# ISTANBUL TECHNICAL UNIVERSITY FACULTY OF COMPUTER AND INFORMATICS ENGINEERING

## MODULE CATALOGUE
### From **2018/2019-Winter** to **2022/2023-Winter**

Catalogue is assembled via the official department course plan and department learning centers:

- https://www.sis.itu.edu.tr/EN/student/undergraduate/course-plans/plans/BLGE/201810.html
- https://ninova.itu.edu.tr/en/courses/faculty-of-computer-and-informatics/
- https://ninova.itu.edu.tr/en/courses/faculty-of-science-and-letters/
- https://ninova.itu.edu.tr/en/courses/faculty-of-management/
- https://ninova.itu.edu.tr/en/courses/department-of-fine-arts/

On occasion, if available, the link "http://ssb.sis.itu.edu.tr:9000/pls/PROD/itu_icerik.p_download?file=MAT103E" can be used to check the course catalogue for more details on the course such as the course plan, program outcomes etc. To check if the catalogue is available, change the "file=MAT103E" part to "file={COURSE CODE}" without braces and spaces by writing the actual course code.

| Courses | Number of Courses | Total Local Credit | Total ECTS |
|---|---|---|---|
| Mathematics | 5 | 18 | 27 |
| Physics | 4 | 8 | 12 |
| Chemistry | 1 | 3 | 4.5 |
| Economics | 1 | 3 | 4 |
| Turkish and Turkish History | 4 | 8 | 8 |
| Advisory | 2 | 2 | 2 |
| English | 2 | 6 | 7 |
| Law | 1 | 2 | 2 |
| Electrics and Electronics | 4 | 10 | 18.5 |
| Humanities, Social Sciences, Free Electives | 2 | 6 | 8 |
| Computer Engineering | 30 | 81 | 162 |
| **Total** | **56** | **147** | **255** |

# Mathematics Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| MAT 103E | Mathematics I | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 4 | 6 | 3 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Functions of a Single Variable, Limits and Continuity, Derivatives, Applications of Derivatives, Sketching Graphs of Functions, Asymptotes, Integration, Fundamental Theorem of Calculus, Applications of Integrals, Polar Coordinates, Transcendental Functions, Techniques of Integration, Indeterminate Forms, L'Hopital's Rule, Improper Integrals.* |

# Mathematics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| MAT 104E | Mathematics II | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 4 | 6.5 | 3 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | MAT 103 MIN DD<br>or MAT 103E MIN DD<br>or MAT 101 MIN DD<br>or MAT 101E MIN DD<br>or MAT 112 MIN DD<br>or MAT 112E MIN DD<br>or MAT 187 MIN DD<br>or MAT 187E MIN DD<br>or MAT 185 MIN DD<br>or MAT 185E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Improper Integrals, Infinite sequences and series, Vectors in Space, Vector-Valued Functions, Multivariable Functions and Partial Derivatives, Multiple Integrals, Integration on vector fields .* |

# Mathematics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| MAT 210E | Engineering Mathematics | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 4 | 5.5 | 4 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | MAT 102 MIN DD<br>or MAT 102E MIN DD<br>or MAT 104 MIN DD<br>or MAT 104E MIN DD<br>or MAT 186 MIN DD<br>or MAT 186E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Matrices and System of Equations, Systems of Linear Equations, Vector Spaces, Eigenvalues and Eigenvectors, First Order Differential Equations, Higher Order Linear Equations, The Laplace Transform, Systems of First Order Linear Differential Equations.* |

# Mathematics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| MAT 271E | Probability and Statistics | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---------------------|
| *Product rule, permutation, combination, probability concept (Kolmogorov's axioms), conditional probability and independence, random variable, probability density function, distribution function, discrete distributions: Bernoulli, Binomial, Poisson Distributions, continuous distributions: Normal, Gamma and Exponential, Expected value, Moment extractor function, mean, variance, standard deviation, covariance, correlation, Chebyshev inequality, Estimator and its properties, Maximum likelihood estimator, Confidence interval, Hypothesis testing, Single and double Main Population Mean Hypothesis Testing, Regression.* |

