



NEAR EAST UNIVERSITY

**DEPARTMENT OF Information
Systems Engineering**

***Course Structure Diagram with
Course Credits***

2021-2022

Courses List with Near East University credits and ECTS

Please see the attached example of the diploma supplement which is given to all graduates of our university free of charge. It is arranged in English.

The diploma supplement is a document the purpose of which is to provide sufficient independent data to improve the international “transparency” and fair academic and professional recognition of qualifications (diplomas, degrees, certificates, etc.). It is designed to provide a description of the nature, level, context, content and the status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgments, equivalence statements or suggestions about recognition.

		Basic Departmental Courses	Credit	ECTS	Prerequisites	
		Departmental Courses				
		Departmental Elective Courses				
		Course Code	Course Name			
1. YEAR / 1. SEMESTER		CHM101	General Chemistry	4	5	-
		ENG101	English I	3	3	-
		MTH101	Mathematics I	4	5	-
		ECC102	Programming and Problem Solving	4	5	-
		PHY101	General Physics I	4	5	-
		MTH113	Linear Algebra	3	5	-
		CHC100	Cyprus: History and Culture	2	2	-
		CAM100	Campus Orientation	0	2	-
1. YEAR / 2. SEMESTER		ECC108	Object Oriented Programming	3	6	ECC102
		ENG102	English II	3	3	ENG101
		MTH102	Mathematics II	4	6	MTH101
		ECC104	Discrete Structures	3	5	-
		PHY102	General Physics II	4	6	PHY101

	CAR100	Career	0	2	-
2. YEAR / 1. SEMESTER	MTH201	Differential Equations	4	6	MTH102
	ECC201	Data Structures and Algorithms	4	6	ECC102
	ECC001	Digital Logic	4	6	ECC104
	EAS103	Introduction to Management	3	5	-
	ECC204	Electrical Circuits	3	5	PHY102
	AİT103	Principles of Atatürk and the History of Turkish Revolution I	2	2	-
2. YEAR / 2. SEMESTER	ECC202	Database Management Systems	4	6	ECC201
	ECC006	Web Design and Programming	3	5	-
	ECC007	Multimedia Systems	3	5	ECC102
	EAS101	Introduction to Economics	3	5	-
	MTH251	Probability and Statistics	3	5	MTH113
	AİT104	Principles of Atatürk and the History of Turkish Revolution II	2	2	AİT103
	ISE299	Summer Practice I	0	2	-
3. YEAR / 1. SEMESTER	ECC302	Operating Systems	3	6	ECC202
	ECC004	Programming Languages I	3	6	ECC202
	ENG201	Oral Communication Skills	3	5	ENG102
	ECC311	Management Information Systems	4	7	EAS103
	ECC439	Occupational Health and Safety I	2	4	-
	YİT101	Turkish for Foreign Students I	2	2	-
3. YEAR / 2. SEMESTER	CS322	Web Application Development	3	5	ECC006
	ECC303	Data Communication and Networking	3	6	ECC001
	ISE301	Geographic Information Systems	4	6	-
	ECC003	Software Engineering	3	5	ECC302
	ECC440	Occupational Health and Safety II	2	4	ECC439
	YİT102	Turkish for Foreign Students II	2	2	YİT101
	ISE399	Summer Practice II	0	2	ISE299
4. YEAR / 1. SEMESTER	ECC428	eGovernment	3	4	-
	ECC430	Principles of Information Security	3	6	ECC303
	ISE491	Senior Project I	2	5	-
	TE	Technical Elective	3	5	-
	TE	Technical Elective	3	5	-
	TE	Technical Elective	3	5	-
4. YEAR / 2. SEMESTER	ECC429	Engineering Ethics	3	6	-
	ISE492	Senior Project II	3	8	ISE491
	ECC422	Software Testing	3	6	ECC003
	TE	Technical Elective	3	5	-
	TE	Technical Elective	3	5	-
	Total		145	240	

