LEFKE AVRUPA ÜNİVERSİTESİ
EUROPEAN UNIVERSITY OF LEFKE

DEPARTMENT OF COMPUTER PROGRAMMING

PROGRAM INFORMATION

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PROGRAM INFORMATION

Program Name and Degree Awarded: Computer Programming, Associate Degree

Duration of Studies: 2 years (4 semesters)

Total Credits / ECTS : 75 CREDITS/ 120 ECTS

Language of Instruction: English

Mission

To prepare highly skilled technical human resources demanded by today's globalized digital world; to equip graduates with theoretical and practical competencies in computer programming and related technologies; to foster individuals who keep up with developments in the digital and computer world; who can work effectively in teams; having strong communication, social skills, high work ethics, and high motivation.

Vision

To prepare well-prepared, industry-ready graduates who contribute to the public and private sectors, and who are capable of entrepreneurship and continuous learning in computer systems, software, and programming.

Program Objectives

- Be technically competent in both theoretical and practical aspects of computer programming, software, and systems demanded by industry and service sectors.
- Keep pace with evolving technologies in computing and digital industries; be adaptable to change.
- Have strong teamwork, communication, social skills, ethical conduct, and motivation.
- Be able to work in public or private sector organizations—especially in areas such as system import, installation, assembly, marketing, distribution of computer systems, and software development.
- Potentially start their own business given the nature of the sector.

Program Learning Outcomes

- Apply theoretical knowledge and practical skills in computer programming, software installation, system setup, and related technical tasks.

- Use project-based learning to design, develop, and maintain simple to moderately complex software or system components.

- Work effectively as part of a team and individually; communicate technical information clearly; demonstrate social and professional behavior.

- Adapt to new technologies and continuous developments in the field of computing and digital world.

- Exhibit high ethical standards, motivation, and professionalism in their work.

Curriculum:

1. YEAR FALL

COURSE CODE	COURSE NAME	(T-U-L)K	ECTS	COURSE TYPE
COMV109	MATHEMATICS	(3-0-0)3	6	COMPULSARY
COMV121	PHYSICS I	(3-0-0)3	6	COMPULSARY
CPRG117	COMPUTING FOUNDATIONS	(3-0-2)4	7	COMPULSARY
UFLE01	FOREIGN LANGUAGE ELECTIVE I (ENGLISH)	(3-0-0)3	3	ELECTIVE
ISTE101	INTRODUCTION TO TECHNOLOGY FUNDAMENTALS	(3-0-0)3	6	COMPULSARY
UHTC01	HISTORY	(2-0-0)2	2	ELECTIVE

1. YEAR SPRING

COURSE CODE	COURSE NAME	(T-U-L)K	ECTS	COURSE TYPE
CPRG124	COMPUTER PROGRAMMING	(3-0-2)4	7	COMPULSARY
CPRG104	OPERATING SYSTEMS	(3-0-3)3	7	COMPULSARY
UFRC01	UNIVERSITY ELECTIVE I	(3-0-0)3	4	ELECTIVE
UFLE02	FOREIGN LANGUAGE ELECTIVE II (ENGLISH)	(3-0-0)3	3	ELECTIVE
CPRG152	INTRODUCTION TO INFORMATION SYSTEMS	(3-0-0)3	7	COMPULSARY
UHTC02	TURKISH	(2-0-0)2	2	ELECTIVE

2. YEAR FALL

COURSE CODE	COURSE NAME	(T-U-L)K	ECTS	COURSE TYPE
CPRG205	DIGITAL LOGIC DESIGN	(3-0-2)4	6	COMPULSARY
CPRG217	DATA STRUCTURES	(3-0-2)4	6	COMPULSARY
CPRG215	DATABASE MANAGEMENT SYSTEMS	(2-2-0)3	5	COMPULSARY
UFRC02	UNIVERSITY ELECTIVE II	(3-0-0)3	4	ELECTIVE
CPRG01	TECHNICAL ELECTIVE I	(3-0-0)3	5	ELECTIVE
UFRC03	UNIVERSITY ELECTIVE II	(3-0-0)3	4	ELECTIVE

