ZONGULDAK BULENT ECEVIT UNIVERSITY
FACULTY OF ENGINEERING – COMPUTER ENGINEERING
EDUCATION PLAN COURSE CONTENTS (2018)
(DAYTIME AND EVENING EDUCATION)

1st SEMESTER
YDL185 - FOREIGN LANGUAGE I (2+0+2) 2 ECTS
Course Content: Present tense and past tense, auxiliary verbs, transitive and intransitive tenses, singular and plural structures, active and passive sentences, adjective clauses, noun clauses, sentences that connects structures, conditional sentences.
TUR181 - TURKISH LANGUAGE I (2+0+2) 2 ECTS
Course Content: What is language? Place of language as a social institution in nation life and its importance, language-cultural relation, importance of Turkish language among world languages, development of Turkish language, and its historical periods, position of Turkish language today and spread areas, Turkish sounds and classification, Turkish sound features, rules about Turkish sound system, syllables, spelling rules and practice, punctuation and application, affixes and their application, noun and verb conjugations in Turkish, general knowledge about composition, plans used in essay writing and applications.
FIZ183 - PHYSICS I (3+0+3) 4 ECTS
Course Content: Physics and measurement, motion in one and two dimensions, vectors, laws of motion, rotational motion, Newton's laws of motion and applications, work and energy, conservation of energy, linear momentum and collisions, rotation of rigid body around a fixed axis, ruling and angular momentum, static equilibrium and properties, Vibrational Motion.
MAT181 - MATHEMATICS I (4+0+4) 6 ECTS
Course Content: Definitions and basic laws, Cartesian coordination, functions and graphics, equations of circular and conical sections: shifting of axes, asymptotes: vectors in plane, differential (derivative) of algebraical functions, limits, derivatives and formulas, inverse and implicit functions, extreme rates, Rolle and mean value theorem, applying of extreme theorem: trigonometric, logarithmic and exponential functions and differentials.
BLM105 - INFORMATION TECHNOLOGIES (3+0+3) 4 ECTS
Course Content: Windows operating system, Microsoft Office applications (PowerPoint, Word, Excel), Internet and social media usage and security.
BLM107 - LINEAR ALGEBRA (2+0+2) 3 AKTS
Course Content: Solution of linear equations systems (Cramer, inverse matrix, reducing the normal form), matrix and determinant operations, eigenvalues and eigenvectors of the matrix, linear transformations in linear spaces.
BLM111 - ALGORITHMS AND PROGRAMMING I (3+1+4) 5 ECTS
Course Content: The concept of the algorithm. Flow diagrams. Programming and programming languages. Structured programming concepts. Array concept. In Array search and sorting algorithms. Multi-dimensional arrays (matrices). File and use basic concepts related to the file. Format concept and input-output formatting. Subroutine concept. The concept of recursion and recursive subroutines samples.
BLM113 - INTRODUCTION TO COMPUTER ENGINEERING (3+0+3) 4 ECTS
Course Content: The definition of computer engineering, information about the computer engineering department, history of computer engineering, content, relevance and work area, basic concepts related to computer hardware, basic concepts related to computer networks, software engineering and basic concepts of computer programming, database technology.

