T.C.
AKSARAY UNIVERSITY FACULTY OF ENGINEERING
SOFTWARE ENGINEERING CURRICULUM
SHORT COURSE CONTENTS
(EFFECTIVE FROM 2023-24 FALL)
I. HALF YEAR

COURSE NAME: AİT-191 PRINCIPLES OF ATATÜRK AND INK. HISTORY- I T: 2 P: 0 CREDITS: 2 ECTS: 2

COURSE CONTENT: **The main** political, economic, social and cultural phenomena of the historical period starting from the classical era of the Ottoman Empire and ending with the signing of the Treaty of Lausanne in 1923 and the main academic comments on them.

COURSE NAME: İNG-185 FOREIGN LANGUAGE I T:2 P: 0 CREDITS: 2 ECTS: 2

COURSE CONTENT: Basic grammar rules, vocabulary, reading comprehension, paragraph writing.

COURSE NAME: TDİ-195 TURKISH LANGUAGE I T: 2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: In order for the historical development and good use of Turkish, language and culture relations, the place of Turkish among the world languages, the development stages of Turkish in Turkey, the spelling rules to be considered in the use of the language, the basic information to be known and applied in terms of grammar constitute the content of the course.

COURSE NAME: YZM-101 INTRODUCTION TO SOFTWARE ENGINEERING T: 3 P:0 CREDITS:3 ECTS:6

COURSE CONTENT: Introduction to software engineering, UML, requirements determination, analysis, system design, object design, testing, project management, software life cycle.

COURSE NAME: YZM-103 INTRODUCTION TO PROGRAMMING AND ALGORITHM T:3 P:2 CREDITS: 4 ECTS:6

COURSE CONTENT: Introduction to software engineering, UML, requirements determination, analysis, system design, object design, testing, project management, software life cycle.

COURSE NAME: YZM-105 BASIC COMPUTER SCIENCES T:1 P:1 CREDITS: 2 ECTS:4

COURSE CONTENT: Computer Organization; algorithms, programming languages; Data Structures; Arrays; Loops; Conditional statements; Functions; Procedures; Write and read data file; Sample applications, computer hardware and software, MS Word, excel, powerpoint.

COURSE NAME: YZM-107 PHYSICS I T:3 P:0 CREDITS: 3 ECTS: 4

COURSE CONTENT: Physics and Measurement, Vectors, Motion in One Dimension, Motion in Two Dimensions, 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 Solid Body Around a Fixed Axis, Rotational Motion and Angular Momentum, Static Equilibrium and Flexibility, Oscillatory Motion

COURSE NAME: YZM-109 MATHEMATICS I T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Real functions, trigonometrics, exponential functions, definitions and applications of limits and derivatives, solutions and applications of definite and indefinite integrals.

COURSE NAME: AİT-192 PRINCIPLES OF ATATÜRK AND HISTORY OF TURKISH REVOLUTION II T:2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: Turkish Revolution (Modernization Movements in the New Turkish State), Political Revolutions, Abolition of the Sultanate, Proclamation of the Republic and the Concept of the Republic, Abolition of the Caliphate, Constitution of 1924, Reforms in the Field of Social and Health, Dress Code, Hat Law, Surname Law, Abolition of Sects, Closure of Tekkes, Tombs and Zaviyes, Calendar, Clock, Changes in the Measurement System, Women's Rights and Development, Revolution in the Field of Law, Civil Adoption of Law, Concepts of Rule of Law and Rule of Law, Revolutions in the Field of Culture and Education, Revolutions in Letters, Language and History, Educational Revolution and Its Importance, Principles to be Applied in Education, Reforms in the Economic Field, Economic Objectives in Early Republican Period Turkey, Izmir Economic Congress, Mixed Economy Project, Relative Liberalism between 1923 and 1929, Statism between 1929 and 1939, Atatürkist Thought System and the Founding Principles of New Turkey, Policies Developed Against the Rising War Threat, Bloc World and Turkey, Political and Social Developments in Turkey from 1960 to 1980.