2. YEAR SPRING

COURSE CODE	COURSE NAME	(T-U-L)K	ECTS	COURSE TYPE
COMN204	ETHICS IN PROFESSION	(3-0-0)3	5	COMPULSARY
CPRG218	OBJECT ORIENTED PROGRAMMING	(3-0-2)4	6	COMPULSARY
CPRG214	INTERNET PROGRAMMING	(3-0-0)3	5	COMPULSARY
CPRG220	PROJECT WORK	(3-0-0)3	4	COMPULSARY
CPRG252	PROGRAMMING FOR MANAGEMENT INFORMATION SYSTEMS	(3-0-0)3	5	COMPULSARY
CPRG02	TECHNICAL ELECTIVE II	(3-0-0)3	5	ELECTIVE

TECHNICAL ELECTIVES :

SENG212 SOFTWARE REQUIREMENTS ANALYSIS AND SPECIFICATION

CP214 INTERNET PROGRAMMING

Laboratory and Equipment Capacity

AS104, AS106, AS108 COMPUTER LABS

Career Opportunities

Graduates of the program can be employed in all public and private sector institutions. In particular, there are employment opportunities in private companies engaged in commercial activities such as the import, assembly, hardware, installation, production, marketing, distribution, and software development of computer systems. In addition, due to the nature of the sector, it is also possible for graduates to establish their own businesses.

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COURSE CATALOGUE DESCRIPTIONS

COMV109 MATHEMATICS

Repetition of basic algebra, fractions and partial fractions. The basic algebra and linear equations, arithmetic expression and simplification of algebraic expressions. Operations with surds and indices. Methods for solving logarithmic functions. The techniques for solving quadratic functions. Graph sketching for quadratic equations in Cartesian plane. Solving linear, polynomial and rational inequalities. The parallel and perpendicular lines.

COMV121 PHYSICS I

This course aims to introduce the fundamental concepts of physics necessary for engineering science and to provide essential background for engineering students. The course provides deep understanding about kinematics and dynamics of one dimensional, two dimensional, circular and rotational motion. Also, the course aims to show the students the engineering applications of the course material.

CPRG 117 COMPUTING FOUNDATIONS

Introduction to general problem-solving concepts, algorithms and its applications. Computer terminology, units, and number systems. Steps in problem-solving. Problem solution, pseudocode, algorithms, flowcharts, data types, and control structures. History of computers and programming. A simple C program layout, syntax and rules. C language basics, native types, identifiers, declarations, variables, expressions, and assignments. Basic console input/output functions. Operators, unary, binary, mathematical, relational, equality and logical, precedence and associativity rules, type conversions and casting. Statements, flow of control. Sequential structure. Selective structure, if-else statement. Repetitive structure, while loop, do-while loop, break/continue statements. Tracing C code.

UFLE01 FOREIGN LANGUAGE ELECTIVE I (ENGLISH)

This course is intended for academically oriented students and it aims to bridge the gap between general and academic English. The course aims at developing the skills required for academic study, including note-taking, essay writing, as well as teaching strategies for undertaking research and dealing with unfamiliar academic vocabulary. The course also aims at teaching the features of guided writing, reading strategies such as predicting, skimming, and scanning. At the end of this course the students are expected to be able to; develop strategies, to improve the ability to comprehend complex academic texts, to develop strategies to produce more coherent writing and, make clear, appropriate, relevant notes from academic texts, and to adopt various approaches to deal with new or unknown vocabulary by practising effective use of dictionaries, and through making effective vocabulary records.

ISTE101 INTRODUCTION TO TECHNOLOGY FUNDAMENTALS

The IT Fundamentals course offers an overview of IT concepts including: hardware, software, networks, IT careers and skills, databases and ethics with an emphasis on applications of IT in business. The course incorporates multiple current scenarios to help students more clearly recognize the importance of the information and apply their knowledge. Multiple “Professional

Perspectives" videos are included to provide insight to students from current IT professionals working in the field.

UHTC01 HISTORY

The course provides a detailed exposure on the history of the construction of the Turkish Republic under the light of Kemal Atatürk's principles The aim of the course is to introduce a brief history of Turkish Republic and Cyprus. Social, economic and political aspects and effects of Western Civilization on Turkey and Cyprus. Relations with Middle East.