# Mathematics Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| MAT 281E | Linear Algebra and Applications | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 4 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Matrices and System of Equations, Systems of Linear Equations, Row Echelon Form, Matrix Algebra, Elementary Matrices, Determinants, Vector Spaces, Subspaces, Linear Independence, Basis and Dimension, Change of Basis, Row Space end Column Space, Orthogonality, Orthogonal Subspaces, Orthonormal Sets, The Gram-Schmidt Orthogonalization Process, Eigenvalues and Eigen vectors, Diagonalization.* |

# Physics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| FIZ 101E | Physics I | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Physical quantities and measurements, unit systems; vectors, kinematic quantities and the description of motion; Newton's laws of motion; the concepts of work and energy, conservative forces and conservation of energy; momentum and the description of the motion of particle systems, conservation of momentum; kinematics and dynamics of fixed-axis rotation; static equilibrium; harmonic motion; gravity.* |

# Physics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| FIZ 101EL | Physics I Laboratory | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 1 | 1.5 | 0 | 0 | 2 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Basic measurements, Motion with constant acceleration, Conservation of linear momentum, Equilibrium experiment, Friction experiment, Rotational dynamics, Simple harmonic motion, Inclined throw, Flexible and inelastic collision, Moment of inertia, Centripetal acceleration, Physical pendulum.* |

# Physics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| FIZ 102E | Physics II | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Coulomb laws and electrical field. Gauss law. Electrical potential. Capacitance. Electrostatic energy and properties of insulators. Current and resistance. DC circuits. The magnetic field. Sources of magnetic field. Faradays law. Inductance. Maxwell equations and electromagnetic waves.* |

# Physics Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| FIZ 102EL | Physics II Laboratory | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 1 | 1.5 | 0 | 0 | 2 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Fundamental measurements and Ohm's law, Oscilloscope and signal generator. Electric field and lines, Kirchhoff's law and Wheatstone bridge, Transient currents, Charging and discharging of capacitors, RC circuits, Determination of electron e/m ratio, Transformers.* |

# Chemistry Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| KIM 101E | General Chemistry I | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Matter: Its properties and Measurements, Atoms and the Atomic Theory, Electrons in Atoms, Periodic Table and Some Atomic Properties, Chemical Compounds, Chemical Reactions, Introduction to Reactions in Aqueous Solutions, Gases, Thermochemistry, Chemical Bonding (Basic concepts, Valance bond and Molecular Orbital Theories), Intermolecular Forces in Liquids and Solids, Solutions and Their Physical Properties, Principles of Chemical Equilibrium, Acids and Bases, Spontaneous Change: Entropy and Gibbs Energy.* |

## Economics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| EKO 201E | Economics | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *This course examines the basic concepts in economics. The first part covers microeconomics. In this part, we will study of how firms decide on production and households decide on consumption of goods and services. The second part covers macroeconomics. In this part, we will study the economy as a whole. Topics include national income, unemployment, inflation, and economic growth.* |

# Turkish and Turkish History Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| TUR 101 | Turkish I | Turkish | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 2 | 2 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Definition of Language, Language and Thought, Language and Culture, World Languages (In Point of Origin and Structure), The Significance of Turkish Language among World Languages, The Historical Development of Turkish Language, The Structure of Turkish Language, Turkish Phonetics, Todays Turkish Language,The Act of Writing and the Rules of Writing (Orthography), Spelling Rules, The Right Expression of Thought, Scientific Language and Turkish as a Scientific Language, Turkish Poetry and Poetry Language.* |

# Turkish and Turkish History Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| TUR 102 | Turkish II | Turkish | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 2 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Written Expression, Method and Planning of Written Expression, Writing Exercise, Scientific Texts (Article-Report-Critic), Official Texts (Petition-Resume), Genres of Literature, Essay, Column, Travel Writing, Biography, Story, Novel, Verbal Literature, Verbal Expression and Communication.* |

# Turkish and Turkish History Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| ATA 101 | History of Turkish Revolution I | Turkish | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 2 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *A definition of Revolution. The aim and the importance of the Turkish history of revolution. General state of the Ottoman Empire, the reason for the decline. Efforts to save the Ottoman Empire. The current ideals. The First World War. Societies. Mustafa Kemal in Anatolia and the Congresses. The opening of the Great Turkish National Assembly. Reactions to the National Government. National and International policy. The Mudanya Treaty. Lausanne Conference.* |