COURSE NAME: ENG-186 FOREIGN LANGUAGE II T:2 P:0 CREDITS: 2 ECTS:2

COURSE CONTENT: Linking Ideas: Present and Past Tenses Irregular Multiples, Consonants, Countable and Uncountable Nouns, Healthy Living and Habits, Doing- Doing-Skills, Wanting Doing- Adjectives and Adverbs, Explaining Persons, Present and Adjectives, Question Formation; Prepositions, To Do/Not to Do, Homework and Work Obligations, Offer

and Invitation, Near Future and Plans, Transportation, Movement Prepositions Address Description, Writing Activities.

COURSE NAME: TDİ- 196 TURKISH LANGUAGE II T:2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: Sentence types, expression disorders, paragraph expression forms, written expression types, oral expression types, spelling rules and punctuation marks.

COURSE NAME: YZM-102 LİNEER CEBİR T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Systems of linear equations, matrices. Determinants and Their Applications, Vector spaces, subspaces, bases and dimensions, coordinate systems.

COURSE NAME: YZM-104 OBJECT ORIENTED PROGRAMMING T:3 P:2 CREDITS:4 ECTS:6

COURSE CONTENT: Objects and classes, constructor, static variable, constants, methods, visibility modifiers, temporary objects, calling methods with objects, immutability, variable visibility, class abstraction and packaging, concepts of upper and lower classes, heredity, multiple meanings, chewing, overloading, abstract class, object-oriented design.

COURSE NAME: YZM-106 DATABASE PROGRAMMING T:3 P:2 CREDITS:4 ECTS:6

COURSE CONTENT: Introduction to Relational Databases, Relational Database Management Systems, Entity Relationship Models, Data Modeling and Normalization, SQL: Data Definition Language, Defined Functions, SQL Queries and Oracle Objects.

COURSE NAME: YZM-108 PHYSICS II T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Basic principles and theories of electromagnetic concepts: Coulomb's Law, Electric Field, Gauss's Law, Electric Potential, Direct Current Circuits, Magnetic Field, Magnetic Field Sources, Ampere's Law, Faraday's Law, Magnetic Properties of Matter, Alternating Current Circuits, Presentation of Maxwell's Equations, Electromagnetic Wave Concept.

COURSE NAME: YZM-110 MATHEMATICS II T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Partial derivatives, trigonometric, exponential and logarithmic functions, lines, circles, parabolas, indeterminate definite integrals.

COURSE NAME: ISG-255 OCCUPATIONAL HEALTH AND SAFETY I T:2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: Occupational Health and Safety Course; General definition and applications in the field of occupational health and safety.

COURSE NAME: YZM-201 DIFFERENTIAL EQUATIONS T:3 P:0 CREDITS3 ECTS:5

COURSE CONTENT: Investigation of first-order differential equations, existence and uniqueness theorem/ Solutions and applications of various first-order differential equations/ Fundamental theorems for linear differential equations of high order variable coefficient and constant coefficient/ Indefinite coefficients and operator method for linear equations of constant coefficient/ Method of change of parameters/ Downgrade method/ Variable transformation method/ Euler-Cauchy differential equation/ High order full differential equations/ Systems of linear differential equations.

COURSE NAME: YZM-203 NUMERICAL ANALYSIS T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Definition of Numerical Analysis and especially its use in engineering applications. Error analysis in numerical methods, analytical solutions, linear and nonlinear equation system solutions, approximation methods, interpolation, linear regression, numerical integration.

COURSE NAME: YZM-205 OPERATING SYSTEMS T:3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: The content of the course includes; introduction to operating systems, computer system structure, operating system structure, processes, threads, CPU job distribution, process synchronization, memory management, virtual memory, file system interface, file systems, input/output systems, administrative tools, mass storage tools, comparison of different operating systems.

COURSE NAME: YZM-207 DATA STRUCTURES AND ALGORITHMS T:2 P:2 CREDITS3 ECTS:5

COURSE CONTENT: Stacks, Stack Structures Applications, Queues, Adding to Queues, Dequeuing, Priority Queues, Tree Structures, Tree Applications, Binary Search Trees, Cluster Structures Applications, Balanced Search Trees, Graph Structures, Graph Structures Applications.

COURSE NAME: YZM-209 WEB DESIGN AND PROGRAMMING T:3 P:2 CREDITS:4 ECTS:5

COURSE CONTENT: This course provides students with the basic principles of web design practices, HMTL, CSS, bootstrap and jquery coding systems. This course introduces students to web standards, usability, and designing for workflow and accessibility. This course provides a design knowledge to the web to "responsive" design by exploring multimedia with students and building their own grid systems.