Course Code	Course Name	Credit	ECTS	Class Hours	LAB
ECC431	e-Commerce	3	5	3	0
ECC412	Database Applications	3	5	3	2
ECC002	System Simulation	3	5	3	0
ISE412	Health Information Management	3	5	3	0
ISE413	Strategic Information Systems Management	3	5	3	0
ISE414	Information in Hospitality and Tourism	3	5	3	0
ISE415	Accounting Information Systems	3	5	3	0
ISE430	Human-Computer Interaction	3	5	3	0

ECC404	Neural Networks	3	5	3	2
ECC419	Image Processing	3	5	3	2
ECC005	Internet Programming	3	5	3	2
ECC402	Computer Graphics	3	5	3	2
ECC405	Computer Hardware	3	5	3	0
ECC406	System Programming	3	5	3	2
ECC413	Artificial Intelligence	3	5	3	0
ISE428	Forensic Information Systems	3	5	3	2
ECC417	Mobile Programming	3	5	3	0
ECC408	Advanced Object Oriented Programming	3	5	3	2
ECC409	Object Oriented Programming II	3	5	3	2
ISE461	Embedded System Design	3	5	3	0
ECC407	Programming Languages II	3	5	3	2
ECC415	Decision Making	3	5	3	0

CONTENTS OF THE COURSES

YEAR 1

AIT101 Ataturk's Principles and Reforms (course type: only for Turkish Students) (2 Credits)

Course objective: The aim of this course is to give detail introduction about the Turkish Republic History for Turkish students.

Course Content: General situation before 1st World War, Kurtulus War and manner of Ottoman Empire, Occupations, Ataturk and liberation of Samsun in 19 May 1919, Ataturk's life and personal characteristics and variety features and reforms.

YİT101 Turkish for Foreigners (course type: only for Foreign Students) (2 Credits)

Course objective: The aim of this course is to introduce Turkish Language for Foreign Students of NEU.

Course Content: Fundamentals of Turkish phonology, simple sentence structures, vocabulary, simple sentence structure of Turkish, case endings and certain structures necessary for fluent communication, tenses and possessive constructions, reading articles and essays written in Turkish.

CHM101 G. Chemistry (course type: required) (4 Credits)

Course objective: The aim of this course is to give fundamentals of Chemistry to engineering students.

Course Content: A basic course with emphasizing the metric system. Introduction to atomic theory, stoichiometry. The structural and physical properties of matter. Periodic relationship among elements and periodic table. Gaseous state. Thermo-chemistry. Energy and enthalpy. Electronic structure of atoms. Chemical bonding.

ECC102 Programming and Problem Solving (course type: required) (4 Credits)

Course objective: This course provides an introduction to fundamental concepts of programming and use of built-in data structures in solving problems using the Python general-purpose programming language.

Course Content: In this course, students study how write user-defined functions using iteration as well as recursion in Python. This course also stresses the importance of programming tools such as programming editors and debuggers. The students are expected

to work within a GNU/Linux environment. The course provides a basic introduction into object-oriented programming.

ECC108 Object Oriented Programming (course type: required) (3 Credits)

Course objective: This course provides an in-depth discussion of object-oriented programming and how object oriented programming can be used in solving real-life problems.

Course Content: This course requires a more advanced use of programming tools (mainly editors and debuggers) that were introduced in ECC102 (Programming and Problem Solving). This course uses Python 3 to teach the fundamental concepts of object-oriented programming. The students are expected to work within a GNU/Linux environment. The course builds upon the knowledge of ECC102 and ECC201 and is the third course in line that uses Python as programming language.

Prerequisite: ECC102

ENG101 English I (course type: required) (3 Credits)

Course objective: This course aims at enabling students to understand their lessons and to express themselves in English

Course Content: Within a thematic approach, reading, writing, speaking, and listening skills will be developed, with a language component in order to build onto the foundation established at the Department of English. In speaking and writing, students will be encouraged to use language forms that they learn through reading and listening. Under broad themes (or threads), the students will be exposed to extensive reading both in and outside the classroom. They will be encouraged to read a variety of texts such as short stories, academic articles, research reports, reviews and journalistic texts as well as chapters from textbooks.

