DEPARTMENT: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

CODE	COURSE	ECTS	SEMESTER	PROFESSOR	LEVEL OF EDUCATION	COURSE CONTENT
YPZ101	Introduction to Artificial Intelligence and Machine Learning	6	Fall	Assoc. Prof. Dr. Ayşe Beşkirli	Undergraduate	The goal of this course is to teach students the fundamental concepts and algorithms of artificial intelligence and machine learning, and to equip them with the skills to apply this knowledge to real-world problems.
YPZ531	Introduction to Image Processing	6	Fall	Assoc. Prof. Dr. Muhammet Fatih Aslan	Undergraduate	Image fundamentals; image detection and retrieval; image enhancement; image filtering; image matching; color space; geometric transformations; object detection and extraction methods; image segmentation and classification methods
YPZ604	Deep Learning	5	Spring	Assoc. Prof. Dr. Hakan Yılmaz	Undergraduate	The history and theoretical advantages of deep learning, the basic artificial neural network architectures and learning algorithms that can be used for deep learning, the organization of distributed models, optimization techniques for training deep models, convolutional networks, feedback and recursive networks.

DEPARTMENT: COMPUTER ENGINEERING

CODE	COURSE	ECTS	SEMESTER	PROFESSOR	LEVEL OF EDUCATION	COURSE CONTENT
BIL502	Operating Systems	5	Fall	Asst. Prof. Dr. Alper Kılıç	Undergraduate	Focusing on the theoretical foundations of operating systems, which underlie computer applications, the interaction between computer architecture and user applications is explained. It aims to enhance students' theoretical knowledge and practical competencies in high-performance, concurrent software development and the design and management of computing infrastructures.

BIL503	Computer Organization	4	Fall	Assoc. Prof. Dr. Ö. Kaan BAYKAN	Undergraduate	Introduction to computer organization and architecture Computer Evolution and Performance Computer Arithmetic Memory Systems Input/Output Processor- Structure, functions Processor- Instruction set, addressing methods Pipeline principle Superscalar Processor Parallel Processing Multicore Computers
BIL747	Basic Learning Algorithms	5	Fall	Assoc. Prof. Dr. Ersin KAYA	Undergraduate	The Fundamentals of Learning Algorithms course aims to present the core principles and methods of machine learning within a rigorous theoretical framework. The course provides a comprehensive examination of fundamental algorithms—such as classification, regression, and clustering—covering both their mathematical foundations and practical implementation strategies. It is designed to equip students with the ability to construct, evaluate, and scientifically interpret machine learning models across various data types.
BIL 303	Logic Design	5	Fall	Assoc. Prof. Dr. Ahmet BABALIK	Undergraduate	Teaching the necessary concepts for the design of complex logic systems starting from simple digital circuits. Gaining necessary hardware knowledge for design and analysis and developing logic design knowledge.
BIL102	Algorithms And Programming - I	5	Fall	Prof. Dr. İsmail BABAOĞLU	Undergraduate	The Algorithms and Programming - I course aims to teach the basics of algorithm development and core programming logic. Students learn how to plan the steps needed to solve a problem, establish logical flow, and use the main programming structures correctly. The course covers variables and data types, conditional statements, loop structures, creating and using functions, array structures, and manipulating character strings. Additionally, students gain practical skills in basic input/output operations and simple algorithmic patterns.

BIL640	Fundamentals of Data Science	5	Spring	Assoc. Prof. Dr. Sait Ali UYMAZ	Undergraduate	This course provides an introduction to the scientific methods, processes, algorithms, and systems required to extract meaningful knowledge from both structured and unstructured data. Students will learn fundamental skills in collecting, organizing, analyzing, and interpreting datasets. The curriculum emphasizes the strategic use of historical and current data to gain a deep understanding of complex problems and forecast future trends. A significant focus will be on the practical application of data analysis techniques to uncover hidden solutions within large data piles for real-world problems. Key topics covered include data collection, manipulation, and visualization. Upon completion, students will be proficient in clearly and thoroughly presenting and communicating the results of their data analysis.
BIL535	Artificial Intelligence	5	Fall	Prof. Dr. Mesut GÜNDÜZ	Undergraduate	This course aims to introduce students to the fundamental principles of artificial intelligence, including the behavior of intelligent agents and methods for solving problems in complex environments. Through search algorithms, constraint satisfaction techniques, adversarial game strategies, and logic-based representation approaches, students learn how to design and analyze intelligent systems. The course seeks to enhance students' ability to apply first-order logic inference and knowledge representation techniques to develop effective solutions for real-world problems.
BIL305	Object-Oriented Programming	4	Fall	Prof. Dr. Mustafa Servet KIRAN	Undergraduate	This course introduces fundamental concepts such as classes, objects, inheritance, polymorphism, and encapsulation to help students understand modern software development approaches. Students learn to analyze real-world problems and model them using object-oriented techniques to create structured and efficient software components. Through hands-on exercises and projects, the course enables learners to develop scalable, maintainable, and reusable software designs.