2nd SEMESTER
YDL186 - FOREIGN LANGUAGE II (2+0+2) 2 ECTS
Course Content: Past tense and future tense, similar and differing aspects of these tenses with other times, usage of sequence and counting number, speaking about dates, future plans, travel and shopping information, speaking about career, habits and interests, intent, alert, give advice and directions.
TUR182 - TURKISH LANGUAGE II (2+0+2) 2 ECTS
Course Content: Using forms of adverbs and prepositions in Turkish, sentence information (phrases in Turkish), parts of sentences, sentence analysis and applications, sentence analysis and applications; sentence formation, oral composition types and applications, speech plan, prepared speeches, rhetoric speech rules, unprepared speech varieties and practices, expression types in the composition and application, written composition types and application, presentation and ambiguity, and correcting them, writing rules to be followed in academic articles, examining academic articles samples, reading and analysing work about literature and idea, and their theoretical practices.
FIZ184 - PHYSICS II (3+0+3) 4 ECTS
Course Content: Coulomb force, electric field, electric flux, Gauss's Law, Electric Potential, Capacitors, formation of Current and Resistance, Direct Current Circuits, Kirchhoff's law, magnetic field, Biot-Savart's law, Ampere's law, induction, Faraday's Law, Lenz's Law.
MAT182 - MATHEMATICS II (4+0+4) 6 ECTS
Course Content: Definite and indefinite integrals, series, Fourier series, multiple integrals, under the integral sign differential and applications, multiple integrals, definitions, calculations, specifications, conversions, volume calculation, area of surface calculations, curve integral; properties, green formula, the surface integral; Stokes and Diverjans theorems and applications, Laplace transformation.
BLM102 - ALGORITHMS AND PROGRAMMING II (3+1+4) 5 ECTS
Course Content: Introduction to object-oriented programming, C ++ programming basics, loops, decision structures, functions, objects and classes, arrays and strings, overloading of operators, inheritance, pointers, streams and files.
BLM104 - WEB TECHNOLOGIES (2+1+3) 4 ECTS
Course Content: Web, internet technologies, web and graphic design basics (Html, CSS, JavaScript, Ajax), basics of Html editing tools, web site publishing, introduction to server based web programming languages, introduction to PHP script language.
BLM108 - ELECTRICAL CIRCUIT FUNDAMENTALS (3+0+3) 4 ECTS
Course Content: Electrical signals, power and energy definition, electrical circuit elements and definitions, graph theory, Kirchhoff's current and voltage laws, environmental equation, node equations, state equations, superposition theorem, maximum power theorem, Thevenin and Norton theorem, RC and RL circuits.
BLM116 - ENGINEERING ETHICS (2+0+2) 3 ECTS
Course Content: This course gives the information on how to analyze and discuss some ethical issues which are exposed by the crisis of the modern sciences and scientific activity, with a focus specifically on engineering ethics.

3rd SEMESTER
AIT281 - PRINCIPALS OF ATATURK AND REVOLUTION HISTORY I (2+0+2) 2 ECTS
Course Content: Principals of Atatürk's and Revolution in the history of the modern Republic of Turkey, basic concepts, the modernization process, the reasons for the collapse of the Ottoman Empire, the Turkish reform movements, World War I, the Turkish national struggle.
YDL285 - FOREIGN LANGUAGE III (4+0+4) 2 ECTS
Course Content: English terms related computer engineering and English texts, relative clauses, describing functions and Purposes, time clauses, cause and effect, reason and result connectives.
BLM201 - ELECTRONICS (3+1+4) 5 ECTS
Course Content: Types of semiconductor diode, power supply, voltage multipliers, common emitter circuit, common base circuits, common collector circuits, biasing of transistors, transistor amplifiers, multiple amplifiers, class A-B-AB-C power amplifiers, field effect transistors (JFET), metal oxide FETs (MOSFET, MESFET), the FET biasing, FET amplifiers, small signal equivalent circuits, digital processing blocks and the basic definitions.
BLM203 - NUMERICAL ANALYSIS (3+1+4) 5 ECTS
Course Content: The expression of numbers on the computer, error analysis, calculation of the series, Solution of linear and nonlinear equation systems, interpolation methods, numerical differentiation and integration, numerical solution of differential equations.
BLM205 - DIGITAL ELECTRONICS (3+1+4) 4 ECTS
Course Content: Analog and digital concepts, number systems, concepts related to encoding, Boolean Algebra rules, logic gate circuits, logic circuit design.
BLM207 - DATA STRUCTURES (3+1+4) 4 ECTS
Course Content: Data concepts and data types, lists, linked lists, queue, stack, binary trees and applications, compression algorithms, sorting algorithms and comparisons, search algorithms and comparison, hash tables.
BLM209 - ENGINEERING MATHEMATICS (4+0+4) 5 ECTS
Course Content: Ordinary differential equations, first order differential equations, second order differential equations, high-order differential equations, linear differential equations, systems of differential equations, series solutions of differential equations. Basic properties of Laplace transform, power series of functions and their convergence, Taylor formula, the maximum error calculations, Laplace transform, Special functions (Sturm-Liouville theory and Eigen function expansions), Differential equations (Cauchy-Euler equations), Fourier analysis, Boundary value problems of partial differential equations, Complex sequences and series (Taylor and Laurent expansions).
BLM901 - INFORMATION SYSTEMS MANAGEMENT (2+0+2) 3 ECTS
Course Content: Methods for analysts and managers, information technology and management, information networks and distributed management systems, project planning, information sharing, the contribution of information systems innovation, security and management of information systems, information systems management of project work, management information systems.
BLM905 - INTRODUCTION TO PROGRAMMING WITH C (2+0+2) 3 ECTS
Course Content: Algorithm concept, flow diagrams, programming and programming language, concept of structured programming, concept of array, search and sort algorithms in arrays, multidimensional arrays, basic concepts of file usage and files, recursion concept and recursive subprogram examples.