# Turkish and Turkish History Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| ATA 102 | History of Turkish Revolution II | Turkish | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 2 | 2 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *The importance of the leader and the staff in the revolution. The declaration of the Republic. Constitutional solutions to the problems related to the Lausanne Conference. The participation of Turkey in pacts and in international organizations. Reactions to the new governmental structure. Trials in the multi-party system. The Home and foreign policy of the Republic of Turkey. Atatürk's foreign policy to inspire confidence in the future of Turkey. Kemalism, the Principles of Atatürk.* |

# Advisory Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| DAN 101 | Academic Advising | Turkish | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 1 | 1 | 0 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Academic advising is a training/education process that helps to bring meaning and purpose to undergraduate study. Through the undergraduate study, it provides intellectual and personal development of academic achievement and lifelong learning. Academic advising in ITU provides opportunities for students to gain access to education, personal and career goals, realize the abilities needed for academic success, learn how to access the countless resources and services offered by the institution, and establish relationships with one or more academic advisers.* |

# Advisory Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| DAN 301 | Career Advising | Turkish | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 1 | 1 | 0 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | 3.Class, 4.Class |

| Course Description |
|---|
| *Career Advising is an educational process that helps undergraduate students to introduce their program's specific sectoral fields and career opportunities in detail. Interrelationships among lifestyle, work place, and career planning are presented by the invited speakers from the related sectors and industry. The invited speakers consisting of professionals such as CEOs, managers and decision makers, scientists and researchers, successful entrepreneurs, role models, human resource experts, etc. are capable of creating an occupational vision for students. Career Advising at ITU offers students the opportunity to help them achieve their personal and career goals, learn to gain the necessary skills, and communicate with one or more sectoral decision makers. Accessing the world of work through developing resumes, writing cover letters, seeking job vacancies, successful interviewing; Understanding importance of career development and career choice, Locating and accessing occupational and career information, Role of technology, Networking.* |

# English Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| ING 112 | English I | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 3.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | Click for prerequisites. |
| Class Restriction | None |

| Course Description |
|---|
| *The students of English 112 course improve their efficient reading techniques, learn to analyze outside sources and elicit proper information, develop their critical thinking skills and go through the processes of reading and analyzing texts, planning, drafting and editing. Students working on text exploration and academic writing simultaneously produce argumentative essay both in their homework assignments and their exams. Besides, they participate in the in-class discussions of the reading materials.* |

# English Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| ING 201 | English III | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 3.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | Click for prerequisites. |
| Class Restriction | None |

| Course Description |
|---|
| English 201 is a course designed to teach the organizational and critical thinking skills necessary for logical written expression. The course focuses on writing a research paper of at least 3000 words based on sound scholarly sources on a topic of interest related to a student's field by conforming to the APA standards of writing without committing plagiarism. In this course the whole research process is taught step by step through skills including research, source selection, choice of topic, construction and defense of a thesis statement, citing sources, outlining, organizing a "References" page and note taking. Critical elements of the course are instruction in paraphrasing and summarizing techniques, use of quotations and the incorporation of these research findings in the paper together with the inclusion of personal comments, avoidance of plagiarism and conforming to ethical rules. |

# Law Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| HUK 203E | IT Law | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 2 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *This course addresses wide range of legal problems related to the information and communication technologies, of which the Internet is the primary component. Internet law is highly dynamic, rapidly evolving and complex area of law. By the end of the course, students will be able to sort through such legal complexities; express the basic concepts of Internet law; become aware of the significant impact of new information technologies(especially the Internet) both on social, political and legal discussions; develop legal argumentation in cases related to this field.* |

# Electrics and Electronics Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| EHB 211E | Basic of Electronic Circuits | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | MAT 281 MIN DD<br>or MAT 281E MIN DD<br>or EEF 281 MIN DD<br>or EEF 281E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Physical Electric circuits. Modeling of electrical circuits elements. Power and energy function. Active and passive elements. Axioms of Circuit theory and undefined variables. Kirchhoff's laws: Current and voltage equations. Basics of graph theory, circuit graphs and graph matrices. Tellegen's Theorem. Two and multi-terminal elements: resistor, capacitor, inductor, memristor. Chord Current, Branch Voltage, Node voltage and Mesh current methods for resistive circuits. Analysis of Nonlinear resistive circuits: Operating points, small signal equivalent circuit. Thevenin's and Norton's theorems. Analysis of dynamic (RLC) circuits: State equations. Solution of first order state equations.* |

