Sarıdoğan , Papatya Publishing.
- Effective Speech Techniques , Murat Baykızı , Snow Publications, October 2005
- Research writing presentation techniques, Yücel İslam, distinguished publishing.
- Effective presentation techniques, Demet Gürüz, Ayşen Temel Eğinli, Detay Publishing.
- The art of effective and beautiful speaking, Ali Kaya, Eğitim Kitabevi Yayınları.

USEC0012 CAREER PLANNING 2+0+0 ECTS:4

Course content

Textbook / Material

Additional Resource

5. SEMESTER COURSE CONTENTS

YZM3001 FORMAL LANGUAGES AND AUTOMATA 3+0+0 ECTS:4

Course content

AUTOMATA THEORY : Languages, Recursive Definitions, Regular Expressions, Finite Automata, Transition Graphs, Kleene's Theorem, Finite Automata with Output, Regular Languages, Nonregular Languages (The Pumping Lemma, Myhill-Nerode Theorem), Decidability. PUSHDOWN AUTOMATA THEORY : Context-Free Grammars (Trees, Ambiguity), Grammatical Format (Regular Grammars, Chomsky Normal Form, Leftmost Derivations), Pushdown Automata, CFG=PDA, Non-Context-Free Languages (The Pumping Lemma for CFLs), Context-Free Languages (Closure Properties), CYK Algorithm. TURING THEORY : Turing Machines (TM), Post Machines, Minsky's Theorem, Variations on the TM (The Move-in-State Machine, The Stay-Option Machine, The k-Track TM, The Two-Way Infinite TAPE Model, The Nondeterministic TM, The Read-Only TM) , TM Languages (The Encoding of Turing Machines, The Universal Turing Machines, Halting Problem), The Chomsky Hierarchy (Phrace-Structure Grammars, Context-Sensitive Grammars), Computers (Computable Functions, Church's Thesis).

Textbook / Material

- Yarımağan , Ünal. 2011, Automata Theory and Formal Languages
- Cohen, D. 1997; Introduction to Computer Theory (2nd).
- Sipser , M. 2013; Introduction to Theory of Computation (3rd).

Additional Resource

YZM3007 NUMERICAL ANALYSIS 2+2+0 ECTS:5

Course content

Mathematical modeling concept, approximations and errors. Roots of equations. Systems of algebraic equations. Curve fitting. Interpolations. Tables of Finite Differences.Numerical differentiation and numerical integration. Solution of ODE's.

Textbook / Material

- Atkinson, K. 1989 An introduction to Numerical Analysis, John Wiley Pub .

Additional Resource

- Bayram, Mustafa 2002; Numerical Analysis, Aktif Publishing House, Ankara.

YZM3009 SYSTEM PROGRAMMING 2+1+0 ECTS:4

Course content

1. Introduction to Unix, Structure of Unix System and Command System 2. Unix File System , File Permissions 3. Use of Text Editing Editors 4. Input/Output Redirection and Pipe Structures 5. Regular Expressions 6. Unix Window System 7. Unix Shell Environment ve Shell Environment Variables 8. Introduction Shell Script 9. Basic Shell Script 10. Advanced Shell Script 11. Software Development and Debug 12. File Management and Applications 13. Process Management 14. Basic Unix System Administration

Textbook / Material

- http://courses.cs.vt.edu/~cs2204/summer2004/notes/
- Haviland , K., Gray, D., Salama, B. 1999; UNIX System Programming, 2nd ed., Addison -Wesley, 350 p.

Additional Resource

- Kochan , S.G., Wood , P. 2003; UNIX Shell Programming, 3rd ed., Sams , 460 p.
- Robbins, KA, Robbins, P. 1996; Practical UNIX Programming, Prentice Hall, 658 p.

- Michael, R. K. 2003; Mastering UNIX Shell Scripting, Wiley , 680 p.

YZM3017 SOFTWARE DESIGN AND ARCHITECTURE 3+1+0 ECTS:5

Course content

Introduction to the Design and the Architercture of Software. Software Process, software development life cycle. SOLID Principles (Single Responsibility Principle,Open/Closed Principle,Liskov?s Substitution Principle,Interface Segregation Principle,Dependency Inversion Principle) . Unified Modeling Language (UML). Design patterns. Creational Design Patterns, Structural Design Patterns and Behavioural Desgn Patterns.