COURSE NAME: DDE-201 EXTRACURRICULAR ACTIVITY I T:0 P:1 CREDITS:1 ECTS:1

COURSE CONTENT: Participation in activities within the university.

COURSE NAME: YZM-211 INDUSTRIAL PROGRAMMING T:2 P:0 CREDITS:3 ECTS:3

COURSE CONTENT: Fundamentals of industrial automation systems, input and output elements in automation systems, PLC architecture and hardware, PLC programming editor and PLC programming languages, PLC programming (logic functions, arithmetic operations, timers, counters, data processing), PLC programming methods, industrial applications (motor control, PID control, industrial communication, HMI)

COURSE NAME: YZM-213 VOLUNTEERING T:1 P:2 CREDITS:2 ECTS:3

COURSE CONTENT: Introduction to software engineering, UML, requirements determination, analysis, system design, object design, testing, project management, software life cycle.

COURSE NAME: DDE-202 EXTRACURRICULAR ACTIVITY II T:0 P:2 CREDITS:1 ECTS:1

COURSE CONTENT: Participation in activities within the university.

COURSE NAME: ISG-256 OCCUPATIONAL HEALTH AND SAFETY II T:2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: Definition and history of occupational health and safety, Human errors and work accidents, Physical risk factors in the working environment, Psychosocial factors in the working environment

COURSE NAME: YZM-202 DISCRETE MATHEMATICS T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Logic; Sets and Functions; Fundamentals of Algorithm; Numbers and Matrices; Calculation Techniques; Chromatic Polynomials; Graphs; Trees; Boolean algebra; Left State Machines with and without Output.

COURSE NAME: YZM-204 VISUAL PROGRAMMING T:3 P:2 CREDITS:4 ECTS:5

COURSE CONTENT: Description of software, development principles and definition of quality. .NET Event-oriented programming structure. C# programming language syntax,

Object-oriented programming concepts; Concepts of abstraction, encapsulation, heredity, overload. I/O Programming, handling outliers. Use of ADO and LINQ with SQL Server.

COURSE NAME: YZM-206 INTERNET PROGRAMMING T:3 P:2 CREDITS: ECTS:5

COURSE CONTENT: Basic content, HTTP rules and methods, HTML/CSS web design formats, introduction to client-side Javascript and server-side PHP usage

COURSE NAME: YZM-208 PROBABILITY AND STATISTICS T:3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: Introduction to probabilistic and statistical methods.

COURSE NAME: YZM-210 SOFTWARE REQUIREMENT ENGINEERING T: 3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: Basic concepts of software engineering, process models, project management, requirements analysis, system models, requirements identification, initial sampling, software design, software reliability, testing and validation, software maintenance

COURSE NAME: YZM-212 ADVANCED PROGRAMMING TECHNIQUES T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: An overview of current programming languages. Introduction to object-oriented programming. Classes, constitutive destructive functions, member functions. Overload of operators, heredity of classes. Template classes and STL. GUI graphical interface programming with programming language. Advanced programming methods with the QT package. Data access and data collection with advanced programming methods. Data structures and programming. Introduction to the database, SQL and basic functions.

COURSE NAME: YZM-301 SOFTWARE DESIGN AND ARCHITECTURE T:3 P:0 CREDITS: 3 ECTS:5

COURSE CONTENT: To determine and analyze the requirements, To choose the software development model and software architecture, To use the design tools, To design the software in accordance with the requirements, To code the software, To use the file version control tools, To use the test tools, To test the software Using the project management tools, To perform maintenance and repair process operations.

COURSE NAME: YZM-303 NUMERICAL DESIGN T:3 P:2 CREDITS:4 ECTS:5

COURSE CONTENT: Definition of Boolean algebra and logic functions, simplification of logic functions using Boolean algebra and Karnough maps, digital system design using

programmable and unified logic circuits, synchronous and asynchronous device design using flip flops, recorders and sequential circuits.

COURSE NAME: YZM-305 ALGORITHM ANALYSIS T:3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: Knowledge of algorithm design concepts and algorithm complexity analysis, solving and proving recursive equations, formal and intuitive introduction to level and growth rate, brute force approach, divide and conquer approach, dynamic programming, greedy approach, graph algorithms and NP theory.