# Electrics and Electronics Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| EHB 222E | Introduction to Electronics | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Semi-conductor basics: concepts and semi-conductor components. Semiconductor diode; physical structure, terminal characteristics, analysis of diode circuits. Bipolar junction transistor (BJT); physical structure and operating modes, BJT as a switch; DC biasing, BJT as an amplifier, small-signal model, basic amplifier circuits. MOSFET; structure and operating modes, MOSFET as a switch, MOSFET amplifiers. Operational amplifiers; concepts and application examples.* |

# Electrics and Electronics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| EHB 311E | Introduction to Electronics Laboratory | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 1 | 3 | 0 | 0 | 2 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|--|
| Prerequisites | EHB 262 MIN DD<br>or EHB 262E MIN DD<br>or EHB 222 MIN DD<br>or EHB 222E MIN DD<br>or EEF 262 MIN DD<br>or EEF 262E MIN DD |
| Class Restriction | None |

| Course Description |
|--------------------|
| *DC Power Supplies, DC characteristics of BJTs and MOSFETs, transistor amplifiers, linear applications of operational amplifiers, logic gates and flip-flops, non-linear applications of operational amplifiers.* |

# Electrics and Electronics Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| EHB 322E | Digital Electronic Circuits | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 6 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | EHB 262 MIN DD<br>or EHB 262E MIN DD<br>or ELE 262 MIN DD<br>or ELE 262E MIN DD<br>or ELE 222 MIN DD<br>or ELE 222E MIN DD<br>or EHB 222 MIN DD<br>or EHB 222E MIN DD<br>or EEF 262 MIN DD<br>or EEF 262E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction and basic definitions, NMOS and CMOS inverters and their static and dynamic behaviors, NOR and NAND gates, complex static gates, pass logic (NMOS and CMOS), flip-flops, synchronization of digital electronic circuits, dynamic gates: cascading methods; domino, NORA, zipper logics, semiconductor memories: ROM, static and dynamic RAM, gate arrays: PAL, PLA, FPGA.* |

# Humanities, Social Sciences, Free Electives Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| SNT 123E | Film Production | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *In this course students will investigate the techniques of short film production. Basic film terminology, basic camera setups, sound recording, understanding the roles of the various members of the production team and mastering the video camera as a means of communication are among the topics of this course. Students will complete a minimum of four video projects during the semester. There will be a number of "in class" exercises and productions of individual videos for the project assignments. This semester course will culminate in an exhibition of original student video projects.* |

# Humanities, Social Sciences, Free Electives Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| ITB 207E | Ottoman History | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|

*This course is a survey of the history of the Ottomans from its origins as a small medieval principality in Asia Minor to a major global power in the sixteenth century, and to its eventual disintegration at the end of World War I. The course will concentrate on the main political, social and cultural institutions of the Ottoman society, and how these changed over time. It will also introduce students to some of the major themes and recent trends in Ottoman historiography, including debates on the origins and decline of the Ottomans, the issue of Ottomans' legacy for the successor states, as well as the growing research on the formerly underrepresented groups such as women, minorities etc.*

