MARMARA UNIVERSITY VOCATIONAL SCHOOL OF TECHNICAL SCIENCES
DEPARTMENT OF COMPUTER TECHNOLOGIES
COMPUTER PROGRAMMING PROGRAM COURSE CONTENTS (2014-2022 Year)

1st SEMESTER

• BLY1001 Introduction to Algorithm and Programming (3+1)
National Credit: 5 ECTS Credit: 5
It is aimed to teach the definition of algorithm and basic concepts about algorithms, performance analysis and coding of algorithms, algorithm types and performances, as well as the basic principles of structural programming and the basic features of the C programming language. In this context, by introducing the variables, data types, data structures and program control statements used in the C programming language, and standard libraries, input-output functions, assignment operators, logical operators, programming structure, program control commands and other standard functions; It is aimed to enrich the practice of our students with applications on sorting and searching methods, menu preparation, linked lists, sequences, filing and port usage.

• BLY1003 Web Design (3+1)
National Credit: 4 ECTS Credit: 4
Internet environment and web design, basic principles of web design, HTML language basic tags, advanced web operations with HTML language, HTML 5.0 and W3C standards, web editor entry-near/far site concepts and new site creation, text operations, working with tables, images, multimedia components and links, CSS - Css panel -box model and Div tags, AP elements - effects, behaviors - SPRY, forms, site management and publishing. Learning the BOOTSTRAP 4 framework and creating Responsive Web sites that are compatible on all devices without getting into the HTML5-CSS3-JAVASCRIPT density. To increase dominance over your sites by minimizing JAVASCRIPT programming by learning the React library.

BLY1005 Operating Systems I (3+1)
National Credit: 5 ECTS Credit: 5
General structure of operating systems, single-user operating systems, multi-user operating systems. Process management, Memory management, Disk management, File system structure. Knows and applies logical and physical security concepts. Knows and applies basic Unix / Linux commands. It can install and backup Unix/Linux based operating system, adjust security settings and resolve problems.

• MAT1081 Mathematics (3+0)
National Credit: 5 ECTS Credit: 5
Numbers, algebra, equations and inequalities, functions, trigonometry, complex numbers, logarithms. To teach the concepts of limit, continuity and derivative in functions of one variable. To provide the ability to use derivative and integral concepts in practice. To gain the ability to use mathematical knowledge in solving engineering problems.

• TRD121 Turkish Language I (2+0)
National Credit: 2 ECTS Credit: 2
The content prescribed by National Higher Education Institution (YÖK) will be applied.

• YDZI121 English I (2+0)
National Credit: 2 ECTS Credit: 2
The content prescribed by National Higher Education Institution (YÖK) will be applied.

• BLY1021 Computer Statistics Applications (3+1)   (Elective Course 1st Semester)
National Credit: 4 ECTS Credit: 4
Introduction to statistics, descriptive statistics, measures of central tendency, measures of spread. How to make descriptive statistics with the help of the program? How are distributions tested with the help of the program? Preparation of frequency tables and descriptive graphics, sample selection, survey preparation and evaluation. Comparison of dependent-independent group means, one-two-way analysis of variance, nonparametric tests, confidence limits, z-test, Chi-square test, Cross tables, regression analysis, multivariate statistical analysis methods.

• BLY1065 Office Software (3+1)   (Elective Course 1st Semester)
National Credit: 4 ECTS Credit: 4
Basic components of office programs, word processing program - introduction to Word, text and formatting operations, insert menu and figure-graphic-table etc. inserting and editing, table of contents - creating a table of figures, page layout - footer / header - cover - review menu - macros, introduction to Excel spreadsheet program, border and formatting operations, formulas - functions - creating graphics, filters - sorting, PowerPoint Introduction to presentation preparation program and effective presentation preparation techniques, effective presentation preparation with effects, OneNote digital notebook, Outlook e-mail management program.