4th SEMESTER
AIT282 - PRINCIPALS OF ATATURK AND REVOLUTION HISTORY II (2+0+2) 2 ECTS
Course Content: Atatürk's reforms, Turkish Foreign Policy in during Atatürk's era, principles of Atatürk, political developments in Turkey and the world after 1938.
YDL286 - FOREIGN LANGUAGE IV (4+0+4) 2 ECTS
Course Content: Professional technical reading, writing and speaking, foreign language for daily and professional life.
BLM208 - PROBABILITY AND STATISTICS (3+0+3) 3 ECTS
Course Content: Definition of Statistics, Stats types and uses, variables, graphs and frequency distribution, collection and organization of data, averages, variability measures, probability theory, conditional probability, multiplication rule, dependent and independent events, Bayes' rule and its applications, random variables, probability function distribution function, expected value, variance and standard deviation, continuous random variables, discrete distributions, continuous distributions, hypothesis tests.
BLM210 - PRINCIPLES OF PROGRAMMING LANGUAGES (3+0+3) 3 ECTS
Course Content: The history and evolution of programming languages, programming language definition, the programming language conversion, basic programming elements, the basic programming concepts, data types and data structures, structured programming concepts, subroutines, modulation in programming languages, concurrency, logical, object-oriented and functional programming concepts.
BLM222 - DISCRETE OPERATIONAL STRUCTURES (3+0+3) 4 ECTS
Course Content: Introduction to mathematical techniques in computer engineering and computer science, mathematical logic, induction, set theory, relations, functions, algebraic structures, graphs, trees and mapping.
BLM224 - COMPUTER ORGANIZATION (3+0+3) 4 ECTS
Course Content: Decoders, Data Selector, shift registers, Binary Counters, Memory Unit, Microprocessors, Register Transfer, Register Memory Transmission, Arithmetic-Logic Shift Microprocessors, Arithmetic-Logic Shift Unit, Basic Computer Organization and Design, Commands, Computer Registers, Computer Instructions, Timing and Control, Hardware Control, Micro programmed Control, Control Memory, data addressing, Example Micro Program, Control Unit Design, Mass Organization, register Organization, Addressing Modes, Arithmetic Processor Design, addition, Subtraction, Multiplication and Division Algorithms, floating-Point Arithmetic.
BLM226 - OBJECT ORIENTED PROGRAMMING (3+1+4) 5 ECTS
Course Content: Introduction to C# programming, object-oriented programming concepts in C#, graphical user interface design, generics, collections, LINQ, files.
BLM212 - SUMMER PRACTISE I (0+0+0) 4 ECTS
Course Content: In this internship, it is expected to take part in tasks that require active participation such as hardware, design, production line work, calibration, quality testing, and to realize the importance of work integrity and to report experience gained properly. In addition, it is expected to observe works in engineering business. Duration of training is 20 working days.
BLM902 - OPEN SOURCE OPERATING SYSTEMS (2+0+2) 3 ECTS
Course Content: What is open source? What is the open source license? Open source operating systems and structures, file system and process logic, file and directory operations, application management shell processes, network management, and shell programming.
BLM904 - E-COMMERCE (2+0+2) 3 ECTS
Course Content: Definition of E-Commerce, types, historical development, most used e-commerce applications, Introduction to internet marketing, internet marketing research, internet payment systems.