ENG102 English II (course type: required) (3 Credits)

Course objective: This course aims to take students to intermediate advanced level of English.

Course Content: This course will be a continuation of ENG 101, with greater emphasis on student autonomy, research skills and synthesizing ability. In Eng-102, the ability to evaluate, analyze and synthesize information in written discourse will be highlighted. Documentation in writing will be introduced at the beginning of the course, in order to solidly establish the skill by the end. Students will learn the discourse patterns and structures to be used in different essay types. Students will prepare essays: 1. An academic essay with proper documentation. 2. A project report to be prepared throughout the course, including a literature review (displaying analysis/synthesis skills, and documentation), a definition/elaboration of a problem (using definition, description, cause/effect and comparison/contrast patterns) and suggestions for solution (including personal views and argumentation). Local and regional topics, personalizing the research and viewpoints will be recommended to prevent plagiarism. Instructors will have to keep in close contact with the students to guide them throughout the process.

Prerequisite: ENG101

MTH101 Mathematics I (course type: required) (4 Credits)

Course objective: This course aims to give fundamentals of Calculus to students.

Course Content: Functions, limits and continuity. Derivatives. Mean value theorem. Sketching graphs. Definite integrals, infinite integrals (antiderivatives). Logarithmic, exponential, trigonometric and inverse trigonometric functions and their derivatives. L'Hospital's rule. Techniques of integration. Applications of the definite integral, improper integrals.

MTH102 Mathematics II (course type: required) (4 Credits)

Course objective: This course aims to give advances of Calculus to students.

Course Content: Plane and polar co-ordinates, area in polar co-ordinates, arc length of curves. Limit, continuity and differentiability of function of several variables, extreme values, method of Lagrange multipliers. Double integral, triple integral with applications. Line

integrals, Green's theorem. Sequences, infinite series, power series, Taylor's series. Complex numbers.

Prerequisite: MTH101

MTH113 Linear Algebra (course type: required) (3 Credits)

Course objective: This course aims to give details of Linear Algebra to students.

Course Content: Matrices and Systems of Equations, Determinants, Vector Spaces, Linear Transformations, Orthogonality, Eigenvalues, Numerical Linear Algebra.

ECC104 Discrete Structures (course type: required) (3 Credits)

Course objective: This course aims to introduce students about discrete structures.

Course Content: Sets and Logic, Proofs, Functions, Sequences and Relations, Algorithms, Introduction to Number Theory, Counting Methods and the Pigeonhole Principle, Recurrence Relations, Graph Theory, Trees, Network Models, Boolean Algebras and Combinatorial Circuits, Automata, Grammars and Languages, Computational Geometry.

PHY101 Physics I (course type: required) (4 Credits)

Course objective: This course aims to introduce students about general physics.

Course Content: Measurement, vectors, kinematics, force, mass. Newton's laws, applications of Newton's laws. Work and kinetic energy. Conservation of linear momentum. Impulse, collisions, rotation, moments of inertia. Torque, angular momentum, conservation of angular momentum, static equilibrium.

PHY102 Physics II (course type: required) (4 Credits)

Course objective: This course aims to introduce students about electricity.

Course Content: Electrical charges. Coulomb's law. Electrical fields. Gauss's law. Electrical potential. Capacitance and dielectrics. Current and resistance. Direct current circuits. Magnetic fields. Sources of the magnetic field. Faraday's law of induction. Inductance and inductors.

Prerequisite: PHY101

YEAR 2

ECC201 Data Structures and Algorithms (course type: required) (4 Credits)

Course objective: This course comprises an introductory exploration into the design and implementation of Abstract Data Types (ADTs) along with the study of algorithm design and complexity analysis.

Course Content: Even though the discussions during lectures about ADTs are language independent, this course uses Python, a very high-level general programming language, to implement these ideas using object-oriented programming. This class starts with a brief introduction to object-oriented programming.

Prerequisite: ECC102

ECC202 Database Management Systems (course type: required) (4 Credits)

Course objective: This course comprises an introductory exploration into the design and implementation of database systems.

