T.C.

FIRAT UNIVERSITY

KARAKOÇAN VOCATIONAL SCHOOL

DEPARTMENT OF COMPUTER TECHNOLOGIES

COMPUTER PROGRAMMING PROGRAM

COURSE CONTENTS

I. SEMESTER COURSES

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Turkish Language-I	2 +0	2	2

Course Content

To be able to understand that language is the product of the human mind, to understand the structural features and richness of the Turkish language, to understand the ways to be successful in written expression, and to develop research, reading and information skills.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Ataturk's Principles and History of Revolution I	2 +0	2	2

Course Content

The purpose of studying Ataturk's principles and History of Revolution course and the concept of revolution, a general overview of the reasons that led to the collapse of the Ottoman Empire and the Turkish Revolution; The disintegration of the Ottoman Empire, the Armistice of Mudros, the situation of the country in the face of invasions and Mustafa Kemal Pasha's landing in Samsun, the first step for the national struggle, organization through congresses, Kuvayı Milliye and National Pact, the opening of the Turkish Grand National Assembly, the Turkish Grand National Assembly taking over the management of the War of Independence, the national struggle until the Sakarya Victory, the Sakarya War and the Great Offensive, From Mudanya to Lausanne, national struggle in the field of education and culture, national struggle in the social and economic field.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT

Foreign Language-I	2 + 0	2	2

Tokens; prepositions: place, time, action; singular and plural nouns, countable and uncountable nouns, tenses, present tense, present tense, past tense structures, moods, will, should, should not, must, must not, can, comparative structures, pronouns, personal pronouns, possessive pronouns, adjectives, positive sentences, negative sentences and interrogative sentences, conjunctions.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Mathematics	3 +0	3	3

Course Content

Sets, Basic Concepts, Numbers, Divisibility, GCD-OKEK, Rational Numbers, Decimal Numbers, Exponents, Radical Numbers, First Degree Equations, Second Order Equations, Absolute Value, Ratio-Proportion, Equating Problems, Number and Fraction Problems, Percentage Problems, Profit-Loss Problems, Graph Reading and Problems.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Algorithm and Programming Fundamentals-I	2 + 2	3	6

Course Content

Basic concepts about computers: Input-Output devices, Basic concepts about hardware and software, Operating systems. Algorithms and algorithm development for problem solving. Flow Diagrams. High-level programming languages. Introduction to Java programming. General structure of the Java language. Data in Java, standard data types, special data types. Operators in Java. Arrays, matrices. Entry/Exit transactions. Program Control elements and loops. File operations with Java. Introduction to data structures with Java

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Internet Programming-I	2 +2	3	5

Course Content

Installation and testing of application software, variables and constants, operators, decision control structures, loop control structures, user-defined functions, ready-made functions, arrays and objects, filing operations, web form applications, inter-page data transfer methods, database operations, XML and WEB services, AJAX, JSON

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Computer Hardware	2+0	2	5

Precautions against static electricity, properties of hardware materials, properties of hardware materials, power requirement of the computer case, motherboard, processor and memory units, disk drives, hardware cards, peripherals, BIOS, error messages

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Basic Electronics	2 + 2	3	5

Course Content

To provide basic knowledge and skills about electronic technology. To teach basic concepts and circuit structures about analog and digital electronic circuits.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Office Software	2 + 2	3	5

Course Content

Word Processing Program (Using the Screen, File Operations, Text Operations, Adding Objects, Page Layout, References, Mails), Spreadsheet Program (Home and File Tab, Insert Tab, Page Layout-Review and View Tab, Formulas and Data Tabs), Slide and Presentation Program (Presentation Creation and Home Tab, Insert Tab and Slide Operations, Animation and Slide Transition Operations, Advanced Presentation Features)

II. SEMESTER COURSES

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
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Turkish Language-II	2 + 0	2	2

To be able to recognize the types of written expression in daily life, to understand the importance of punctuation in written expression, to understand the importance of correct expression in personal and social communication, to apply research, reading and information skills.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Ataturk's Principles and History of Revolution-II	2 +0	2	2