CPRG124 COMPUTER PROGRAMMING

Structured programming using C. Expressions: constants, data types, type modifiers, const qualifier, operators, order of evaluations, type conversions, type casts. Statements: selection, iteration, jump, label, expression, block. Selective statements: if-else, switch-case, conditional operator, nested forms. Iterative statements: for, while, do-while, infinite loops, comma operator, break, continue, nested forms. Functions: definitions, formal parameters, actual arguments, call-by-value, function prototypes. Scope rules, storage classes. Arrays: declarations, initialization lists, define directive, arrays as function arguments, call-by-reference. Strings: character arrays, null character, string-handling functions. Pointers: pointer variable declarations, array/pointer relationship, pointer arithmetic, array-subscript and pointer-offset notations, pointers as function arguments. Structures: user-defined types, typedef, structures as function arguments, array of structures, pointer to a structure. Unions, bit-fields, enumerations, preprocessing directives, and standard header files.

CPRG104 OPERATING SYSTEMS

The history of the operating systems. The hardware and software components. Application Programming Interface. Computing environments. Process Management, Process operations, Process synchronization. Processor Scheduling Criteria and Algorithms (FIFO, RR, SJF, SRTF, PRIORITY, PREEMPTIVE, NONPREEMPTIVE ALGORITHMS). The Indefinite postponement, Deadlock prevention, detection, avoidance, recovery. The main memory, swapping, fixed partition multiprogramming, variable partition multiprogramming, paging, segmentation. The virtual memory, page replacement strategies (FIFO,LRU,OPT). Secondary Storage, Disk scheduling (First-Come-First-Served, Shortest-Seek-Time-First, SCAN, C-SCAN, FSCAN, N-Step SCAN,LOOK, C-LOOK). File Systems, Directories.

UFLE02 FOREIGN LANGUAGE ELECTIVE II (ENGLISH)

This course is the continuation of the COM101 English I course. Similar issues are focused on as in the former course with a higher tone of language. This course integrates all four language skills and teaches students how to integrate skills and content in real-world academic contexts. High-interest and intellectually simulating authentic materials are used to familiarize students with academic content. The course also aims at developing the ability to participate in exchanges of information and opinions in the context of the specific field, and to write instructions, descriptions and explanations about topics in the related field. Extra importance is put on teaching students terminology related to the specific field.

CPRG152 INTRODUCTION TO INFORMATION SYSTEMS

This course is designed to provide students with a foundational understanding of Information Systems (IS) as they apply to the computer industry. Topics will include Information Systems fundamentals; IS infrastructure; organizational and business strategies for Information Systems, Managing Information Systems; Information Systems for commerce and collaboration; business intelligence and Enterprise Information Systems; security, privacy and ethics for Information Systems.

UHTC02 TURKISH

To show the characteristics and rules of operation of Turkish language with examples; to give the students the ability and habit to express their feelings and thoughts accurately and effectively; developing vocabulary through written and oral texts; The aim of this course is to teach the rules of reading texts or the programs they listen to correctly. This course aims to provide basic Turkish reading, speaking and writing skills for international students.

CPRG205 DIGITAL LOGIC DESIGN

Number systems; logic gates; Boolean algebra and truth tables; Karnaugh maps; Combinational logic design; Decoders and encoders; Multiplexers; Arithmetic circuits; Synchronous sequential circuits; Flip-flops; Counters and shift registers; Sequential logic design; Memory and programmable logic.

CPRG217 DATA STRUCTURES

Notion of data and types, representations in computer memory, abstract data type, types of data structures. The stack structure: properties, operations, types of problems solved, array-based implementations, case study: shunting-yard algorithm. The queue structure: properties, operations, types of problems solved, array based implementations, circular queue, case study: waiting lines. The linked list structure: singly, doubly, and circular lists, basic operations and applications, linked stack and linked queue. Recursion: recursive definitions, how to write a recursive C function, working on examples, case study: linear vs binary search. The tree structure: definitions and properties, binary trees, tree traversals, binary search trees, inserting and deleting nodes into/from a binary search tree.

CPRG215 DATABASE MANAGEMENT SYSTEMS

Foundations of a database-management system: view of data, data models, data abstraction, instances and schemas, data-definition and data-manipulation languages. Relational model: tables, tuples, attributes, primary and foreign keys, schema diagrams, relational query languages, relational algebra. Structured Query Language (SQL): built-in types, schema definitions, structure of SQL queries, queries on a single/multiple relation(s), rename operation, string operations, ordering tuples, attribute specification, where-clause predicates, set operations, null values, aggregate functions, aggregation with grouping, having clause, nested subqueries, set membership, set comparison, test for empty relations, test for the absence of duplicates, subqueries in the from clause, with clause, scalar subqueries, modification of the database, join expressions, views, integrity constraints. Entity-

Relationship (E-R) model: design process, entity sets, relationship sets, complex attributes, mapping cardinalities, participation constraints, E-R diagrams, reducing E-R diagrams to relational schemas, extended E-R features, E-R design issues, alternative notations.