• ELY1011 Basic Electronics (3+1)   (Elective Course 1st Semester)
National Credit: 4 ECTS Credit: 4
To gain basic knowledge and skills about electronic technology. Basic concepts and circuit structures related to analog and digital electronic circuits. Basic electrical knowledge, electronic principles and laws, basic semiconductor circuit elements used in electronics, resistors, capacitors, diodes, transistors, simple R, L, C circuits, rectifier circuits, number systems and binary number systems, structures of basic gate circuits, (NOT, AND, OR, EXOR, EXNOR, BUFFER etc.) studies, (NOT, AND, OR, EXOR, EXNOR, BUFFER etc.) studies, learning and application of basic gate circuits. Learning analysis methods (Karnough method). Learning with various simplification methods and various examples given.

• BLY1023 Software Development (2+0)   (Elective Course 1st Semester)
National Credit: 3 ECTS Credit: 3
Computer systems, general definitions of the project, the meaning of quality in software, software development methodologies (standards), planning of execution in the project, execution of the project, determination of requirements, design process, software development models, software implementation, software testing, software maintenance, configuration management, end of the project, implementation of the project.

• TBY1001 Research Methods and Techniques (2+0)   (Elective Course 1st Semester)
National Credit: 3 ECTS Credit: 3
Concepts of science and research, the relationship between science and research, the necessity and importance of research, the basic aims of science and research, ways of obtaining information, transforming research results into reports, preparing a presentation, research proposal, transforming research results into a report. The student's recognition of the research process, the steps to be applied in this process and what needs to be done, and ultimately reporting the research within the framework of general rules.

• TBY1010 Professional Ethics (2+0) (Elective Course 1st Semester)
National Credit: 3 ECTS Credit: 3
In this course, it is aimed to gain the competencies related to professional ethics. Examining the concepts of ethics and morality, Examining ethical systems, Examining the factors that play a role in the formation of morality, Examining professional ethics, Examining the consequences of professional corruption and unethical behaviors in professional life. Introduction, theories of ethics, professional ethics, responsibility, privacy, data protection, intellectual property, copyright, patent, license agreements, internet, computer crimes, social effects.

2nd SEMESTER

• BLY1006 Operating Systems II (3+1)
National Credit: 5 ECTS Credit: 5
Structure, installation, distribution and management of network operating systems. Manage to install a Windows server based operating system. Setting up and managing servers such as DNS, DHCP, WINS. Administering the server as a domain server.

• BLY1012 Database Management Systems I (2+1)
National Credit: 5 ECTS Credit: 5
Basic database topics targeting conceptual, logical and physical design, ER model in conceptual design, relational model in logical design and basic SQL commands, file and database concepts, relational database design, normalization, relational algebra, Microsoft SQL installation and usage, SQL- Structured query language basic commands, queries from a single table, use of arithmetic operators and functions, grouping and querying in multiple tables. Introducing the basic concepts of database and making applications with MSSQL database management system. Developing applications with the .NET Core Entity Framework

• BLY1014 Graphic Animation I (3+1)
National Credit: 5 ECTS Credit: 5
Basic information about the image manipulation program - concepts and terms, innovations - selection processes, retouching and transforming - layers, automating tasks - masks and channels, colors and adjustments - painting and drawing, working with filters - typographic design, printing processes, web design - animation - 3d, animation basics, graphics, text manipulations, symbols, creating animation, audio and videos, uploading and controlling animation content – publishing documents. In this course, color information, graphic formats, graphic file types, retouching, editing etc. using image editing tools in Adobe Photoshop program. learn to do operations, work with masks and channels in layers. Learns the basics of animation and how to use Animate and 3Ds Max programs to make 3D animations.

• BLY1016 Visual Programming I (3+1)
National Credit: 5 ECTS Credit: 5
General definitions of visual programming, use of object-oriented programming editor, data types, variables, arrays, operators, class and object concept, forms and properties, comparison and loop statements, interfaces and advanced objects, advanced objects, dialogs, input and message windows, functions. To teach the general features of the compiler program with the features of one of the visual programming languages (C#); Developing different kinds of software running under Windows operating system using this compiler.

• ISG1081 Occupational Health and Safety (2+0)
National Credit: 3 ECTS Credit: 3
Occupational accidents, elements that threaten safety in the environment, workplace safety, personal protectors and their use, emergency and first aid in accidents, legal dimension of occupational safety, occupational safety legislation. By understanding the importance of Occupational Health and Safety in both social and business life, information is given about the general lines of the Occupational Health and Safety Law No. 6331 and its sanctions in the printing sector, which is the last law regulation in this field. In addition, the effects of Physical, Chemical, Psychological and Biological Factors that harm health in the printing sector, the causes of work accidents and occupational diseases, prevention methods are explained, and first aid and its importance are outlined.