Course Content

The purpose of studying Ataturk's principles and History of Revolution course and the concept of revolution, a general overview of the reasons that led to the collapse of the Ottoman Empire and the Turkish Revolution; The disintegration of the Ottoman Empire, the Armistice of Mudros, the situation of the country in the face of invasions and Mustafa Kemal Pasha's landing in Samsun, the first step for the national struggle, organization through congresses, Kuvayı Milliye and National Pact, the opening of the Turkish Grand National Assembly, the Turkish Grand National Assembly taking over the management of the War of Independence, the national struggle until the Sakarya Victory, the Sakarya War and the Great Offensive, From Mudanya to Lausanne, national struggle in the field of education and culture, national struggle in the social and economic field.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Foreign Language-II	2 + 0	2	2

Course Content

To ensure the development of the basic tense structures, language structure and technical terminology and practical usage language of the language that will be used in daily and professional relationships. Doing exercises and practices for this purpose.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Professional Mathematics	3+0	3	3

Course Content

Geometric Basic Concepts, Analytical Geometry Basic Concepts, Angles in Triangles, Psagorical Relation, Triangle Inequality, Isosceles and Equilateral Triangle Properties, Area in Triangles, Polygons, Special Quadrilaterals, Circle and Circle

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Algorithm and Programming Fundamentals-II	2 + 2	3	5

Visual Programming with Java. AWT and Swing applications. Java Applets. Java Threads. Introduction to Data Structures, Arrays, Stacks, Queues and Lists, Tree structures and algorithms related to these structures. Object Oriented Programming. Reuse of objects, Composition. Inheritance and Polymorphism. Abstract Classes and Interfaces. Creating and using ready-made libraries in Java. Introduction to database applications with Java (JDBC - Java Database Connectivity). Introduction to Internet programming with Java (JSP - Java Server Pages).

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Internet Programming-II	2 + 2	3	5

Course Content

Software installations and publishing for the web server, variables and constants, operators and operation priority, decision control statements, loop control statements, user-defined functions, ready-made functions, array operations, file operations, web forms, data transfer between pages, database connection, database operations, XML applications and web services.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Database and Management	2 + 2	3	5

Course Content

Database and Database Management Systems Basic Concepts, Normalization, Data Models, Entity – Relationship Diagrams, E – R Types and Relations, Transfer from Conceptual Model to Logical Model, Introduction to SQL Language, Select, Insert Into, Update, Delete, Limit, Offset, Order by, Where, And – Or, Alter table, Drop table, Create view, Alter view.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Graphics and Animation	2 + 2	3	4

Program Input Settings, tool panel, vector tools, text editing operations, color, stroke and fill applications, live filters, layer operations, layer operations, slices and active regions, buttons and drop-down menus, pages, animated images, slide show, optimization and export, working with the web design editor.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Computer Aided Design	2 + 2	3	4

Course Content

General Information About CAD / Introduction and Use of Basic CAD Software / Coordinate Systems, workspace arrangement / Wireframe Drawing, 2D and 3D Wireframe Drawing / Surface Modeling, Solid

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Software Installation and Management	2 + 2	3	4

Course Content

Operating systems, operating system installation, system features, control panel, group policies, replicating the operating system, security software, office software, other application software.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Internet of Things	2 + 2	3	4

Course Content

In the course, software, hardware, communication protocols and sensors used for the implementation of the Internet of Things will be examined and applications will be carried out.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Basic Electronics	2 + 2	3	4

Course Content

To provide basic knowledge and skills about electronic technology. To teach basic concepts and circuit structures about analog and digital electronic circuits.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Image Processing	2 + 2	3	4

Course Content

Introduction to signal and image processing, overview of digital image processing, discrete time signals and systems, sampling, reconstruction and digitization, digital image representation, image transformations, enhancement, repair, segmentation and identification.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Statistics Applications with Computers	2 + 2	3	4

Course Content

The aim is to provide basic knowledge and skills regarding the selection of single-factor statistical techniques frequently used in educational research, performing the process using the SPSS statistical program and interpreting the results.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Professional Ethics	2+0	2	2