BLM906 - SEARCH ENGINE OPTIMIZATION (2+0+2) 3 ECTS
Course Content: What is SEO (Search Engine Optimization)? What are the advantages of SEO? What are the main search engines and their market share? What is the concept of Backlink? What is the impact of design and coding on SEO? How to increase traffic to websites.

5th SEMESTER
BLM301 - FORMAL LANGUAGES AND ABSTRACT MACHINES (3+0+3) 4 ECTS
Course Content: Mathematical notations and techniques, regular expressions and regular languages, deterministic finite automata, nondeterministic finite automata, grammars and languages, regular and non-regular languages, context free grammars and languages, Chomsky normal form, pushdown automata, Turing machines, examples of Turing machines, parsing (Top-Down Parsing), Parsing (Top-Down Parsing), LL(K) and LR(K) Grammars.
BLM303 - SIGNALS AND SYSTEMS (3+0+3) 3 ECTS
Course Content: Values of the signals, features and classifications of the signals, continuous and discrete time signal varieties, systems, features and classifications of the systems, linear time-invariant System types, their features and mathematical expressions, sampling, convolution in continuous and discrete time. Laplace transform, properties and applications of the Laplace transform, inverse Laplace transform, properties and applications of the inverse Laplace transform. z-transform, properties and applications of the z-transform. Inverse z-transform, properties and applications of the inverse z-transform. Fourier series in continuous time, continuous time Fourier transform and analyses. Fourier series in discrete time, discrete time Fourier transform and analyses, frequency analyses of the signals and systems, state space concepts, illustrations and solutions.
BLM305 - OPERATING SYSTEMS (3+1+4) 4 ECTS
Course Content: Introduction to operating systems, architecture of operating systems, Process management, interprocess synchronization, critical section problems, interprocess communications, semaphores, monitors and applications, deadlocks and solutions, CPU scheduling algorithms, Memory management, Paging, segmentation, Virtual memory, File systems, access and protection mechanisms, input/output systems, disk scheduling.
BLM307 - COMPUTER NETWORKS I (3+0+3) 4 ECTS
Course Content: Fundamentals of data communications, data communication protocols, introduction to computer networks, network models, OSI reference model, computer networks classification, network topologies, protocol concepts, internet protocol and architecture, TCP/IP model and internet concepts, TCP, ICMP protocols, domain name system(DNS), file transfer protocol(FTP) and Ethernet concepts.
BLM309 - OBJECT ORIENTED ANALYSIS AND DESIGN (3+0+3) 4 ECTS
Course Content: Basic concepts, object-oriented modelling concepts (UML), requirements description, decomposition in requirements modelling, object interaction, the process definition, control definition, system architecture, system design, design patterns creating, problem solving.
BLM311 - DATABASE MANGEMENT SYSTEMS (3+1+4) 5 ECTS
Course Content: Definitions and basic concepts, entity-relationship model, relational data model, relational algebra and calculation, SQL structured query language, functional dependency and normalization, transaction management, concurrency control, database recovery, database security, object-oriented database, database programming and web applications.
BLM313 - ENGINEERING ECONOMY (3+0+3) 3 ECTS
Course Content: Basic Concepts, Balance of Cash Flow, Relationships between Time, Money and Interest, Present Worth Method, Annual Worth Method, Future Worth Method, Internal Rate of Return Method, External Rate of Return, Performing Comparison between Alternatives, Cash Flow Analysis After Taxation, Effect of Inflation on Cash Flows, Breakeven Analysis, Benefit-Cost Ratios, Depreciation and Replacement Analysis.
BLM903 - MANAGEMENT FOR ENGINEERS (2+0+2) 3 ECTS
Course Content: Management functions theory and development in industry, management types, organization types, control area, number of hierarchies, partitioning, planning, decision making, coordination, communication, organizational theories and rejections against them, reasons for constructing an organization, factor efficiency.