Course Content: Introduction to Databases, Relational Data Model and SQL, Conceptual Modeling and Database Design, Models, Database Programming Techniques, Database Normalization Theory, File Structures-Indexing and Hashing, Query Processing-Optimization and Database Tuning, Transaction Processing-Concurrency Control and Recovery, Security and Distribution, Advanced Database Models-Systems and Applications.

Prerequisite: ECC201

ECC006 Web Design and Programming (course type: required) (3 Credits)

Course objective: The aim of this course is to basic and advance features of Web design.

Course Content: HTML Values and Units, Text Structuring Essentials, Character Formatting Essentials, Lists, Links, Tables, Frames, Forms, Colors and Images, Multimedia, Special Characters, Internationalization and Localization, Scripts, Dynamic HTML, Web Development Software, Publishing a Site, An Introduction to XML, Creating Mobile Documents, Tidying and Validating Documents, CSS Basics, Style Definitions, CSS Values and Units, CSS Inheritance and Cascade, Font Properties, Text Formatting, CSS Lists, Padding, Margins, and Borders, Colors and Backgrounds, CSS Layouts, Pseudo-Elements and Generated Content, Dynamic HTML with CSS, Media Styles and Defining Documents for Printing, User Interface Styles, Testing and Validating CSS.

Prerequisite: ECC102

ECC001 Digital Logic (course type: required) (4 Credits)

Course objective: The aim of this course is to give the basics of Digital Logic Systems.

Course Content: Digital Systems and Information, Combinational Logic Circuits, Combinational Logic Design, Arithmetic Functions and HDLs, Sequential Circuits, Selected Design Topics, Registers and Register Transfers, Memory Basics, Computer Design Basics, Instruction Set Architecture, RISC and CISC Processors, Input-Output and Communication, Memory Systems.

Prerequisite: ECC104

EAS101 Introduction to Economics (course type: required) (3 Credits)

Course objective: This course comprises an introductory exploration about Economics.

Course Content: The Scope of Economics, How Markets Work, Firms and Markets, Government in the Economy, Microeconomic Basics, Microeconomic Policy, Globalisation and the International Economy.

EAS103 Introduction to Management (course type: required) (3 Credits)

Course objective: This course comprises an introductory exploration about Management.

Course Content: Principles of management. Functions of managers. Organisation and environment. Marketing management. Production management. Personnel management. Managerial control. Accounting and financial reports. Budgeting and overall control.

ECC007 Multimedia Systems (course type: required) (3 Credits)

Course objective: The aim of this course is to introduce students about the Multimedia Systems.

Course Content: Introduction to Computer Science and Media Computation, Introduction to Programming in Jython, Modifying Pictures Using Loops, Modifying Pixels in a Range, Advanced Picture Techniques, Modifying Sounds Using Loops, Modifying Samples in a Range, Making Sounds by Combining Pieces, Building Bigger Programs, Creating and Modifying Text, Advanced Text Techniques: Web and Information, Making Text for the Web, Creating and Modifying Movies, Speed, Functional Programming, Object-Oriented Programming.

Prerequisite: ECC102, MTH113

MTH251 Probability and Statistics (course type: required) (3 Credits)

Course objective: The aim of this course is to give details of probability to engineering students.

Course Content: Statistics, Data and Statistical Thinking, Methods for Describing Sets of Data, Probability, Random Variables and Probability Distributions, Inferences Based on Samples, Design of Experiments and Analysis of Variance, Categorical Data Analysis, Simple Linear Regression, Multiple Regression and Model Building, Methods for Quality Improvement: Statistical Process Control, Time Series, Nonparametric Statistics.

Prerequisite: MTH113

MTH201 Differential Equations (course type: required) (4 Credits)

Course objective: Introducing first, second and higher order differential equations, and the methods of solving these equations. Emphasizing the important of differential equations and its engineering application. Introducing the Laplace transform and its applications in solving differential equations and other engineering applications. Introducing the series method in solving differential equations.