Textbook / Material

- Head First Design Patterns , O?Reilly , Eric Freeman , Elisabeth Freeman , Kathy Sierra, Bert Bates , First Edition October 2004.
- Software Architect's Handbook, Uml and Design Patterns with C, Java and Csharp , Pusula Publishing, September 2014, Aykut Taşdelen
- Design Patterns : Elements of Reusable Object Oriented Software, E. Gamma, R. Helm , R. Johnson, and J. Vlissides , Addison ?Wesley Professional, 1995.

Additional Resource

- Analysis Patterns : Reusable Object Models , Martin Fowler , (1996-11-27). Addison -Wesley.

YZM3013 SCRIPTING LANGUAGES 2+0+0 ECTS:4

Course content

1. Introduction to Javascript , Installation and Test of Development Environment 2. Variables, Constants and Operators 3. Decision Control Structures 4. Loop Control Structures 5. Arrays 6. Regular Expressions 7. Functions 8. Object Oriented Programming and Javascript Objects 9. Document Object Model (DOM) 10. Events 11. Browser Object Model (BOM) 12. Error Checking and Timers 13. Forms and Form Elements 14. Cookies and Sessions

Textbook / Material

- Çelikbilek , İ. 2013; Javascript Programming, Kodlab Publications

Additional Resource

- Akın, FK 2016; Modern JavaScript, Portrait
- Arslan, Selahattin. 2002; Javascript For Everyone, Turkmen Publishing House
- Flanagan , D. 1998 ; JavaScript: The Definitive Guide

YZM3027 DEVELOPMENT OF MOBILE APPLICATION 2+0+0 ECTS:4

Course content

Introduction to Mobile Programming, Application Components and Activity Structure, User Interfaces, Intent Concept and Broadcast Receivers, Preferences and File Management, Database Management and Content Providers, Internet Access, Background Processes, Service and Alert Concepts, Positioning and Map Management, Sensors and Sensor Management, Publishing an Android App to the Google Play Store.

Textbook / Material

- Meier , R. 2013; Android Application Development for Professionals, Compass.
- Norman, AE 2015; Programming with Android Studio, Kodlab .

Additional Resource

YZM3031 INFORMATION SECURITY AND CRYPTOLOGY 2+0+0 ECTS:4

Course content

Information Security / Cyber security related definitions and security attacks,Information security principals and objectives, General definitions of cryptography, Basic security mechanisms and secure network designs, Number theory and modular arithmetic, The history and types of cryptography, Symmetric, asymmetric encryption methods, Hashing algorithms, Public key cryptographic algorithms, RSA, Hand-Gamal Encryption Methods, Elliptic Curve Cryptography, Digital signatures, Security certificates, Security risk analysis and planning

Textbook / Material

- Eşref Adalı, Computer and Information Security and Management

Additional Resource

- Forouzan , Behrouz , McGraw Hill, 2009, Cryptography and Network Security

YZM3011 HUMAN-COMPUTER INTERACTION 2+0+0 ECTS:4

Course content

General concepts of human computer interaction. User interface design principles and evaluation. Concepts to evaluate the usability of software user interface design. Usability engineering. Adaptation of software engineering processes to improve usable software.

Textbook / Material

- Shneiderman , B. 2016.Designing the User Interface: Strategies for Effective Human-Computer Interaction , Pearson , 6th Edition.

Additional Resource

- Preece J. 2015. Interaction Design: Beyond Human-Computer Interaction , John Wiley , 4th Edition .

YZM3021 3D MODELING AND ANIMATION 2+0+0 ECTS:4

Course content

Understanding the Maya Interface, Modeling with Polygons, Surfacing the Character, Blend Shapes, Set Up Joint System, Weighting the Joints, Rigging the Character, Setting the Scene, Animating the Character, Lighting the Shot, Rendering and Compositing the Scene

Textbook / Material

Additional Resource

YZM3033 CONCEPTS OF PROGRAMMING LANGUAGES 2+0+0 ECTS:4

Course content

Introduction, Programming Language Evaluation Criteria, Language Design, Describing Syntax, Attribute Grammars, Describing Semantics, Lexical and Syntax Analysis, Names, Bindings, and Scopes, Data Types, Expressions and Assignment Statements, Statement-Level Control Structures, Subprograms, Implementing Subprograms, Concurrency, Functional Programming Languages, Logic Programming Languages

Textbook / Material

- Robert W. Sebesta , Concepts of Programming Languages , Pearson Education , 11th Edition, 2016.