BLM907 - INTRODUCTION TO WEB DESIGN (2+0+2) 3 ECTS

Course Content: Basic concepts of web and graphic design (Html, CSS, JavaScript), basic use of HTML editor programs, website publishing concepts. Introduction to server based web programming, introduction to PHP script language.

6th SEMESTER
BLM302 - COMPUTER NETWORKS II (3+2+4) 5 ECTS
Course Content: Static routing, network interface hardware, LAN active devices, Long-Distance and local loop digital technologies, WAN technologies and routing, connection oriented networking and ATM; Network Characteristics, protocols and layer structures, Internet Protocol Addresses, IP subnetting, NAT, IPv6, IP datagrams and datagram forwarding, network switching methods, network switches and functions, creating and managing a VLAN.
BLM304 - MICROPROCESSORS (3+2+4) 5 ECTS
Course Content: Basic concepts of microprocessor system, basic microprocessor architecture, memory types, organizations and applications, introducing the 8085 microprocessor, internal architecture of the 8085A microprocessor, command set, external architecture of the 8085A microprocessor, the 8085 simulator and applications, fetch cycles, timing and addressing modes, 8085 example applications.
BLM306 - SYSTEM PROGRAMMING (3+0+3) 4 ECTS
Course Content: Introduction to systems programming, C++ programming data structures, program compiling and management, file input/output operations, files and directories, system data files and definitions, processes, signals, threads, daemon processes, sockets, script writing language and script examples.
BLM308 - WEB PROGRAMMING (3+1+4) 5 ECTS
Course Content: Web 2.0, XHTML, CSS, JavaScript, JavaScript, XML and RSS, Flash, Flex, Silverlight, Dreamweaver, Web Servers and Databases, PHP, Ruby, ASP.NET and ASP.NET Ajax, ASP.NET and ASP.NET Ajax, Java Server Faces, Web Services.
BLM310 - SOFTWARE ENGINEERING (3+0+3) 4 ECTS
Course Content: Introduction to software engineering, software development processes, analysis of software requirements and definitions, software design, interface design, software realization, UML diagrams and example, software test, software quality and standards, project management and applications, the common characteristics of successful software projects, information systems evaluation and ethics.
BLM312 - SUMMER PRACTICE II (0+0+0) 4 ECTS
Course Content: In this internship, it is expected to take part in tasks that require active participation such as hardware, design, production line work, calibration, quality testing, and to realize the importance of work integrity and to report experience gained properly. In addition, it is expected to observe works in engineering business. Duration of training is 20 working days.
SSP900 - SOCIAL RESPONSIBILITY PROJECT (1+2+2) 3 ECTS
Course Content: Obtaining the necessary knowledge and skills to perform social responsibility projects, working with different social environment, making discussions on current social responsibility projects and bring solutions.

7th SEMESTER

BLM401 - COMPUTER ENGINEERING PROJECT DESIGN (3+0+3) 6 ECTS

Course Content: Each student will do projects related to computer engineering department, write a report and present their work to the advisors.

BLM403 - ENTREPRENEURSHIP AND LEADERSHIP (2+2+3) 4 ECTS

Course Content: Entrepreneurship house (intrapreneurship) or small family-run business (entrepreneurship) that arise due to the different types of dimensions of economic, legal, financial, behavioral, psychological, social and cultural aspects related to the inspection and evaluation; To the leadership - know - to make (leadership theories, motivation, communication, team building, creativity) addressing both the individual as a social process in size; Identification of Entrepreneurial Leadership relationships and factors affecting entrepreneurship; Evaluating international and Turkey samples in the historical process of entrepreneurship.

BLM405 - ARTIFICIAL INTELLIGENCE (3+0+3) 5 ECTS

Course Content: Introduction to artificial intelligence and basic concepts, problem solving, search methods, training, artificial intelligence methods, neural networks, expert systems, fuzzy logic, intelligent agents and applications.