Course Content: Ordinary and partial differential equations. Explicit solutions, Implicit Solution. First-order differential equations, separable, homogenous differential equations, exact differential equations. Ordinary linear differential equations. Bernoulli differential equations. Cauchy-differential equations. High-order ordinary differential equations. Introduction to Laplace transforms. Introduction to series method for solving differential equations.

Prerequisite: MTH102

ECC204 Electrical Circuits (course type: required) (3 Credits)

Course objective: Conceptual overview of law and methods in engineering. Teaching Methods of Circuit theory. Teaching Power in circuits.

Course Description: This course is designed for provide an understanding of the fundamentals and analysis of electric circuits. The course encompasses the fundamental concepts of electric circuits, such as Ohm's and Kirchhoff's laws. It develops into the circuit analysis techniques such as nodal and mesh analyses and the equivalent circuits. Energy storage elements and first order transient circuits are included in the course. The course also covers the analysis of sinusoidal circuits, including the power calculation.

Prerequisite: PHY102

YEAR 3

ECC302 Operating Systems (course type: required) (3 Credits)

Course objective: The aim of this course is to give details of operating systems and how they work to students.

Course Content: Principles of operating systems. Memory management. Multiprocessing. Virtual memory concepts. Memory protection. Scheduling. Process management. Time-slicing and priorities, deadlocks and process synchronization. Peripheral control. Filing system management. Resource control and monitoring. Linux and Windows Operating Systems.

Prerequisite: ECC108

CS322 Web Application Development (course type: required) (3 Credits)

Course objective: The aim of this course is to provide advanced knowledge about Web applications.

Course Content: Beginning server programming using PHP, Expressions and Control Flow in PHP, PHP Functions-Objects and Arrays, MySQL, Accessing MySQL Using PHP, Form Handling, Cookies, Sessions and Authentication, JavaScript, JavaScript Functions-Objects and Arrays, AJAX and Web Services.

Prerequisite: ECC006

ECC303 Data Communication and Networking (course type: required) (3 Credits)

Course objective: The aim of this course is to give details of computer networking and data communications.

Course Content: Introduction to Computer Networks and Data Communications, Fundamentals of Data and Signals, Conducted and Wireless Media, Making Connections, Making Connections Efficient, Errors, Error Detection and Error Control, Local Area Networks, Introduction to Metropolitan Area Networks and Wide Area Networks, The Internet, Voice and Data Delivery Networks, Network Security, Network Design and Management.

Prerequisite: ECC001

ENG201 Oral Communication Skills (course type: required) (3 Credits)

Course objective: The aim of the course is to provide techniques for dealing with academic prose.

Course Content: Definition of Technical Communication, Profiling Audiences, The Technical Communication Process, Technical Communication Style, Researching, Designing Pages, Using Visual Aids, Summarizing, Defining, Describing, Sets of Instructions, Memorandums and Informal Reports, Developing Websites, Formal Reports, Recommendation and Feasibility Reports, Proposals, User Manuals, Oral Presentations, Letters, Job Application Materials.

Prerequisite: ENG102

ISE301 Geographic Information Systems (course type: required) (4 Credits)

Course objective: The aim of the course is to provide knowledge about GIS.

Course Content: What is a GIS, GIS's Roots in Cartography, Maps as Numbers, Getting the Map into the Computer, on the Surface, Making Maps with GIS, How to Pick a GIS, GIS in Action, The Future of GIS.

Prerequisite: ECC108

ECC311 Management Information Systems (course type: required) (4 Credits)

Course objective: The aim of the course is to provide knowledge about MIS.

Course Content: Introduction to Management Information Systems, Global E-Business, Foundations of Business Intelligence, Documenting Information Systems, Decision Making and Managing Knowledge, Building Information Systems and Managing Projects, Ethical and Social Issues in Information Systems.

Prerequisite: EAS103

ECC003 Software Engineering (course type: required) (3 Credits)

Course objective: The aim of the course is to prepare students to real life application of software engineering.

Course Content: Introduction to Software Engineering, Modeling with UML, Project Organization and Communication, Requirements Elicitation, Analysis, System Design, Object Design, Mapping Models to Code, Testing, Rationale Management, Configuration Management, Project Management, Software Life Cycle, Methodologies.