• TRD122 Turkish Language II (2+0)
National Credit: 2 ECTS Credit: 2
The content prescribed by National Higher Education Institution (YÖK) will be applied.

• YDZI122 English II (2+0)
National Credit: 2 ECTS Credit: 2
The content prescribed by National Higher Education Institution (YÖK) will be applied.

• BLY1022 Computer Hardware (3+1)   **(Elective Course 2nd Semester)**
National Credit: 3 ECTS Credit: 3
The aim of the course is to provide knowledge for the design and construction of a digital computing machine with a background of digital circuits and logic. Gain knowledge of computer use, design principles and physical description, and how software relates to a computer system. Measures against static electricity, characteristics of hardware materials, power requirement of the computer case, motherboard, processor and memory units, motherboard, processor and memory units, disk drives, disk drives, hardware cards, hardware cards, peripherals, peripherals, bios, bios error messages.

• MAT1082 Discrete Mathematics (3+1)   **(Elective Course 2nd Semester)**
National Credit: 3 ECTS Credit: 3
Integral and its applications, solution of nonlinear equation systems, solution of linear programming problems with simplex method, optimization of multivariate functions with the help of Hessian matrix, transportation problems and assignment problems, PERT-CPM-TSP, PERT-CPM, MATLAB applications, interpolation polynomials and errors, eigenvalues and eigenvectors, numerical derivative, numerical integral, reduction relations Tower of Hanoi-Fibonacci sequence- Golden ratio.

3. SEMESTER

• ATA121 Ataturk's Principles and History of Revolution I (2+0)
National Credit: 2 ECTS Credit: 2
The content prescribed by National Higher Education Institution (YÖK) will be applied.

• BLY2000 Internship Application (0+0)
National Credit: 2 ECTS Credit: 2
Practices that enable the teachings gained at school to be transformed into skills and competencies in the sector during the working day specified in the associate degree regulation. To enable the students of Marmara University Vocational School of Technical Sciences to develop their practical skills in industrial enterprises, to benefit from technological developments and to gain management experience.

• BLY2001 Computer Network Systems (3+1)
National Credit: 5 ECTS Credit: 5
Computer networks, network elements, network protocols. OSI architecture, IEEE architecture, regional area networks (LAN), Ethernet, token-ring, FDDI, wide area networks (WAN), ISDN, ATM, DSL, cabling protocols, (IPX/SPX, NETBIOS, TCP/IP) network coupling elements (Hub, Switch, Router, Bridge, Gateway), network operating systems (NT, LUNIX, Windows), network security. To learn the basic concepts of TCP/IP and to program routers.

• BLY2003 Object Oriented Programming I (3+1)
National Credit: 5 ECTS Credit: 5
Object Oriented basic principles and concepts, Java Programming Language basic principles and concepts, Expressions and operation priority, Data transformations, Getting input from the user, Introduction to Graph, Package and Import Concept, Object Creation and Object References, String Class and Methods, Random and Math Classes, Commands Used in Input-Output (I/O) Operations, Control Structures - Repetitive Structures - Loops, Array Concept, Points to Consider While Naming Arrays and Indices, One-Dimensional Arrays, For-each-Like Loop Structure and Array Elements Accessing, Two Dimensional Arrays, Multidimensional Arrays, Copying Array Elements to Another Array, String Operations, Defining Dynamic Arrays with Array list, Sorting Algorithms, Search Algorithms, UML Diagrams, Class, Object, Access Tokens to Object Members, Method Concept, Inheritance, Encapsulation , Polymorphism, Graphics.

• BLY2005 Internet Programming I (3+1)
National Credit: 5 ECTS Credit: 5
Analysis of the Internet environment, software languages, Python software, MySQL, Mongo DB will be able to write open source programs that can work in the Internet environment. Installation and testing of application software, Python input (code writing format, variables and input commands), operators and arrays, control and cyclic structures, global variables and the use of Get Post method in form, functions, ready-made functions used in Python, Python file upload, database operations in Python. Python Flask framework explanation.