COURSE NAME: YZM-307 SUMMER PRACTICE T:0 P:2 CREDITS:0 ECTS:5

COURSE CONTENT: The internship envisages the acquisition of a six-week (30 working days) professional experience in any workplace (public or private sector). In order to successfully complete their internship, students are required to follow the rules in the Internship Directive of the Department of Software Engineering.

COURSE NAME: YZM-315 SOFTWARE QUALITY AND APPLICATIONS T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Introduction to software quality and assurance. Software quality criteria. Software quality assurance Construction. Configuration management. Software verification and validation. Assessment, inspection and audits. Software process improvement models. Software testing strategies and testing techniques. Fault reporting and removal. Software reliability criteria and software quality criteria. Quality assurance model. Risk management. Data collection and maintenance.

COURSE NAME: YZM-317 ARTIFICIAL INTELLIGENCE T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Problem solving techniques. Knowledge representation and reasoning. Syntax, semantics, and proof theory of propositional logic and first-order predicate logic (deductive reasoning). Ambiguity. Probabilistic reasoning. Expert systems and machine learning.

COURSE NAME: YZM-319 FINITE ELEMENT METHOD T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Definition of engineering problems, Finite Element Method, Finite Element Model, decomposition (element type and meshing), rigidity matrix, finite element analysis with the help of a commercial package program, boundary conditions, load application and solution.

COURSE NAME: YZM-321 MOBILE APPLICATION DEVELOPMENT T:3 P:1 CREDITS:4 ECTS:4

COURSE CONTENT: Mobile Devices, Mobile Operating Systems, After Mobile Application Development Platforms and Their Applications, Mobile Services, Data Storage Methods

COURSE NAME: YZM-302 COMPUTER NETWORKS AND DATA COMMUNICATION T:3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: Mobile Devices, Mobile Operating Systems, Mobile Application Development Platforms, Mobile Services, Data Storage Methods

COURSE NAME: YZM-304 SOFTWARE IMPLEMENTATION AND TESTING T:3 P:2 CREDITS:4 ECTS:5

COURSE CONTENT: Software life cycle; object-oriented software engineering; Introduction to UML (unified modeling language); uncovering and analyzing requirements; software patterns; implementation and testing; structural layout management; software project management; realization of a mid-level software project by doing group work.

COURSE NAME: YZM-306 FORMAL LANGUAGES AND AUTOMATA T:3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: To provide students with detailed concepts about Automata Theory, Kleen's Theorem, Pushdown Automata Theory and Turing Theory

COURSE NAME: YZM-308 MICROPROCESSORS AND PROGRAMMING T:3 P:0 CREDITS:3 ECTS:5

COURSE CONTENT: Basic microprocessor architecture and microprogram, Microcontroller (Intel-8051) architecture and addressing modes, Memory and RAM structures, Port hardware, Interrupt resources, subsystem and interrupt utilities, Scheduler/Counters, Advanced microcontroller architecture and peripherals (ADC, DAC,PWM,POR,TIC,EEPROM, etc.), Asynchronous/Synchronous serial and SPI communication

COURSE NAME: YZM-316 PATTERN RECOGNITION T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Learning and adoption, Bayesian decision theory, discriminant functions, parametric techniques, maximum likelihood estimation, Bayesian estimation, adequate statistics, non-parametric techniques, linear discriminant functions, algorithm-independent machine learning, classifiers, unsupervised learning, grouping.

COURSE NAME: YZM-318 HUMAN COMPUTER INTERACTION T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Within the scope of this course, students get to know the basic pillars of this interdisciplinary field, as well as the limits of man and machine. Accordingly, they are made to have skills in what kind of rules should be followed and which models and examples should be used in the computer systems to be developed by considering these limits. Finally, the methods and methods of measuring the usability and ease of use of the designed systems are evaluated practically.

COURSE NAME: YZM-320 GAME DESIGN AND PROGRAMMING T:3 P:0 CREDITS 3 ECTS:4

COURSE CONTENT: History of game design, basic concepts, collaborative logic, graphic realism and pedagogical aspects in games. Types and effects of digital games. Digital game design process.

COURSE NAME: YZM-322 INFORMATION SYSTEMS AND SECURITY T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: This course focuses on computer systems and security of computer networks.