Prerequisite: ECC302

ECC004 Programming Languages I (course type: required) (3 Credits)

Course objective: The aim of the course is to introduce students to visual programming languages.

Course Content: Introduction to Visual Studio, An In-Depth Look at The IDE, Writing and Working With Code, Introducing the Object Automation Model, Extending and Customizing the Code Editor, Writing Macros, Writing Add-Ins and Wizards, Creating Enterprise Applications.

Prerequisite: ECC202

YEAR 4

ECC417 Mobile Programming (course type: elective) (3 Credits)

Course objective: The aim of the course is to give the basics of mobile programming.

Course Content: Getting Mobile, Starting Your Mobile Site, Adapting to User Devices, Developing Standards- Compliant Sites, Sending Text Messages, Adding Spice to Messages: MMS, Making Money via Mobile Devices, Interactive Voice, Mobile AJAX, Mobile Web.

ECC431 E-commerce (course type: elective) (3 Credits)

Course objective: The aim of the course is to prepare students for design e-commerce sites.

Course Content: Starting an E-Commerce Site, Laying Out the Foundations, Starting a Project, Creating the Product Catalog, Product Attributes, Search Engine Optimization, Searching the Catalog, Receiving Payments Using PayPal, Catalog Administration, Creating Shopping Cart, Implementing AJAX Features, Accepting Customer Orders, Product Recommendations, Managing Customer Details, Storing Customer Orders, Implementing the Order Pipeline, Processing Credit Card Transactions, Product Reviews, Using Web Services.

CS450 Database Administration (course type: elective) (3 Credits)

Course objective: The aim of the course is to provide advance knowledge about Databases.

Course Content: Relational Database Management Systems, SQL and PL/SQL, Oracle Architecture, Planning, Software Installation, Database Creation, Physical Database Design, User Management and Data Loading, Database Support, Database Tuning.

Prerequisite: ECC202

ECC428 eGovernment (course type: required) (3 Credits)

Course objective: The aim of the course is to explain the eGovernment Systems to students.

Course Content: Understanding eGovernment, Approaches to Management of eGovernment Systems, eGovernment Strategy, Managing Public Data, Core Management Issues for eGovernment, Emerging Management Issues for eGovernment, eGovernment System Lifecycle and Project Assessment, Analysis of Current Reality, Design of the New eGovernment System, eGovernment Risk Assessment and Mitigation, eGovernment System Construction, Implementation and Beyond, Developing eGovernment Hybrids, Overall picture of the situation and progress of eGovernment and eInclusion in European countries, Local editions of the ePractice factsheets, European eID.

Prerequisite: EAS103

ECC429 Engineering Ethics (course type: required) (3 Credits)

Course objective: The aim of the course is to provide knowledge about engineering ethics.

Course Content: An Overview of Ethics, Ethics for IT Professionals, Computer and Internet Crime, Privacy, Freedom of Expression, Intellectual Property, Software Development, The Impact of Information Technology on the Quality of Life, Social Networking, Ethics of IT Organizations.

ECC430 Principles of Information Security (course type: required) (3 Credits)

Course objective: The aim of the course is to prepare students for information security.

Course Content: Introduction to Information Security, The Need for Security, Legal, Ethical, and Professional Issues in Information Security, Risk Management, Planning for Security, Security Technology, Cryptography, Physical Security, Implementing Information Security, Security and Personnel, Information Security Maintenance.

Prerequisite: ECC303

ECC406 System Simulation (course type: elective) (3 Credits)

Course objective: The aim of the course is to give introduction to simulation as a problem solving tool.

Course Content: Methodology of simulation . The use of computers. Classification of simulation. Planning of a computer simulation experiment. Introduction to simulation programming languages.

ISE491 Senior Project I (course type: required) (2 Credits)

Course objective: The aim of the course is to give senior design experience to students.

Course Content: This course is the first part of design project. The senior design project can be a software or a networking project under the supervision of a faculty member. Oral presentations and written reports are required.