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 101E | Introduction to Information Systems | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 5 | 1 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Basic computer knowledge: hardware, software, operating system, file system, character set, metadata. Working with documents and web pages: content, structure, style. Working with images: bitmap images, vector images. Working with data: spreadsheets. Introduction to programming: basic constructs, control flow, composite data types, procedural abstraction. Basics of developing applications with modern tools.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 102E | Int. to Scientific&Eng. Computing (C) | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 4 | 8 | 3 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Problem modelling, algorithms. Selection and repetition constructs. Derived data types, arrays. Abstraction. Basic input/output operations. Basic numerical methods.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 112E | Discrete Mathematics | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Propositions, rules of inference, predicates, quantifiers, sets. Methods of proof, proof by contradiction, induction. Relations, functions, pigeonhole principle. Graphs, trees. Algebraic structures, partially ordered sets, lattices.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 113E | Intr. To Computer Engineering and Ethics | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 1.5 | 5 | 1 | 1 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction to Computer Engineering. Employment opportunities for Computer Engineers. Research areas in The Computer Engineering Program. Courses offered in The Computer Engineering Program. The Computer Engineering Education. Definition of Ethics. Ethical obligations for the areas in Computer Engineering.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 202E | Numerical Methods in Computer Engineering | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | MAT 102 MIN DD<br>or MAT 102E MIN DD<br>or MAT 104 MIN DD<br>or MAT 104E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Description of Numerical Methods (NM) and application of them particularly in Computer Engineering. Error analyses in numerical methods, Analytical solutions, numerical methods for the solution of systems (lineer and non linear), approximation methods and software implementation, interpolation, linear regression, non - linear regression for specific CE applications, numerical integration in MATLAB, linear programming, Monte - Carlo Simulation.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 212E | Microprocessor Systems | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 7 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 231 MIN DD<br>or BLG 231E MIN DD<br>or EHB 205 MIN DD<br>or EHB 205E MIN DD<br>or EEF 205 MIN DD<br>or EEF 205E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction to computer and microprocessor - based systems. Number systems, binary arithmetic and data representation. Memory and memory expansion. CPU architecture. Addressing methods. A generic microprocessor and its architecture. Addressing modes and instructions set. Input/Output: parallel and serial I/O device s. Peripheral devices. Subroutine, interrupt and stack structure. Data transfer. The assembly language and directives. Design of a microprocessor - based system.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 222E | Computer Organization | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 231 MIN DD or BLG 231E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *This course provides the basic knowledge necessary to understand the hardware operation of computers. Main topics are, 1. various digital components used in the organization and design of computers, 2. design of an elementary basic computer, 3. arithmetic logic unit 4. control unit with hardware and microprogramming 5. algorithmic state machine (ASM) for representation for sequencing and controlling operations.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 223E | Data Structures | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3.5 | 8 | 3 | 1 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 102 MIN DD<br>or BLG 102E MIN DD<br>or BIL 104 MIN DD<br>or BIL 104E MIN DD<br>or BIL 105 MIN DD<br>or BIL 105E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *The course involves the study of basic data structures (e.g., stack, queue, list, tree, binary search tree) and associated algorithms.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 231E | Digital Circuits | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Initial course in Boolean algebra, binary numbers, combinational logic design, synchronous sequential circuit analysis and synthesis.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 242E | Logic Circuits Laboratory | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 1 | 4 | 0 | 0 | 2 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 231 MIN DD or BLG 231E MIN DD or EHB 205 MIN DD or EHB 205E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *A laboratory involving the design and implementation of logic circuits. Combinational and sequential (both synchronous and asynchronous) design examples using small and medium scale integrated circuits. PAL/PLA programming software is also used. Groups of 3 students use a protoboard to build their circuits.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 252E | Object Oriented Programming | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|---|
| Prerequisites | BIL 104E MIN DD<br>or BIL 104 MIN DD<br>or BIL 105E MIN DD<br>or BIL 105 MIN DD<br>or BLG 102 MIN DD<br>or BLG 102E MIN DD<br>or EHB 110 MIN DD<br>or EHB 110E MIN DD<br>or KON 110 MIN DD<br>or KON 110E MIN DD<br>or YZV 102E MIN DD<br>or YZV 104E MIN DD<br>or EEF 110 MIN DD<br>or EEF 110E MIN DD |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Introduces concepts of Object Oriented Programming. Presents tools, structures , syntax, and basic OOP techniques for designing well formed programs. Studies concepts such as classes, objects, methods, inheritance, polymorphism exception handling and template.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 311E | Formal Languages and Automata | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 112 MIN DD or BLG 112E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Formal languages. Grammars and the Chomsky hierarchy. Regular expressions. Finite state machines (FSM) : Mealy and Moore models. Machine congruence and reduction of states. Deterministic and non deterministic automata. Push down automata and context - free grammars. Turing machines and computability.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 312E | Computer Operating Systems | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 221 MIN DD<br>or BLG 221E MIN DD<br>or BLG 233 MIN DD<br>or BLG 233E MIN DD<br>or BLG 223 MIN DD<br>or BLG 223E MIN DD<br>or YZV 201E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction, history. Processes: basic concepts, concurrent processes, mutual exclusion, process management, scheduling approaches. Deadlock and deadlock prevention approaches. Memory management: segmentation, paging, related methods, virtual memory. Input/Output. UNIX and other example operating systems.* |

## Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 317E | Database Systems | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 252 MIN DD<br>or BLG 252E MIN DD<br>or MUH 212 MIN DD<br>or MUH 212E MIN DD<br>or YZV 201E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Database concepts. Relational model, relational algebra, queries. Application development, object/relational mapping. Database design, normalization, entity-relationship model. Concurrency, transactions, locking. NoSQL databases. Query optimization.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 322E | Computer Architecture | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 6 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|--|
| Prerequisites | BLG 222 MIN DD or BLG 222E MIN DD |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Pipeline structure. Input - output organization: data transfer methods, interrupts and direct memory access. Memory hierarchy, virtual memory, cache memory, memory management. Interconnection networks and multiprocessor systems.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 335E | Analysis of Algorithms I | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4.5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | (BLG 221 MIN DD or BLG 221E MIN DD or BLG 223 MIN DD or BLG 223E MIN DD or BLG 233 MIN DD or BLG 233E MIN DD or YZV 201E MIN DD) and (BLG 252 MIN DD or BLG 252E MIN DD or YZV 201E MIN DD) |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction, Secondary Storage Devices, Asymptotic Analysis; Recurrences, classwork; Sorting, merge sort, heap sort; Dictionaries, hashing; Binary search trees, 2 - 3 trees, 2 - 3 - 4 trees, red and black trees; B - trees; Binomial heaps; Fibonacci heaps.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 336E | Analysis of Algorithms II | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 335E MIN DD or BLG 335 MIN DD or BLG 381 MIN DD or BLG 381E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *This course aims to study the methods for designing efficient algorithms and to evaluate their performance (mainly in term of time). Fundamentals of Algorithm Analysis; Asymptotic Notation; Graphs; Greedy Algorithms; Divide and Conquer; Dynamic Programming; Network Flow; NP and Computational Intractability.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 337E | Principles of Computer Communications | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction to computer communications and basic communications concepts. Shannon diagram, communication principle using source - channel - destination nodes. Data communications and entropy. Introduction to International Standards Organization, Open System Interconnection (ISO - OSI) reference model, design issues and protocols in the physical layer, data link layer and network layer, architectures and control algorithms, standards in network access protocols and models of network interconnection.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 351E | Microcomputer Laboratory | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 1 | 2 | 0 | 0 | 2 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 212 MIN DD or BLG 212E MIN DD or BLG 222 MIN DD or BLG 222E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *In order to implement the fundamental concepts taught in microprocessor course, following lab experiments are included: - Introduction of microprocessor experiment kit - Example programs - Introduction to basic components in ITU - Egit operating system - Procedures and stack operations - Introduction to Freescale experiment kits - Asynchronous communication interface - Parallel communication interface - Real time circuits - Interrupt applications.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 354E | Signals and Systems for Computer Engineers | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 6 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | MAT 281 MIN DD<br>or MAT 281E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Classification of signals, basic signals, classification and properties of systems, time domain characterization of Linear Time Invariant (LTI) systems, Continuous-Time and Discrete-Time Fourier Series, Continuous-Time and Discrete-Time Fourier Transforms, frequency domain characterization of Linear Time Invariant (LTI) systems, Sampling. Laplace and z-transforms and their applications.* |

## Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 368E | Operations Research | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 5 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Quantitative Decision Making; Model Building and Modeling Philosophy; Linear Programming and Simplex Algorithm; Big M Method; The Two - Phase Simplex method; Duality and Sensitivity Analysis; Transportation Models and Solving Methods; Integer Programming, Network Models, LINDO, LINGO and GAMS Software Packages.* |

## Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 374E | Technical Communication for Computer Engineers | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 1 | 3 | 0 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|--------------------------------------------|------|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|--------------------|
| *Advanced engineering communication skills, with emphasis on technical documents, oral reports, graphics, and collaborative work.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 411E | Software Engineering | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 8 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 252 MIN DD or BLG 252E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *This course aims to introduce the concepts of Software Engineering and Management of Software Projects. The intensive content of the course presents a broad view of common Software Engineering topics such as process models, project management, software analysis and design, software testing and etc.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 439E | Computer Project I | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 5 | 1 | 2 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | (BLG 221 MIN DD or BLG 221E MIN DD or BLG 223 MIN DD or BLG 223E MIN DD or BLG 233 MIN DD or BLG 233E MIN DD) and (BLG 212E MIN DD or BLG 212 MIN DD or ELK 323 MIN DD or ELK 323E MIN DD) |
| Class Restriction | None |