BLM407 - ERP SYSTEMS (3+0+3) 5 ECTS

Course Content: ERP's development and basic concepts, the basic modules of ERP, accounting and financial management module, material management module purchasing, inventory and warehouse management), sales and distribution system module, manufacturing data management (BOM and Workflows), production planning module (MPS, MRP, CRP), production control operations module, quality and care management module supplier relationship management (SRM), customer relationship management (CRM), Enterprise performance management (Balanced Scorecard), Human resource management, ERP packages (SAP, Microsoft Dynamics, etc.) introduction and applications.

BLM409 - COMPUTER GRAPHICS (3+0+3) 5 ECTS

Course Content: Basic graphics hardware and software concepts, 2D and 3D modelling and mapping, conversion monitoring, projection, cropping, lighting and shading, using graphical software packages and graphics systems, colors and game development.

BLM411 - PATTERN RECOGNITION (3+0+3) 5 ECTS

Course Content: The definition of the patterns and basic concepts, Pattern classes, Feature extraction, Pattern classification techniques, Statistical pattern classification, Introduction to machine learning, Pattern classification using machine learning, Learning types in machine learning, Performance analysis in pattern recognition, Sample applications (Fingerprint, industrial part recognition, signature and character recognition).

BLM413 - DATA MINING (3+0+3) 5 ECTS

Course Content: Introduction to data mining, data mining definitions, data mining background, data mining techniques, operations and algorithms, data mining applications and problems, text mining, web mining, examples.

BLM415 - COMPUTER VISION (3+0+3) 5 ECTS

Course Content: Introduction to computer vision, basic concepts, image matrix and neighbourhood operations, hardware and software architecture of computer vision system, gray level, binary and color image processing, quantizing, noise reduction, edge detection, feature extraction, fundamentals of 3D image processing, sample applications.

BLM417 - INTERNET ENGINEERING (3+0+3) 5 ECTS

Course Content: TCP/IP protocol stack, TCP/IP core protocols (TCP, UDP, IP, ICMP, ARP) and RFC documents, Wireshark packet capture and traffic analyzer program and applications, real time protocol packet analysis.

BLM419 - DIGITAL SIGNAL PROCESSING (3+0+3) 5 ECTS

Course Content: The applications of Z-transform, the sampling and the overlap on time and frequency domain, discrete and fast Fourier transform, the design methods of digital filter.

BLM421 - VIRTUAL REALITY (3+0+3) 5 ECTS

Course Content: Fundamentals of virtual reality systems, geometric modelling, transformations, graphics and tactile image creation, spatial representations and transformations, evaluation of virtual reality systems.

BLM423 - INTRODUCTION TO CYBER SECURITY (3+0+3) 5 ECTS

Course Content: Basic concepts of cyber security, Cyber warfare, Introduction to encryption, Network security; Firewalls, Intrusion Detection and Shutdown Systems, Operating System Security, Secure Software Development, Web Application Security, Penetration Testing, Malware Analysis.

BLM425 - ARTIFICIAL NEURAL NETWORK (3+0+3) 5 ECTS

Course Content: Basic concepts related to artificial neural networks, application areas of artificial neural networks, general artificial neural cell model, threshold logic and boundaries. Educational learning, sensor learning rule. Radial Base Function (RTF) networks. Comparison of parametric and nonparametric methods for data representation. Learning without trainer as a vector quantization problem. Pattern recognition applications of artificial neural networks. Control applications of artificial neural networks.

BLM427 - INFORMATION SECURITY AND CRYPTOGRAPHY (3+0+3) 5 ECTS

Course Content: Information security, cyber security and cryptographic applications, history of cryptography and cyber security. Number, Group Theory and modular arithmetic, cryptographic functions and discrete logarithm problem. Fundamentals of symmetric cryptography and DES algorithm, Cryptanalysis methods, AES and block cipher modes, Fundamentals of quantum cryptography, Computer / Network security attacks and implementations of cryptographic protocols, communication security and data integrity.

BLM429 - IMAGE PROCESSING (3+0+3) 5 ECTS

Course Content: Visual perception, Light and Electromagnetic spectrum, Mathematical model of image, Image detection and acquisition. Linear systems, Convolution, Correlation, Impulse response. Fourier transform and its properties, Frequency concept in image and frequency spectrum of view, Representation of view, Conditions on overlap and sampling frequency, Creation of image from sinusoidal planar waves. Edge detection, Color image processing.