• BLY2013 Database Management Systems II (2+1)
National Credit: 4 ECTS Credit: 4
To be able to understand the programming logic in a client/server database software, to prepare interfaces and to create reports. Basic database concepts, database design, stored procedure, indexes, functions, triggers, cursors, security, transaction concepts and applications are included. Programming SQL Server access on the client side. Subqueries, Views, Transaction, T-SQL (Transact SQL), Stored Procedure, Cursor usage, Trigger Usage, Database Security, Advanced Database Applications.

• BLY2017 Visual Programming II (3+1)
National Credit: 5 ECTS Credit: 5
Developing complex database-related applications with visual programming languages (C#). Advanced interface design, data transfer between forms, database elements, database design, database connectivity, advanced application development. In addition, application-game development with the help of game development engines supported by visual programming languages (C#).

• BLY2007 Embedded Systems (3+1) **(Elective Course 3rd Semester)**
National Credit: 4 ECTS Credit: 4
What is an embedded system, embedded system hardware structures, first embedded program writing, compiling, loading, running and debugging, memory elements in embedded systems, peripherals, interrupts, bringing together embedded system possibilities, communication protocols: Usb, RS232, I2C, GPIB , Wi-Fi, embedded system operating systems, Linux examples, application development in embedded systems on Linux, obtaining and controlling the physical data in the outside world, increasing the embedded system features with additional hardware, visually transferring the obtained data to the outside world with LCD screen , communication applications with embedded systems, use of Visual Linux programming environment.

• BLY2009 Computer Intelligent System Applications (3+1) (Elective Course 3rd Semester)
National Credit: 4 ECTS Credit: 4
Learning the general structure of intelligent systems, Expert systems, Prolog, Fuzzy Logic, Heuristic Algorithms, Artificial Neural Networks. Problem solving using these methods. Using MATLAB, application development using MATLAB toolboxes.

• BLY2015 Graphic Animation II (3+1) **(Elective Course 3rd Semester)**
National Credit: 4 ECTS Credit: 4
To provide the student with the ability to write graphic and animation programs that can work in the internet environment. Forms, animation enhancement, publishing animations, ActionScript fundamentals, functions - events, classes, decision structures, math operations, texts, sequences, coding and graphics, multimedia operations, advanced interaction.

• BLY2021 Data Mining (3+1) **(Elective Course 3rd Semester)**
National Credit: 4 ECTS Credit: 4
To introduce students to basic applications, concepts and techniques related to data mining. To prepare students for independent research. Introduction to data mining, data cleaning and preparation, classification methods, bundling methods, association rules, text mining, web mining, data mining programs and applications.

4th SEMESTER

• ATA122 Atatürk's Principles and History of Revolution II (2+0)
National Credit: 2 ECTS Credit: 2
The content prescribed by National Higher Education Institution (YÖK) will be applied.

• BLY2004 Object Oriented Programming II (3+1)
National Credit: 5 ECTS Credit: 5
Making advanced object-oriented programming applications with Java. Subroutines, functions, graphical applications, streams, file operations, binaries, error catching, stack structure, queue structure, single-linked linear lists, single-linked circular lists, double-linked linear lists, double-linked circular lists, thread – multithread concepts, database connection. 2D and 3D animation and game design, Java 8 innovations, JSP concept, JavaFX.

• BLY2006 Internet Programming II (3+1)
National Credit: 4 ECTS Credit: 4
Asp.net login, standard controls in ASP.NET (imagebutton, table, dropbox, listbox, checklistbox, bulletedlist, hiddenfield, treeview, calendar, adrotator, fileupload, wizard, multiview), validation, database applications, session, application, get and post methods, master page, login, web user control, Asp.net Css usage. Understanding React UI rendering, building ASP .NET Core 3.0 MVC web apps.

• BLY2008 Mobile Programming (3+1)
National Credit: 5 ECTS Credit: 5
Mobile devices, operating systems and introduction to programming, analysis of operating systems used in mobile devices (Android, IPhone, Windows), components and settings of the software development environment (SDK), mobile interface architecture, network structures of mobile devices, use of database engines, communication of mobile devices and file sharing, APIs, interface development, use of web services on mobile devices, creation of 2D and 3D graphics.