COURSE NAME: OEDYZM-1 COOPERATIVE EDUCATION PROGRAM COURSE 1 T:0 P:40 CREDITS:20 ECTS:30

COURSE CONTENT: To ensure that the students of the undergraduate program of the Faculty of Engineering are employed for two semesters during their undergraduate education in private or public institutions and organizations and enterprises related to the education they receive.

COURSE NAME: YZM-401 GRADUATION PROJECT 1 T:0 P:2 CREDITS:1 ECTS:6

COURSE CONTENT: Choosing one of the areas covering software topics (website development, embedded systems, computer networks, artificial intelligence, metaverse, information systems, etc.) or several according to the scope of the project and developing a software project related to that subject during the semester.

COURSE NAME: YZM-403 MACHINE LEARNING T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Artificial intelligence (AI) and its application areas, Data science (VB), AI, WHAT IS BC?, K-Means algorithm, Decision trees, Artificial neural networks (ANN), ANN-1 7. ANN Application-2, Fuzzy Logic (BM), UN application, Optimization and

metaheuristic algorithms, Genetic Algorithm, Particle swarm optimization), Artificial Bee Colony, Ant Colony Algorithm

COURSE NAME: YZM-405 DESKTOP PUBLISHING T:2 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Introduction to desktop publishing applications, Image, audio and video recording formats and resolution units, Colors, meanings-effects and principles of use in visual design, Relationships and calculations between recording resolution, record size, print resolution and size according to the project.

COURSE NAME: YZM-407 VOCATIONAL FOREIGN LANGUAGE 1 T:2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: English equivalents of computer main parts, English equivalents and definitions of abbreviations used in the field of computing, English explanations of operating systems, classification and definitions of microprocessors, network structures, cause-effect structures, adjective and noun phrases, conjunctions, passive sentences, causative sentences, tenses used in academic publications, sentence structures, academic terms. Translation of articles, translation of professional book chapters, translation of instruction manuals.

COURSE NAME: YZM-409 IMAGE PROCESSING T:2 P:0 CREDITS:3 ECTS:3

COURSE CONTENT: Fundamentals of digital images, spatial and frequency zone image enhancement, image repair, color image processing and image compression

COURSE NAME: YZM-411 FUZZY LOGIC

COURSE CONTENT: Fuzzy logic, its fundamentals and application areas, Classical and fuzzy sets, Operations on fuzzy assemblies, Classical and fuzzy logic theories, Logical (logical) and fuzzy systems

COURSE NAME: YZM-413 INTERNET OF THINGS T: 3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: The content planned to be given for the Internet of Things consists of basic concepts, basic equipment, sensors, signal-image processing, data processing and compression, network and protocols, practical ready platforms, programming basics, programming for data storage and communication, internet of things and big data, internet of things security.

COURSE NAME: YZM-415 INTUITIVE METHODS T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Introduction to optimization problems, NP-Complete problems, Lagrange Stretching and its heuristics, Classical heuristics (Gain, Neighbor search, Greedy),

Development Heuristics (Knotting, k-opt, or-opt), Parametric Heuristics (Genetic Algorithms, Taboo Search, Simulated Annealing, Ant colony) will be covered.

COURSE NAME: YZM-417 ENTREPRENEURSHIP T:3 P:0 CREDITS: 3 ECTS: 4

COURSE CONTENT: Definition of entrepreneurship, characteristics that an entrepreneur should have, legal structures of companies, business ideas, creating a business plan, demand forecasting, facility planning, marketing, finding and managing financial resources

COURSE NAME: YZM-419 BULUT BİLİŞİM T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Understanding the basic concepts of Cloud Computing, discovering the value of the Cloud for business life, examining the Cloud in detail by entering it, Understanding how to develop the Cloud tactic.

COURSE NAME: OEDYZM-2 COOPERATIVE EDUCATION PROGRAM COURSE 2 T:0 P:40 CREDITS: 20 ECTS:30

COURSE CONTENT: To ensure that the students of the undergraduate program of the Faculty of Engineering are employed for two semesters during their undergraduate education in private or public institutions and organizations and enterprises related to the education they receive.

COURSE NAME: YZM-402 GRADUATION PROJECT 2 T:0 P:2 CREDITS:1 ECTS:6

COURSE CONTENT: Choosing one of the areas covering software topics (website development, embedded systems, computer networks, artificial intelligence, metaverse, information systems, etc.) or several according to the scope of the project and developing a software project related to that subject during the semester.