BLM431 - LINUX NETWORK MANAGEMENT (3+0+3) 5 ECTS

Course Content: Linux system commands, Linux file system, X Window graphic interface, basic computer networks, programming with Linux, network management tools, Linux system security.

BLM433 - OPTIMIZATION (3+0+3) 5 ECTS

Course Content: Modelling and simulation concepts, Linear programming, Graph method, Simplex method, Duality and sensitivity analysis, Transport models, Distribution models, Integer programming, Classic optimization theory, Newton-Raphson methods, Nonlinear programming, Unlimited algorithms, Limited algorithms, Applications.

BLM435 - APPLICATION DEVELOPMENT WITH MATLAB

Course Content: Introduction to MATLAB program, usage areas, data visualization, multimedia content usage, development and debugging methods, reading and processing of records.

8th SEMESTER
BLM400 - GRADUATION PROJECT (0+6+3) 8 ECTS
Course Content: Students conduct research of using their knowledge and skills in the previous lectures, project design and preparation of technical reports based Computer Engineering Applications to gain the ability to edit.
BLM402 - OCCUPATIONAL HEALTH AND SAFETY (2+0+2) 2 ECTS
Course Content: Investigation and reporting, the concept of occupational diseases, types, prevention methods. Workshop and safety procedures in the laboratory, personal protection and machine guards, fire and explosion prevention methods, first aid principles and objectives, OHS legislation.
BLM404 - MOBILE PROGRAMMING (3+0+3) 5 ECTS
Course Content: Programmable mobile systems and architectures, operating systems used in mobile systems, mobile basics of programming, file read/write operations, working with XML files, XML web services, emulators and devices, test and debug, mobile GUI applications, I/O operations, Sending SMS and e-mail.
BLM406 - PROJECT MANAGEMENT (3+0+3) 5 ECTS
Course Content: Project planning and control principles and methods, project plan development, including resource planning and scheduling (PERT/CPM); project monitoring and finalization. Leadership for effective teamwork. Effectively managing skills of interdisciplinary projects. Specific problems of companies that use technology extensively are being emphasized throughout the entire course.
BLM408 - COMPUTER ARCHITECTURES (3+0+3) 5 ECTS
Course Content: Fundamentals of computer architectures, memory hierarchy, Input/output systems, central processing unit, instruction set architectures, pipeline and superscalar computer systems, parallel organization.
BLM410 - COMPUTER AND NETWORK SECURITY (3+0+3) 5 ECTS
Course Content: Introduction to Network Security and Basic Concepts, Risk Assessment, Security Policy, classification of threats, passwords, access permissions, encryption techniques, traditional methods, public key methods, authentication, digital signatures, protocols, encryption software, TCP / IP Protocols and Services in Safety, Security firewalls, Virtual Private Networks, Intrusion Detection Systems.
BLM412 - COMPILER DESIGN (3+0+3) 5 ECTS
Course Content: Compiler phases, Lexical analysis, Syntax analysis, Semantic analysis, Intermediate Code generation, Code optimization, Code generation.
BLM414 - INTRODUCTION TO BIOINFORMATICS (3+0+3) 5 ECTS
Course Content: Basic concepts of bioinformatics, biological data flow, access to biological databases and search strategies, biological sequence alignment algorithms (dynamic programming, pairwise alignment, multiple alignment), pattern recognition methods in bioinformatics, data structures used in bioinformatics (suffix trees, decision trees, graphs), example problems and applications (protein secondary structure prediction, protein classification, genetic recognition).
BLM416 - INTRODUCTION TO GAME PROGRAMMING (3+0+3) 5 ECTS
Course Content: Introduction to game programming, mathematics used in game programming, graphic conversion, animation, 3D, game programming in audio input and output equipment, game engines and algorithms.
BLM418 - DATABASE DESIGN AND APPLICATIONS (3+0+3) 5 ECTS
Course Content: Problems encountered in real life, on the theory of database systems, database creation, encouragement of students to design various systems in teamwork.
BLM420 - SYSTEM SIMULATION (3+0+3) 5 ECTS
Course Content: Introduction to simulation and basic concepts, simulation models architecture and types, generation of random numbers and variables, data analysis and distributions, verification and validation, modelling of queue systems, modelling of service systems, simulation software packages, inventory control models, modelling of maintenance and replacement systems, modelling of logistics and distribution systems, modelling of manufacturing systems.