Additional Resource

- John J. Mitchell, Concepts in Programming Languages, Cambridge University Press , 2003.

YZM3035 INNOVATION AND PRODUCT DESIGN IN ENGINEERING 2+0+0 ECTS:4

Course content

The course covers design and innovation engineering. The role of design and innovation engineering in the software development process, its different phases, tools and techniques used are examined. Topics such as product perspective, R&D approaches, data analytics and product development, project management, agile processes, prototyping and product development, technological innovations and trends, branding, usability analysis, psychological factors, human-centered product and software design are also covered.

Textbook / Material

- "Design Thinking for the Digital Age: Solving "Complex Problems with a Human- Centered Approach" by Kim Goodwin
- "The Lean Startup : How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses " by Eric Ries
- The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail, Clayton M. Christensen

Additional Resource

- “Scrum: The Art of Doing Twice the Work in Half the Time” Jeff Sutherland and JJ Sutherland .
- “Design Thinking A Guide to Creative Problem Solving for Everyone ” by Andrew Pressman
- The Design Of Everyday Things by Don Norman
- Designing for People: An Introduction to Human Factors Engineering, John D Lee, Christopher D. Wickens , Yili Liu, Linda Ng Boyle

YZM3037 COMPUTER SYSTEMS SECURITY 2+0+0 ECTS:4

Course content

It ensures that security vulnerabilities, threats and risks that may arise in the digital world are learned and valid up-to-date measures can be taken. Security negligence in other courses taught in the software engineering department will be eliminated.

Textbook / Material

- Security in Computing Fifth Edition/ Charles P. Pfleeger , Shari Lawrence Pfleeger , Jonathan Margulies
- Fundamentals of Information Systems Security, David Kim, Michael G. Solomon, Özgü Can

Additional Resource

- Computer System and Network Security/ Gregory B. White, Eric A. Fisch , Udo W. Pooch

6. SEMESTER COURSE CONTENTS

YZM3002 SOFTWARE TESTING AND VERIFICATION 2+0+1 ECTS:4

Course content

This course addresses validation and verification, quality management, process improvement, static and dynamic software testing and analysis in the context of an overall effort to achieve quality.

Textbook / Material

- Addison Wesley, 2007, Software Engineering 8, Ian Sommerville , 8th Ed.
- Ilene Burnstein , 2003, Practical Software Testing, , Springer

Additional Resource

- Aditya P. Mathur , 2009, Foundations of Software Testing, Pearson education

YZM3012 ARTIFICIAL INTELLIGENCE 3+1+0 ECTS:5

Course content

Introduction to Artificial Intelligence (AI): Definition of Intelligence; Definition, Aims, Importance and Limits of AI. Types and Applications of Artificial Intelligence Classification Problems and Probabilistic Classification (Naive Bayes) Classification Problems and Instance-based Classification (k-nn, decision trees) Meta-heuristic search algorithms, genetic algorithm, artificial bee colony Meta-heuristic search algorithms, symbiotic organism search Estimation Problems and Algorithms Artificial Neural Networks, Intuitive Prediction Algorithm Coding of Artificial Neural Networks

Textbook / Material

Additional Resource

YZM3014 COMPUTER NETWORKS 2+1+0 ECTS:5

Course content

1. Development of Internet and Transmission Medias 2. Asynchronous and Long Distance Communication 3. Packet and Frame Transmission, Error Detection 4. Local Area Network (LAN) Technologies and Network Topologies 5. Hardware Addressing 6. LAN Wiring, Physical Topology and Interface Hardwares 7. LAN Extending Hardwares 8. Long Distance Digital Connection Technologies 9. Wide Area Network Technologies And Routing, Network Ownership, Service Paradigm 10. Protocols And Layering System , Internetworking 11. Internet Protocol (IP) Addresses , Binding Protocol Addresses 12. IPv4 Datagram And Forwarding, IP Encapsulation, Fragmentation and Reassembly of IPv4 Datagram 13. New Generation IP (IPv6) , Fragmentation and Reassembly of IPv6 Datagram 14. Reliable Transport Service