COMN204 ETHICS IN PROFESSION

Ethics and professionalism, moral reasoning, moral frameworks, ethical theories, commitment of safety, risks, workplace responsibilities, honesty, equal opportunity: non-discrimination, confidentiality and conflicts of interest, environmental ethics, green engineering, sustainable development, dilemma resolution, professional rights, whistleblowing. Code of ethics: The Institute of Electrical and Electronics Engineers, American Institute of Chemical Engineers, American Society of Civil Engineers, Software Engineering. Basic ethics training. Engineering professional training, job responsibilities and professionalism, labor law and ethics. Case studies on the topics of engineering professional ethics, labor safety, environmental protection. Computers and ethics, data protection, computer failures. Global issues.

CPRG218 OBJECT ORIENTED PROGRAMMING

Object-oriented programming using C++. C++ console input/output streams. C++ functions: inlining, overloading, default arguments, reference parameters. C++ operators new/delete. C++ vectors. C++ strings. Classes and objects: data abstraction, data members and member functions, encapsulation, hiding data, member access methods: public, private, and protected, accessor/mutator functions, constructors, destructor. Constant and static data members and member functions, friend functions, friend classes. Object composition: copy constructor, member initializer syntax, this pointer, cascaded function calls. Operator overloading: overloading as member, non-member, and friend functions. Inheritance: base and derived classes, protected access, private inheritance, multilevel inheritance, multiple base classes, virtual base class. Polymorphism and virtual functions: static vs dynamic binding, pure virtual functions, abstract classes, virtual destructor.

CPRG214 INTERNET PROGRAMMING

The fundamental concepts of client-side web programming, the fundamental concepts of server-side web programming.

CPRG220 PROJECT WORK

Through project developed in a specific technology, students gain the ability to access knowledge, engage in continuous learning, and enhance their personal and professional development.

CPRG252 PROGRAMMING FOR MANAGEMENT INFORMATION SYSTEMS

This course contains the history of computers and programming. Introduction general steps in problem-solving concepts, programming terminology, algorithms and its applications. Problem solution, pseudocode, algorithms, flowcharts, data types, and control structures. A simple C program layout, syntax and rules. C language basics, native types, identifiers, declarations, variables, expressions, and assignments. Basic console input/output functions. Operators, unary,

binary, mathematical, relational, equality and logical, precedence and associativity rules, type conversions and casting. Statements, flow of control. Sequential structure. Selective structure, if-else statement. Repetitive structure, while loop, do-while loop, break/continue statements.

SENG212 SOFTWARE REQUIREMENTS ANALYSIS AND SPECIFICATION

Important software properties; security, maintenance, adaptability, robustness, safety, reliability, emergent properties, non emergent properties. Software process steps; requirement analysis, specification, prototype, design, implementation, testing, validation and verification. Process models; waterfall, evolutionary, incremental, spiral component based, agile processes, extreme programming, pair programming. Functional and non-functional requirements, system requirements, domain requirements, external requirements, open and closed interview, external requirements, constraints, Organizational Goals, Project Goals, Stakeholders, Life Cycle Planning, responsibilities, activity network, product feasibility, organizational feasibility, financial feasibility, use case diagram, scenarios.

CP214 INTERNET PROGRAMMING

The fundamental concepts of client-side web programming, the fundamental concepts of server-side web programming.

CFE201 LEADERSHIP AND MANAGEMENT

In this course, an analysis of theoretical and practical knowledge is made. In this context, basic social and psychological factors associated with the concept of leadership and current theories will be explained and how theoretical knowledge can be applied in terms of leadership and management functions in organizations will be emphasized. The aim of the course is to provide students with a deep understanding of leadership and management concepts and to develop their own leadership skills.

CFE202 ENVIROMENT & SUSTAINABLE DEVELOPMENT

Ecology and sustainability, biodiversity, urbanization, ecological succession, climate and biodiversity, sustaining biodiversity, sustaining resources and environmental quality: food production, water resources and pollution, mineral sources, energy sources, environmental hazards and human health, air pollution, ozone depletion, cllimate change, solid and hazardous wastes.