BIL301	Discrete Mathematics	5	Fall	Assoc. Prof. Dr. Nurdan Baykan	Undergraduate	Learning how to think mathematically and work with discrete structures. Having the ability to acquire the materials necessary to use discrete mathematics effectively and efficiently.

DEPARTMENT: SOFTWARE ENGINEERING

CODE	COURSE	ECTS	SEMESTER	PROFESSOR	LEVEL OF EDUCATION	COURSE CONTENT
YAZ201	Introduction To Software Engineering	2	Spring	Assoc. Prof. Dr. Özgür Öksüz	Undergraduate	The aim of this course is to introduce computer software and its types, basic concepts related to software engineering discipline, various software process models, phased software development approach, activities, tools and techniques used, software project, configuration and quality management.
YAZ301	Discrete Structures	6	Fall	Assoc. Prof. Dr. Özgür Öksüz	Undergraduate	To learn the details of mathematical facts, to know how to use them, and to show how to achieve mathematical thinking.
YAZ505	Otomata Theory	3	Fall	Assoc. Prof. Dr. Özgür Öksüz	Undergraduate	The goal is to explain the computational process of computers using abstract and algorithmic models. Using these abstract models, we explain fundamental computational theories and examine example problems with and without solutions. We also aim to develop the ability to break down large, complex problems into smaller, more manageable ones and to abstract these problems.

YAZ653	Introduction to Cryptography	4	Spring	Assoc. Prof. Dr. Özgür Öksüz	Undergraduate	Students will understand the fundamental concepts of cryptology, the architectures and operating principles of symmetric and asymmetric encryption algorithms, and learn about implementations of various encryption algorithms.
YAZYL1007	Blockchain Technology and Crypto Currencies	5	Fall	Assoc. Prof. Dr. Özgür Öksüz	Undergraduate	This course aims to give students the properties and use areas of blockchain technology and cryptocurrencies.
12295400	Digital Signal Processing	4	Fall	Asst. Prof. Dr. Burak Yılmaz	Undergraduate	To teach the fundamental concepts of discrete-time signals and systems, sampling, convolution, the Z-transform, the Discrete Fourier Transform (DFT/FFT) and frequency analysis, and FIR/IIR digital filter design; and to develop the ability to apply these methods in software to real data such as biomedical and audio signals.
12297480	Introduction to Digital Transformation	7	Fall	Asst. Prof. Dr. Burak Yılmaz	Undergraduate	To introduce the concept, core components and impacts of digital transformation; to examine the role of key technologies such as the Internet of Things, cloud computing, big data, artificial intelligence and edge computing in organizations, industry and society; and to equip students with the ability to analyze and evaluate digital transformation projects through strategies, processes and case studies.
YAZ305	Software Requirements and Analysis	3	Fall	Asst. Prof. Dr. Engin Eşme	Undergraduate	The Software Requirements course covers the fundamental principles, methods, and tools of requirements engineering. Within the scope of the course, topics such as eliciting, analyzing, documenting, validating, and managing requirements throughout the process are addressed. Students learn to accurately analyze user needs and transform them into technical requirements, while minimizing project risks through the practical methods found in the book "Software Requirements" by Karl Wiegers.

YAZ502	Computer Networks	4	Fall	Asst. Prof. Dr. Engin Eşme	Undergraduate	The Computer Networks course covers the fundamental principles of computer networks and communication technologies, which form the logical and physical infrastructure of data transmission. Topics such as digital data communication, error detection/correction techniques, the OSI reference model, and layer standards are examined in detail. Within the scope of the course, students aim to combine their theoretical foundation with practical network configurations by learning the operations of hardware such as switches, routers, and firewalls, as well as Ethernet, wireless networks, and wide area network technologies. Through this course, students completely master all the core concepts of today's internet architecture and network engineering.
YZLMYL2003	Data Analysis with Graphical Programming	5	Spring	Asst. Prof. Dr. Engin Eşme	Graduate	It covers the application of data acquisition and analysis methods within the LabVIEW environment using graphical programming logic. Within the scope of the course, LabVIEW's dataflow architecture, loops, arrays, and graphical coding techniques are studied. Once this foundation is established, the focus shifts to coding data analysis and statistical analysis methods in LabVIEW, enabling students to transform their theoretical knowledge into practice. Through this course, students hands-on learn real-time data processing, filtering, and statistical modeling techniques using a visual engineering tool.