Course Content

Ethics Related Concepts, Basic Ethical Principles and Types of Ethics, Introduction of Professional Ethics Norms and Social Responsibility Issues, Factors Affecting Ethics, Ethics Related Standards, Ethics in the Public Sector, Sensitivity to Society's Demands and Behaviors, Ethics Related Problems in Businesses.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Communication	2+0	2	2

Description and types of communication, basic communication concepts, the importance of communication in terms of society and the individual, communication types and comparisons, verbal communication, principles of verbal communication, oral communication techniques and their applications, the effects of oral communication in daily life, written communication: writing types, in-house writing types, general purpose business letters, special purpose writings such as forms and surveys, communication in professional life, applying communication techniques to professional groups, graphic communication, purposes of use of graphics and diagrams, communication using technological tools, interpreting the functions of the tools used, the conveniences provided by technological tools.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Innovation Management	2+0	2	2

Course Content

Innovation: Introduction and Problems, Innovation Environment, Innovation Process, Basic Theories, Creativity and Human Factors - Individual, Team and Leadership, Innovation management in businesses, Management of intellectual capital, Management of organizational knowledge, Management of research and development, New product development and service innovation, Open innovation and Technology transfer

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Environmental Protection	2+0	2	2

Course Content

Classification of Environmental Pollution, precautions to be taken, environmental protection laws, factors that play a role in environmental pollution, aesthetic damages, energy sources, thermal pollution, pesticides, industrial wastes, domestic wastes, radioactive substances. Limits of toxic substances in the air in the workplace environment, main substances that pollute workplaces, protective measures and worker health in the workplace.

III. SEMESTER COURSES

NAME	MOMENT	CREDIT	ECTS CREDIT
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Object Oriented Programming-I	2 + 2	3	5
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Installation of software required for programming, a basic console and operating system application, use of constants, variables and objects, use of operators, decision control statements, loop control statements, user-defined functions, ready-made functions, file operations, use of classes, fields and methods, local and global references, arrays, multidimensional arrays, standard components, advanced components, database connection, database queries.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Network Fundamentals	2+0	2	4

Course Content

Network Communication, Network Topologies, Network Connection Types, Network Types, Network Devices, Intranet/Extranet, Networking Models, Cable Specifications, Cable Standards, Twisted Pair Cable, Cable Preparation Stages, LAN Setup, IP Addressing, Public and Private IP Addresses, IP Structure, CAST Concept, Address Types, IP Classes and Subnet Mask, Subnet Concept, Subnet Mask Applications.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Internship Evaluation	0+2	1	6

Course Content

It is the practical and applied training that the student will receive in the relevant sector. Students; Training, practice and internships at workplaces are carried out within the framework of the principles and procedures determined by the Council of Higher Education (30 working days (6 weeks)).

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Mobile Programming I	2 + 2	3	5

Course Content

Mobile Programming overview and content •Requirements and Setup of the Development Environment
•Fundamentals of Android Applications •Life Cycle of Android Applications • Designing a user
interface with Android •Intents, Intent Filters, Broads, BroadReceivers •Preferences and file management
•Database management and content providers •Internet Access, Background processes, Service and alarm
concepts •Positioning and map management •Uploading the application to the Android market (Deployment to
Market)

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
E-Commerce Applications	2 + 2	3	4

Introduction to e-commerce, e-commerce infrastructure, creation of e-commerce websites, security and payment systems in e-commerce, business models for e-commerce, marketing in e-commerce, advertising in e-commerce, e-commerce and law, online media, social networks and communities, online retailing and services, inter-corporate e-commerce, the situation of e-commerce in Turkey and the World.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Visual Programming	2 + 2	3	4

Course Content

Visual programming environment. Basic components and design phase. Component properties and events. Variables, control statements and loops. Object Oriented Programming.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Robotic Coding	2 + 2	3	4

Course Content

Recognizing basic electronic circuit elements. Understanding the working logic of electronic circuit elements. Knows how the written codes are loaded to the Arduino card with the Arduino program.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Embedded Systems	2 + 2	3	4