• BLY2022 Graduation Project (0+2)
National Credit: 5 ECTS Credit: 5
Creating a project in line with the courses in the curriculum for the use of information about education, technology, production management and cost, in which students will gain professional self-confidence by researching, renewing and learning new information on computer technology and programming.

• THU1000 Community Service Applications (0+2)
National Credit: 1 ECTS Credit: 1
Basic information and application stages of the student's field of social service. Activities aimed at providing students with social responsibility towards society within the framework of university culture. Personal development of the student by gaining social awareness.

• BLY2012 Wireless Network Systems (3+1) (Elective Course 3rd Semester)
National Credit: 5 ECTS Credit: 5
To learn the general structure of wireless network technologies and to be able to use wireless network setup operations. Wireless network types and classification, wireless local area networks (WLAN), wireless personal area networks (WPAN), wireless wide area networks (WWAN), mobility management in wireless networks, GSM network infrastructure, routing algorithms, mobile Internet protocols, routing protocols in new generation wireless networks, next generation wireless network protocols.

• BLY2024 Image Processing (3+1) (Elective Course 4th Semester)
National Credit: 5 ECTS Credit: 5
To introduce the student to analytical tools and methods currently used in digital image processing as applied to image information for human imaging. Then apply these tools for image restoration, enhancement, and compression in the lab. Fundamentals of image processing, formation of vision, computer image creation, fundamentals of digital image, image enhancement techniques, basic filtering techniques for digital images.

• OTM2008 Computer Control and Data Collection (3+1) (Elective Course 4th Semester)
National Credit: 5 ECTS Credit: 5
Computerized data collection applications, control applications and analysis processes. Teaching the basic topics related to the use of computers in data collection and control applications and reinforcement with applications. Laplace transforms. Laplace analysis and control of 1st and 2nd order systems. Analysis and control of 1st and 2nd order linear systems under MATLAB.

• BBY2084 Information Security (2+0)   (University Elective Course 4th Semester)
National Credit: 3 ECTS Credit: 3
Network traffic analysis, TCP/IP packet structure and analysis, sniffing concept, packet analysis and tools used for sniffing, network traffic analysis with connection problems, DNS & DHCP traffic packet analysis, forensic analysis in network traffic, identifying and blocking sniffers in local networks, protocol analysis, IDS/IPS (intrusion detection and prevention) technologies, IDS/IPS settlement planning, IDS/IPS circumvention tools and protection methods, DDOS and its types, sample DDOS attack investigations, BOTNET world, DDOS attack prevention methods.

• IK2002 Career Development (2+0)   (University Elective Course 4th Semester)
National Credit: 3 ECTS Credit: 3
Conceptual framework related to career, career management tools, career management practices, career cycles, career problems, ways of recruiting candidates, job search channels, CV preparation, new career approaches, entrepreneurship and career.

• ISL2082 Project Management (2+0)   (University Elective Course 4th Semester)
National Credit: 3 ECTS Credit: 3
What is the project? Introduction to project management, project lifecycle -project manager's characteristics -project team, project planning and work packages-tasks-requests, project expenses and budgeting, basic scheduling approaches GANTT, Node Networks, CPM, PDM - PERT, allocation of resources to the project, risk management , tools and techniques, project execution and control, evaluation and supervision, project completion and implementation, MS Project.

• KSS2002 Photography (2+0)   (University Elective Course 4th Semester)
National Credit: 3 ECTS Credit: 3
Classification of cameras, optical and reflex viewers, analog and digital cameras, shutter speed, aperture, shutter-aperture relationship, depth of field, lenses, analog and digital lens differences, film speed, digital sensors, digital and analog multiplier differences.

• KSS2020 Traffic Safety (2+0)   (University Elective Course 4th Semester)
National Credit: 3 ECTS Credit: 3
Information needed to acquire safe behaviors as pedestrians, drivers and passengers in traffic; elements of traffic as a system, behavioral dynamics, cultural dynamics, preventive and safe traffic rules.