ISE492 Senior Project II (course type: required) (3 Credits)

Course objective: The aim of the course is to give senior design experience to students.

Course Content: Students continue the project they started in ISE491 course. Oral presentation and written reports are required.

Prerequisite: ISE491

ECC422 Software Testing (course type: required) (3 Credits)

Course objective: The aim of the course is to introduce students about software test systems.

Course Content: Basics of Software Testing, Test Generation from Requirements, Test Generation from Finite-State Models, Test Generation from Combinatorial Design, Test Selection-Minimization and Prioritization for Regression Testing, Test-Adequacy Assessment Using Control Flow and Data Flow, Test Adequacy Assessment Using Program Mutation.

Prerequisite: ECC003

ECC005 Internet Programming (course type: elective) (3 Credits)

Course objective: The aim of this course is to give details about Internet Concepts.

Course Content: HTML programming principles. Graphical User Interface design principles. Using ASP to develop internet applications. Uploading and testing internet applications.

ISE412 Health Information Management (course type: elective) (3 Credits)

Course objective: The aim of this course is to give details about information systems used in health services.

Course Content: Health Care Delivery Systems, Health Information Management Professionals, Health Care Settings, The Patient Record, Electronic Health Records, Content of the Patient Record, Numbering Filing Systems and Record Storage and Circulation, Indexes, Registers and Health Data Collection, Legal Aspects of Health Information Management, Coding and Reimbursement.

ISE413 Strategic Information Systems Management (course type: elective) (3 Credits)

Course Objective: The aim of this course is to give details about strategic information systems.

Course Content: Business Strategy for the Digital World, Business Exploitation of Information and Communication Technology, Information Systems Development Approaches, Disruptive Technologies and Applications, Business IT/IS Alignment, Strategic IS/IM in Context, Global Issues in Information Management, Strategic Knowledge Management, Organizational Change, Culture and Strategic IS/IT Led Change, IS/IT Benefits Management and Realization, Strategic IT/IS Leadership and IT Governance, IT/IS Professionalism,

ISE414 Information in Hospitality and Tourism (course type: elective) (3 Credits)

Course Objective: The aim of this course is to give details about information systems used in Tourism.

Course Content: The Internet and the World of Hospitality and Tourism, The Internet Revolution: Brief History and Basics, The Internet as a Means of Communication, The Internet as a Means of Commerce, The Internet as a Means for Information Distribution, The Internet as a Means for Travel and Hospitality Research, The Internet as a Means for Marketing, The Impact of the Internet on Travel and Hospitality Industry, The Future of the Travel Agents, The Travel and Hospitality Industry in the 21st Century.

ISE415 Accounting Information Systems (course type: elective) (3 Credits)

Course Objective: The aim of this course is to give details about accounting information systems.

Course Content: Introduction to Accounting Information Systems, Enterprise Systems, Electronic Business Systems, Documenting Information Systems, Database Management Systems, Relational Databases and SQL, Controlling Information Systems, The Order Entry/Sales (OE/S) Process, The Billing/Accounts Receivable/Cash Receipts (B/AR/CR) Process, The Purchasing Process, The Accounts Payable/Cash Disbursements (AP/CD) Process, The Human Resources (HR) Management and Payroll Processes, Integrated Production Processes (IPP), The General Ledger and Business Reporting (GL/BR) Process, Acquiring and Implementing Accounting Information Systems.

ISE430 Human Computer Interaction (course type: elective) (3 Credits)

Course Objective: The aim of this course is to give details about human computer interaction.

Course Content: Usability of Interactive Systems. Guidelines, Principles, and Theories. Managing Design Processes. Evaluating Interface Designs. Direct Manipulation and Virtual Environments. Menu Selection, Form Filling and Dialog Boxes. Command and Natural Languages. Interaction Devices. Collaboration and Social Media Participation. Design Issues.

ECC404 Neural Networks (course type: elective) (3 Credits)

Course Objective: Teaching the basics of neural networks. To illustrate the basic applications of neural networks using Matlab. To give the principles of neural networks approaches.