Course Content

The purpose of this course is to provide students with an excellent embedded systems engineering education with laboratory application-based instruction for industrial or government manufacturing careers. By learning new generation embedded systems technologies, you will be introduced to current and future industry challenges and emerging embedded systems engineering trends.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Game Programming	2 + 2	3	4

Use of Platform Interface and Sprites Basic design operations and vectors C# Fundamentals in Unity Mass, gravity, force and inertia operations Collision and joint operations and Animations and Particle Systems Use of 2D Physics Engine User Control and interface design with Input Axis Material use Label and Layer System Applications

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Artificial intelligence	2 + 2	3	4

Course Content

The general purpose of the course is to teach basic Artificial Intelligence techniques, explain various problem solving techniques, and provide information about supervised and unsupervised learning techniques related to machine learning.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Encryption Methods	2 + 2	3	4

Course Content

It enables students to learn about basic encryption systems, algorithms, operating principles and application methods in security, and to obtain literature and terminology on the subject.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Cyber Security	2 + 2	3	4

Course Content

Basic concepts of information security, computer security and the security of protocols, devices and technologies used in computer networks will be discussed.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
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Data Mining 2 + 2 3 4

Introduction to Data Mining, Data Mining Models, Classification Algorithms, Classification Algorithms, Classification Algorithms, Association Rules and Relationship analysis, Association Rules and Relationship analysis, Clustering Algorithms, Clustering Algorithms, Clustering Algorithms, Programs developed in the field of data mining, Programs developed in the field of data mining, Commercial applications.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
3D Modeling and Animation	2 + 2	3	4

Course Content

Installation, introduction of toolbars, recognizing and using 3D Drawing elements, Editing and changing the drawings, Making detailed 3D drawings, Making lighting and shading.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
entrepreneurship	2+0	2	2

Course Content

Examinations and evaluations of the economic, legal, financial, behavioral, psychological, social and cultural aspects of entrepreneurship that arise depending on different types of entrepreneurship in the dimensions of intrapreneurship or small business-family business (entrepreneurship); Considering leadership as both an individual and a social process in the dimensions of being-knowing-doing (leadership theories, motivation, communication, team building); Defining the Entrepreneur-Leadership relationship and factors affecting entrepreneurship; Evaluation of entrepreneurship in the historical process with international and Turkish examples.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Quality Assurance System	2+0	2	2

Course Content

Standardization; development, definition, purposes. Quality and quality concepts, Quality and productivity, Quality costs, Quality control concept, Total quality management, Quality assurance, Quality management principles, Professional standards; Protection standard of automation devices against physical environmental factors, Pressure-related standards, Temperature-related standards.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Career Development	2+0	2	2

Career management is the examination of basic concepts for career planning and development and gaining the knowledge and skills that will ensure success in career management. In addition, it aims to examine the important factors in choosing a job and profession, to acquire the skills of preparing a CV and conducting effective job interviews, to teach current issues related to the business world that are prominent in career management, and to provide practical competencies.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Technology Management	2+0	2	2

Course Content

Creating value from science and technology. Critical factors in technology management. Sources and types of innovation. Case studies on innovation. Technology and firm competitiveness. Core competencies. Technology life cycle. Commercialization of technology. Technology strategy. Technology planning. Technology transfer. Green technology management. National innovation systems.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Professional Foreign Language-I	2+0	2	2

Course Content

Proper tense-verb relationship, sentence elements in professional documents, mathematical operations in a foreign language, flowchart terms in a foreign language

IV. SEMESTER COURSES

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Object Oriented Programming-II	2+ 2	3	5

Installing and configuring software for object-oriented programming, preparing console applications with the basic expressions of the programming language, object usage and operators, control objects and arrays, decision control statements, loop control statements, user-defined functions, standard functions, component library, data structures, operating system objects, menu design and forms, database operations, interactive data objects.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
System Analysis and Design	2+2	3	6

Course Content

Expressing coding elements, translating message and error codes, searching with web browsers, translating database concepts, translating graphics and multimedia concepts.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Network Fundamentals II	2+0	2	4