| Course Description |
|---|
| *In this course, each student team works on a design project from conception through implementation and testing. The team is expected to explore technology related issues over the project, comes up with a solution followed with a complete design. Written technical reports and oral representations are required.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 448E | Project Management in Engineering | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 3 | 4 | 3 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | None |
| Class Restriction | None |

| Course Description |
|---|
| *Planning the project, establishing the project schedule and budget, monitoring and controlling schedules and budgets, manpower planning, managing the project team, time management, computerized management methods, preparing document s and technical specific actions, international standarts.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 453E | Computer Vision | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 5 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | (MAT 281 MIN DD or MAT 281E MIN DD) and BLG 202E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Introduction to Computer Vision. Visual and Image Data; Point wise Image Processing; Geometric Transforms; Image Neighborhood Operations, (Spatial Filtering, Edge Detection Operators); Feature Extraction (Corners, Parametric Techniques: Lines, Circles, Ellipses, Templates); Basic Segmentation; Dimensionality Reduction; Motion Estimation in 3D/Dynamic Scenes; Basic Geometric 2D Shape Analysis; Programming Exercises (e.g. Matlab) to implement the computer vision algorithms covered in the course.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 458E | Functional Programming | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 2 | 4 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 233 MIN DD<br>or BLG 233E MIN DD<br>or BLG 221 MIN DD<br>or BLG 221E MIN DD<br>or BLG 223 MIN DD<br>or BLG 223E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *Programming paradigms and functional programming principles. Recursion. Pattern matching. Higher order functions. Functional data structures. Lazy evaluation. Monads.* |

## Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 478E | Network Security | English | Elective |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 2 | 4 | 2 | 0 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 252 MIN DD or BLG 252E MIN DD |
| Class Restriction | None |

| Course Description |
|---|
| *The aim of the course is to make the students be familiar with the computer security concepts, especially network security. Curriculum contains these subjects: basic security concepts, cryptographic methods, access control, operating systems security, network security and protocols, secure programming, malicious logic, safety.* |

# Computer Engineering Module

| Code | Course Name | Language | Type |
|---|---|---|---|
| BLG 4901E | Computer Engineering Design I | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---|---|---|---|---|
| 3 | 8 | 1 | 4 | 0 |

## Course Prerequisites and Class Restriction

| Prerequisites | (BLG 322 MIN DD or BLG 322E MIN DD or BLG 312 MIN DD or BLG 312E MIN DD or BLG 336 MIN DD or BLG 336E MIN DD) and (FIZ 101 MIN DD or FIZ 101E MIN DD) and FIZ 101EL MIN DD and (MAT 103 MIN DD or MAT 103E MIN DD) and (MAT 104 MIN DD or MAT 104E MIN DD) and (FIZ 102 MIN DD or FIZ 102E MIN DD) and FIZ 102EL MIN DD and (MAT 210 MIN DD or MAT 210E MIN DD) |
|---|---|
| Class Restriction | 4. Class |

## Course Description

*The description of the course has not yet been entered by the Department Head. (This is the class that students enroll for the graduation project so there is no case-specific definition. The project can be a software or a hardware project and it's compulsory to graduate the program. Graduation projects are done with selected teachers through two semesters. Usually, first semester is reserved for research while the second semester is reserved for implementation.)*

# Computer Engineering Module

| Code | Course Name | Language | Type |
|------|-------------|----------|------|
| BLG 4902E | Computer Engineering Design II | English | Compulsory |

| Local Credits | ECTS | Theoretical | Tutorial | Laboratory |
|---------------|------|-------------|----------|------------|
| 5 | 12 | 1 | 8 | 0 |

| Course Prerequisites and Class Restriction | |
|---|---|
| Prerequisites | BLG 4901 MIN BB or BLG 4901E MIN BB |
| Class Restriction | 4. Class |

| Course Description |
|---|
| *The description of the course has not yet been entered by the Department Head. (This is the class that students enroll for the graduation project so there is no case-specific definition. The project can be a software or a hardware project and it's compulsory to graduate the program. Graduation projects are done with selected teachers through two semesters. Usually, first semester is reserved for research while the second semester is reserved for implementation.)* |