Textbook / Material

- http://www.cs.nyu.edu/artg/telecom/fall99/lecture_notes/
- Computer Networks, 5th Edition, Andrew Tanenbaum , Pearson education Int ., ISBN: 0132126958

Additional Resource

YZM3000 COMPILER DESIGN 2+0+0 ECTS:4

Course content

1. Compiler and Interpreter, Compile Phases 2. Tree Representation of Basic Straight A Program 3. Lexical Analysis 4. Regular Expression and Representation with Regular Expression of Tokens 5. Lookahead, Ambiguities and Error Handling 6. Compiler Compiler, JavaCC File Structure, Create Scanner with JavaCC 7. Syntax Analysis, Introduction to Parsing 8. Context- Free Grammer (CFG), Righmost and Leftmost Derivation 9. Parse Tree and Ambiguous Grammar 10. Recursive-Descent Parsing 11. First and Follow Sets and Left Factoring 12. LL and LR Parsing 13. Semantic Analysis, Visitor Pattern, instanceof Operator 14. Abstract Syntax Tree

Textbook / Material

- Appel , A.W., 2002; Modern Compiler Implementation in Java, 2nd ed., Cambridge University Press , 501 p.

Additional Resource

- Cooper, K., Torczon , L. 2003; Engineering a Compiler, 1st ed., Morgan Kaufmann, 801 p.
- Grune , D., Bal, H., Jacobs, C., Langendoen , K. 2000; Modern Compiler Design, Wiley , 736 p.

YZM3024 MOBILE PROGRAMMING 2+0+0 ECTS:4

Course content

Introduction to IOS mobile programming, Basic Interface creation and Auto Layout, Interface and code connection, Pickerview, Tableview and Navigation Controller, Notification Center, MapView and TapController, LocationManager, UserDefaults, Realm Database, URL Request, JSON Parser, Async Task and Download Image, Manual side menu creation.

Textbook / Material

- İmrağ , Ö. 2016; iOS Programming Fundamentals with Swift, Dikeeksen .

Additional Resource

YZM3006 DATABASE MANAGEMENT SYSTEMS 2+0+0 ECTS:4

Course content

Database management systems (vtys), relational vtys software, open source vtys software, nosql concept, non-relational vtys software, types, architectures, sample applications

Textbook / Material

- Gözüdeli , Y. 2014; SQL Server 2014 for software developers, Seçkin Publishing, Ankara

Additional Resource

- Öztürk, Hakan T, 2012, Oracle Database 11g R2, Pusula, istanbul
- Ullman , L. 2006, MySQL Books for Beginners , Peachpit press

YZM3022 EDUCATIONAL SOFTWARE DESIGN 2+0+0 ECTS:4

Course content

Technology enhanced learning, Educational software, Addressing educational software design, General conceptualization for educational software, Intelligent tutoring system, Adaptive educational hypermedia, Examples of educational software, Computer science perspectives and technology enhanced learning, Design of educational software: different realities, Educational software engineering, Characterizing the design context and the software artifact, Methodological considerations.

Textbook / Material

- Pierre Tchounikine (2011). Computer Science and Educational Software Design. A Resource for Multidisciplinary Work in Technology Enhanced Learning, Springer-Verlag Berlin Heidelberg

Additional Resource

- Kinshuk (2016). 2-Designing Adaptive and Personalized Learning Environments . interdisciplinary Approaches to Educational Technologist . routledge

YZM3032 IMAGE PROCESSING 2+0+0 ECTS:4

Course content

Elements of Digital Image Processing systems, Image Formating and Sensing; Imaging geometry; Image Analysis, Preprocessing, spatial filters; First-Second order based edge detection and their applications; Image Segmentation; Thresholding-Edge-Region Based segmentation; Discrete transforms in image processing (Fourier, Cosine, Walsh-Hadamard, Wavelet transforms) and its applications; Model based object detection via Hough transform; Mathematical morphology; Feature Extraction and Analysis; Pattern Classification and recognition; Image enhancement; Image

restoration, and geometric transforms; Image compression with lossles compression methods; Lossy compression methods, and fundamentals of the common compression methods: JPEG, MPEG, H.363.