Course Content

Security processes are explained by making analyzes based on open source software and protocols and writing iptables rules.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Mobile Programming II	2 + 2	3	5

Course Content

In terms of performance on smart devices, operating systems are at least as important as the brand and technical specifications of the device. Android, iOS, BlackBerry, HP webOS, Symbian OS, Bada from Samsung and Windows Mobile are the main operating system platforms that enable native coding in the processors of smart devices.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Open Source Operating System	2 + 2	3	4

Open source operating system structure, basic desktop concepts and operations, file system and operating logic, open source operating system basic tools and applications, basic network programs and network settings, basic network programs and network settings, internet connection, basic user and group operations, open source operating system editors, installing and updating programs, shell operations, file and directory sharing

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Industrial design	2 + 2	3	4

Course Content

Recognizes the motors used in robot construction. Creates a circuit with the Bluetooth module. Receives and sends data via Infrared Remote

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Machine Learning	2 + 2	3	4

Course Content

In this course, it is aimed to examine the theoretical and applied foundations of Machine Learning methods and find solutions to pattern recognition problems with these methods.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Big Data Analysis	2 + 2	3	4

Course Content

Infrastructure as a service (IaaS), Hadoop Framework, Hive Infrastructure, Data Visualization, MapReduce Model, NoSQL Databases, Large-Scale Data Workflows, Classification, R usage

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Digital Transformation	2 + 2	3	4

The aim of the course is to teach the design principles and conceptual framework of Industry 4.0, and to explain the adaptive robotics, artificial intelligence, big data, augmented reality, additive manufacturing, internet of things, cloud computing and cyber security technologies that constitute the basic building blocks of Industry 4.0. In addition, the program will provide guidance on how to create new service-based business models with smart and connected products, while providing information on the selection of key technology projects and portfolio management.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Python Programming	2 + 2	3	4

Course Content

Introduction to Python programming, input/output operations, loops, conditionals, error trapping, lists, functions, modules, object-oriented programming, database programming with SQLite, network programming.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Web Project Management	2 + 2	3	4

Course Content

Website needs, website design, website preparation processes, website publishing processes, website security settings, website backup processes, website maintenance processes.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Job security	2 + 0	2	2

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id training, first aid supplies, ensuring personal safety, ensuring employee safety, ensuring workplace safety.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT	
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Business Management	2 + 0	2	2	
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Concept of entrepreneurship, basic concepts of business and management, classification of businesses, types of small businesses, problems and solutions of small businesses, establishment periods of small businesses, management, production, marketing and financing in small businesses.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Vocational Foreign Language-II	2 + 0	2	2

Course Content

Expressing coding elements, translating message and error codes, searching with web browsers, translating database concepts, translating graphics and multimedia concepts.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Social Responsibility	2 + 0	2	2

Course Content

Introduction to the Course, Basic Concepts Overview of the Concept of Social Responsibility and Social Responsibility Campaigns Determination of project topics (children, elderly, women, environmental problems, people with education and learning problems, patients and health problems, etc.) Project preparation and presentation.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
Leadership Training	2 + 0	2	2

Course Content

Continuing a collaborative discussion with students on the concept of "Leadership"; Understanding the concept of effective leadership; Understanding "own leadership capacity" and the learnability of leadership; Understanding that correct leadership factors can be substituted for common incorrect leadership paradigms; Opening the way for the student to question his own leadership capacity, to recognize the leaders around him, and to understand the ways of coordinating with that leadership.

COURSE NAME	MOMENT	CREDIT	ECTS CREDIT
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Research Methods and Techniques	2 + 0	2	2
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Data Collection and Analysis According to Scientific Research Principles; Reporting Research Results in Accordance with Report Writing Principles; Presentation of Research Topics, Datashow, Slide Maker, Internet (Web Page), etc. Use of Devices and Technologies; Getting to Know Business Life; Ability to Follow Developments by Researching Innovations in the Field of Computers; Developing a Sense of Self-Confidence by Expressing Yourself in Public.