COURSE NAME: YZM-404 DEEP LEARNING AND OPTIMIZATION ALGORITHMS T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Introduction, History, Basics of Artificial Neural Networks, Feed Forward Deep Networks, Optimization Techniques for Training Deep Models

COURSE NAME: YZM-406 PROFESSIONAL FOREIGN LANGUAGE 2 T:2 P:0 CREDITS:2 ECTS:2

COURSE CONTENT: Introduction to information technology. Hardware. Software. Storage and input – output tools. Operating systems. Databases. Data communication and computer

networks. Internet ethics, web browsers, Computer security. Virtual reality, artificial intelligence.

COURSE NAME: PROFESSIONAL LAW AND ETHICS T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: Basic Concepts of Labor Law, Definition of Employment Contract, Elements, Legal Qualities, Conclusion of Employment Contract, Debts Arising from Employment Contract.

COURSE NAME: YZM-410 COMPUTER VISION T:2 P:0 CREDITS:3 ECTS:3

COURSE CONTENT: Introduction, Image formation, color, linear filters, gradients and edges, Frequency field, image statistics, texture, image pyramids and scale space, Mapping, RANSAC, Hugh transform, Segmentation, Cameras, projections and calibration, Single-vision geometry, Epipolar geometry, Stereo and structure from motion, Native image attributes, Optical flow, motion segmentation and tracking, Recognition at sample level, set of visual words, general object recognition and classification, With sliding windows t

COURSE NAME: YZM-412 DATA MINING T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Extracting information from internal and external sources for automated data analysis and support for organizational decision-making processes. Researching different applications, methodologies, techniques and models. Classification, Decision Trees, Association Rules, Clustering. This course concludes with large real-life data sets, conducting case studies using Weka Data Mining software.

COURSE NAME: YZM-414 VIRTUAL REALITY T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Definition and history of the Metaverse, metaverse technologies: sensors, display devices, alternate-world generator, human senses, perception, virtual reality applications, 3-dimensional concept, spatial definitions and transformations: angle-axle representation; quaternions; 3D transformations. Homogeneous transformations: screen transformations, Perspective transformations, Graphic image creation.

COURSE NAME: YZM-416 DECISION SUPPORT SYSTEMS T:3 P:0 CREDITS:3 ECTS:4

COURSE CONTENT: Decision Definition and Decision Making Process, Theoretical Decision Support Systems and Their Types, Theoretical Decision Support Systems Components: Data, Model and User Interface, Theoretical Decision Support Systems Components.

COURSE NAME: ÜSDYZM-309 SPACE TRAVEL T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: The topics that make up the content of the course are: space environment, basic information about the space environment, the place of our Earth in space, neutral atmosphere, plasma environment, the Sun, the atmosphere of the Sun, solar radiation, solar wind, solar activities, sunspots, solar flares, geomagnetic and ionized environment, ionosphere, propagation of radio waves and communication.

COURSE NAME: ÜSDYZM-311 DESIGN IN 3D PRINTERS T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: Basic Analytic Geometry Concepts (Point, Line, Plan)

COURSE NAME: ÜSDYZM-313 BIOMETRIC RECOGNITION SYSTEMS T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: Biometric identification and verification, performance calculations in biometric systems, fingerprint recognition, facial recognition, iris and retina based recognition systems, identification systems based on hand geometry and DNA, multiple identity recognition systems, standards related to biometric systems

COURSE NAME: ÜSDYZM-310 PRODUCTION IN 3D PRINTERS T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT:

COURSE NAME: ÜSDYZM-312 ENGINEERING IN ISLAMIC HISTORY T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: During the golden age of Islamic civilization, Muslim scholars made many inventions and the devices we often use in our daily lives

COURSE NAME: ÜSDYZM-314 DEEP NERVE NETWORKS T:2 P:0 CREDITS:2 ECTS:3

COURSE CONTENT: Introduction to Deep Learning, Machine Learning Paradigms, Artificial Neural Networks, Community Learning Methods, Convolutional Artificial Neural Networks, Feedback Neural Networks, Long Short-Term Memory, Deep Autocoders, Other Deep Learning Models, Hybrid Intelligent Systems.