Textbook / Material

- Rafael C. Gonzales, Richard E. Woods . 1998; Digital Image Processing, Addison -Wesley Publishing Company

Additional Resource

- Scott E. Umbaugh , 2005; Computer Imaging: Digital Image Analysis and Processing, A CRC Press Book , Taylor and Francis Group
- Milan Sonka , Wenceslas Hlavac , Roger Boyle . 1999; Image Processing, Analysis, and Machine Vision, Second Edition, PWS Publishing ,

YZM3028 EMBEDDED SYSTEMS 2+0+0 ECTS:4

Course content

Introduction to embedded systems. C Programming for embedded systems. Introduction of circuit elements. Port input/output operations. Port multiplexing. Cuts. Peripherals, use of LCD screen. Timers, counters. Timing interrupts. Analog/Digital converters. Internal Eeprom processes. Serial communication, RS232. Serial communication, I2C. Audio application.

Textbook / Material

Additional Resource

YZM3034 OPTIMIZATION THEORY 2+0+0 ECTS:4

Course content

What is optimization? What are its applications in engineering? Definition and classification of optimization problem, Graphical optimization, Classical optimization techniques Univariate optimization, Unconstrained multivariate optimization, Equality constrained multivariate optimization, Nonlinear programming, One-dimensional unconstrained optimization Geometric programming, Unconstrained geometric programming problems, Geometric programming, Restricted geometric programming problems, Linear programming

Textbook / Material

- Engineering Optimization and Application, , Singiresu S. Rao, , , Wiley Eastern Limited,, 0-4714555034-5,Canada,1996

Additional Resource

YZM3036 BIG DATA ANALYSIS 2+0+0 ECTS:4

Course content

What is big data? Introduction to big data. Current technologies needed and used for big data analysis. Extraction, storage, transformation, loading, labeling and discovery of big data. Analysis and visualization of big data. Machine learning in big data.

Textbook / Material

- Chambers, B., & Zaharia, M. 2018; Spark: The definitive guide: Big data processing made simple. " O'Reilly Media, Inc.".
- Balusamy, B., Kadry, S., & Gandomi, A. H. 2021;. Big Data: Concepts, Technology, and Architecture. John Wiley & Sons.

Additional Resource

- McKinney W., 2022, Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter, O?Reilly
- Herend D. & Işık M. 2019; Adım Adım Bigdata ve Uygulamaları, Pusula Yayıncılık

7. SEMESTER COURSE CONTENTS

YZM4001 VOCATIONAL EXPERIENCE – II 0+2+0 ECTS:3

Course content

The internship offers the student opportunities for the course for theoretical applications acquired from the training program. It covers all kinds of activities related to this business. In this training, students have to work in a working place for 30 days. The work done is somehow used and reported. This internship report is approved by the people and the approved report is delivered to the academic staff in space for evaluation and grading.

Textbook / Material

- Books, brochures, plans, charts and other materials given by the authorized person in the workplace

Additional Resource

- Reference books and papers containing information on work performed

YZM4003 VOCATIONAL EXPERIENCE – I 0+2+0 ECTS:3

Course content

The practical placement gives the student the opportunity to transform the theoretical knowledge obtained during the educational programme into the work environment and hence includes all kinds of work-related activities. Students are required to spend 30 days in any field related to the area of interest where they can practise their profession. The work carried out is compiled in a detailed manner on daily basis in the form of a report which is then approved by the chief staff in the place of work and then submitted to the academic staff responsible for the evaluation and grading of the internship reports

Textbook / Material

Additional Resource

YZM4005 WORKPLACE APPLICATION 1+4+0 ECTS: 20

Course content

Textbook / Material

Additional Resource

YZM4007 DESIGN PROJECT 0+3+0 ECTS:4

Course content

The objective of this course is to have the students utilize their software engineering methodologies to develop a software project.