Course Content: The Neural network paradigm and fundamentals. Training by error minimization. Back propagation algorithms. Feedback and recurrent networks. Hopfield network, Genetic algorithms. Probability and neural networks. Optimizations and constraint.

ECC406 System Programming (course type: elective) (3 Credits)

Course Objective: To study the function of the common operating system kernel routines that are provided by an operating system and accessible from a systems programming language. Design, write, and test moderately complicated low-level programs using a systems programming language. Proficiently use a preprocessor to implement code that is portable between different computing platforms. Use operating system kernel calls from within a programming language to allocate/free virtual memory, initiate and synchronize multiple threads/processes, interact with the file system, set and respond to timers/interrupts.

Course Content: Introduction to system programming, operating systems and fundamental concepts of programming language processors, one and two pass assemblers, symbol tables, compilers and compiler design, parsing, syntax and semantic phases, optimization, relocatable and linkable loaders, operating systems design principles.

ECC426 Economics for Engineers (course type: business elective) (3 Credits)

Course Objective: Discuss principles and economic analysis of decision making. Discuss cost concepts, make-versus-purchase studies; Analyze principles of money-time relationships. Work on cash flow analysis. Analyze application of money-time relations. Analyze supply and demand relations. Analyze price and demand relations. Analyze breakeven point analysis and effects of inflation on money-time relationships

Course Content: Principles and economic analysis of engineering decision making. Cost concept. Economic environment. Price and demand relations. Competition. Make-versus-purchase studies. Principles and applications of money-time relations. Depreciation. Money and banking. Price changes and inflation. Business and company finance.

ECC427 Management for Engineers (course type: business elective) (3 Credits)

Course Objective: Discuss principles of management, Discuss functions of managers, Discuss organization and environment, Discuss marketing, production and personnel management, Discuss marketing control, Discuss accounting and financial reports, Discuss budgeting and overall control.

Course Content: Principles of management. Functions of managers. Organisation and environment. Marketing management. Production management. Personnel management. Managerial control. Accounting and financial reports. Budgeting and overall control.

ECC408 Advanced Object Oriented Programming (course type: elective) (3 Credits)

Course Objective: Teaching object-oriented programming using C# (C sharp). To develop students' skills and dispositions regarding problem analysis and development of different projects using object oriented programming. To show the advantages of object oriented programming and visual programming in project development. To teach inheritance, multiple inheritance, polymorphism, operator overloading and implement them on examples using C sharp. Development of different programs using aggregation, delegates, Events. To teach the design of windows application using object-oriented and visual programming.

Course Content: Modeling the real world using object-oriented software. Overview of the .NET Framework. Components and Languages in the .NET. Structure of a C# Program. Input/Output. Console class, Namespace, Generating Extensible Markup Language (XML) document. Data Types. Control Statements. Methods, Parameters. Overloaded Methods. C# and Object Orientation, Classes and Objects, Encapsulation, Constructors, Creating and Destroying Objects, Destructors, Inheritance, Interfaces, Aggregation, Namespaces, Modules, Operator Overloading, Delegates, Events. Windows Forms Class Hierarchy, Properties, Events, Controls, Dialogs, Menus, Multiple Document Interface, Data Access and Data Binding, DataGridView, ADO.NET, .NET Data Providers, Interacting with XML Data, .NET controls.

Prerequisite: ECC108

ECC409 Object-oriented Programming Language II (course type: elective) (3 Credits)

Course Objective: Design, compile and run Java applications and applets. Understand the role of the Java Virtual Machine in achieving platform independence. Use the Object Oriented paradigm in design of Java programs. Understand the division of classes into Java packages. Use exceptions to handle run time errors. Use threads in order to create more efficient Java programs. Design Java applications with database access.

Course Content: Introduction to Java. Java and object-oriented programming. Introduce advanced Java concepts – inheritance, polymorphism, abstract classes, exception handling, use of collections and database connectivity. Gain more practical

experience by designing and writing Java applications. Components of Java projects. Designing Graphic User Interface GUI. Java Internet applications. Java applets.

Prerequisite: ECC108