BLM422 - ALGORITHM ANALYSIS (3+0+3) 5 ECTS

Course Content: Introduction to algorithms, algorithm analysis. Insertion Sort, Merge Sort, Asymptotic Representation, Recursion, Substitution Method, Divide and Manage Approach and Algorithms, Expansion of Data Structures, Dynamic Sequence Statistics, Range Trees, Minimum Spanning Trees, Shortest Path Algorithms.

BLM424 - EMBEDDED SYSTEMS (3+0+3) 5 ECTS

Course Content: Introduction to Embedded Systems, Microcontrollers, Design with Embedded C, Real-Time Operating Systems and Embedded Operating System Design, Different State Systems, Connection of External Units via interface, Serial I / O Connections, Advanced Microcontroller Applications.

BLM426 - MICROCONTROLLER APPLICATIONS (3+0+3) 5 ECTS

Course Content: Introduction to microcomputer systems, concepts and differences of microprocessors and microcontrollers, Introduction to microcontroller types and PIC microcontrollers, PIC Microcontroller minimum operating circuits (Oscillator, Reset circuits), Assembly language command structure and PIC commands, Program development stages, Simulation Programs.

BLM428 - CLOUD COMPUTING (3+0+3) 5 ECTS

Course Content: Introduction to Cloud Computing, Cloud Computing Service Models, Cloud Computing Distribution Models, Current Cloud Computing Applications, Usage Areas of Cloud Computing, Advantages and Disadvantages of Cloud Computing, Mobile Cloud Applications.

BLM430 - INTERNET OF THINGS AND APPLICATIONS (3+0+3) 5 ECTS

Course Content: Overview of Internet of Things (IOT), Comparison of M2M and IoT, Objects of the Internet Business Models and Application Areas, Objects of the Internet Layered Network and Protocol Architecture, IOT Communication Technologies: RFID, NFC and Applications, IoT Communication Technologies: ZigBee, WSN, Z-Wave, Google Wave and Applications, IoT Communication Technologies: GSM, GPS and Applications, IoT Communication Protocols: XMPP, CoAP, SoAP, REST, IoT Platforms for Large Data Large Data and Cloud Computing on the Internet of Objects.

BLM432 - PARALLEL PROGRAMMING (3+0+3) 5 ECTS

Course Content: The history and basic issues of parallel computing. Classification of parallel processing systems. Parallel computer architectures. Digital libraries related to programming methods and parallel processing. Design and analysis of important parallel algorithms for sorting, arithmetic and matrix-related applications. Parallel programming assignments for selected applications using digital libraries and parallel programming tools.

BLM434 - SOFTWARE QUALITY AND TEST (3+0+3) 5 ECTS

Course Content: Definition of quality in system and software engineering, Classification of software type in COCOMO method; COCOMO RELY parameter; Error rate sigma level requirement for various software types, McCabe Algorithm Complexity; Cyclomatic complexity and component independent trace estimation; data dependent testing and data-based reliability model, first (alpha), second (beta) and acceptance tests; Software V-model, Time Dependable Reliability Model, Software Tests and related standards, Software Review and Software Audit definitions and related standards, ISO standard group on software quality (SQuaRE), Independent Validation & Verification Concept, Software Size Metrics that form the basis for software quality.

BLM436 - DIGITAL CONTROL SYSTEMS (3+0+3) 5 ECTS

Course Content: Mathematical models of digital control systems, difference equations, Z transform and inverse of it, The state equations of discrete-time systems and the demonstration of higher-order difference equations with state equations, obtaining pulse transfer functions from state equations and solving them, The block diagrams of digital control systems.