Textbook / Material

- All kinds of resources related to the subject of the study (Books , papers web sources related to the subject being studied)

Additional Resource

8. SEMESTER COURSE CONTENTS

YZM4000 GRADUATION THESIS 0+2+0 ECTS:6

Course content

Software engineers working areas

Textbook / Material

Additional Resource

YZM4006 SOFTWARE QUALITY ASSURANCE 3+0+0 ECTS:4

Course content

Introduction to software quality assurance. Software quality metrics. Building software quality assurance. Configuration management. Software verification and validation. Evaluations, inspections and audits. Software process improvement models. Software testing strategies and testing techniques. Fault reporting and removal. Software reliability metrics and software quality metrics. Quality assurance model. Risk management. Data collection and maintenance.

Textbook / Material

- Software Quality Assurance : From Theory to Implementation by Daniel Galin, Addison -Wesley, 2004, ISBN:0201709457

Additional Resource

- Software Quality : Producing Practical , Consistent Software, by Ben- Menachem M, and Marliss GS, ThompsonComputer Press , ISBN: 1-85032-326-7, 1997.

YZM4022 SOFT. DEV. STAND. AND PROJECT MANAGEMENT 3+0+0 ECTS:4

Course content

Software Development Process, Management, Project Team, Planning, Plan Quality, Estimation, Project Execution, Quality Assurance Management, Risk Management, Alteration and Configuration Management, Communication Management, Enterprise Data Management, Outsourcing Management, Planning and Management Standards, Process Management Approaches, Project Management Approaches, Managing Mistakes

Textbook / Material

- Nizam, A. 2015; Software Project Management, Papatya Publishing Education, Istanbul

Additional Resource

YZM4008 DATA MINING 2+0+0 ECTS:4

Course content

Introduction to data mining, data mining definitions, data preparation, data mining techniques, classification, decision trees, association rules, clustering.

Textbook / Material

Additional Resource

YZM4032 META – HEURISTIC OPTIMIZATION 2+0+0 ECTS:4

Course content

Introduction to Optimization, Engineering Optimization, Meta-Heuristic Search, Local Search and Diversity, Meta-Heuristic Algorithms, Application Project

Textbook / Material

- Yang, Xin-She Engineering optimization an introduction with metaheuristic applications. John Wiley and Sons , 2010.
- Luke, Sean. Essentials of metaheuristics . Vol. 113. Raleigh : Lulu , 2009.

Additional Resource

YZM4038 DEEP LEARNING 2+0+0 ECTS:4

Course content

Introduction to deep learning. Learning process in neural networks. Single layer networks, multilayer networks. Software technologies used in deep learning. Convolutional neural networks and application. Recurrent neural networks and their applications. Long-short term memory networks and applications. Generative networks and applications. Examination and evaluation of applications of different problem types with deep neural networks.

Textbook / Material

- Deep Learning, Ian Goodfellow, Yoshua Bengio, Aaron Courville (2018) Buzdağı Publishing House
- Deep Learning with Python, François Chollet (2021), Buzdağı Publishing House
- Applied Machine Learning with Scikit-Learn, Keras and TensorFlow, (2021), Aure?lien Ge?ron Buzdağı Publishing House

Additional Resource

YZM4034 CYBER SECURITY AND APPLICATIONS 2+0+0 ECTS:4

Course content

Cyber security overview, Fundamentals of cyber security, Cyber security awareness, Malware, Cyber terrorism, Big data approaches for cyber security, Security in computer networks, TCP_IP Security, ISO / IEC-27032 Cyber security guide, Linux installation and basic commands, Security protocols and structures that use them, Basic security Technologies, Cyber security on mobile devices, Traffic analysis, Penetration tests

Textbook / Material

- Şeref Sağıroğlu and Mustafa Alkan, Cyber Security and Defense, Ankara 2018.
- Eşref Adalı, Computer and Information Security and Management, ITU National Software and Certification Center, Istanbul 2016

Additional Resource

- Marjie T. Britz , Computer Forensic and Cyber Crime , Pearson .
- H. Alparslan Akyıldız, Introduction to Cyber Security with Applications, Gazi Kitapevi, Ankara