Department	Course Code	Course Name	Teaching Lang.	Academic Year and Semester	ECTS	Learning Outcomes	General Information Regarding the Conduct of the Course	Requirements / Prerequisites for Students
Master's Degree in Electrical and Electronics Engineering	FBE-5001	Scientific Research Methods	English	2026-2027 / Fall	5	1. Apply scientific research methodology and principles in engineering contexts. 2. Design and conduct research in a systematic, ethical manner. 3. Write academic papers and reports following scientific standards. 4. Critically evaluate and synthesize scientific literature.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Graduate student status.
Master's Degree in Electrical and Electronics Engineering	EEM-5001	Engineering Mathematics	English	2026-2027 / Fall	5	1. Apply advanced mathematical techniques to engineering problem-solving. 2. Use linear algebra, differential equations, and integral transforms. 3. Formulate engineering systems as mathematical models.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5002	Computer Programming Languages	English	2026-2027 / Fall	5	1. Write programs in multiple languages for engineering data processing. 2. Apply algorithmic thinking to solve complex engineering problems. 3. Implement and test software tools for numerical and data analysis.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5003	Computer-Aided Circuit Design	English	2026-2027 / Fall	5	1. Design analog and digital circuits using CAD software tools. 2. Simulate circuit behaviour and analyse performance parameters. 3. Optimise circuit designs using computer-aided techniques.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5005	Power System Analysis I	English	2026-2027 / Fall	5	1. Model power system networks using per-unit representation. 2. Perform load-flow calculations for balanced systems. 3. Analyse symmetrical fault conditions and protective relay requirements.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5007	Analysis of Control Systems I	English	2026-2027 / Fall	5	1. Analyse linear control systems using time- and frequency-domain methods. 2. Design feedback controllers to meet performance specifications. 3. Evaluate system stability using Routh, Bode and Nyquist criteria.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5009	Scalar Field Problems in Engineering	English	2026-2027 / Fall	5	1. Formulate scalar field problems arising in electrical engineering. 2. Apply analytical and numerical methods to solve field equations. 3. Analyse electric, magnetic and thermal field distributions.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5011	System Design and Analysis	English	2026-2027 / Fall	5	1. Apply systematic design methodologies to complex engineering systems. 2. Analyse system requirements and develop design specifications. 3. Evaluate design alternatives and optimise overall system performance.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5012	Power Systems Stability	English	2026-2027 / Fall	5	1. Analyse static, transient and dynamic stability of power systems. 2. Apply energy-function and time-domain simulation methods. 3. Design stabilisation measures to enhance power system security.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5013	Dynamics of Electrical Machines I	English	2026-2027 / Fall	5	1. Develop dynamic mathematical models of DC and induction machines. 2. Analyse transient and steady-state machine characteristics. 3. Simulate machine behaviour using state-space methods.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5015	Finite Element Method in Electrical Engineering	English	2026-2027 / Fall	5	1. Apply the finite element method to electromagnetic field problems. 2. Build FEM models for EEE device analysis and design. 3. Interpret FEM simulation results and validate against analytical solutions.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5017	Harmonics in Electrical Machines	English	2026-2027 / Fall	5	1. Identify and analyse harmonic components in machine voltages and currents. 2. Evaluate the effects of harmonics on efficiency and thermal performance. 3. Apply mitigation techniques to reduce harmonic distortion in machines.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5019	Artificial Neural Networks and Applications	English	2026-2027 / Fall	5	1. Design and train ANN architectures for engineering tasks. 2. Apply neural networks to regression and classification problems. 3. Evaluate and optimise ANN performance through validation techniques.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5021	Induction Motor Control I	English	2026-2027 / Fall	5	1. Analyse the operating principles and steady-state characteristics of induction motors. 2. Design scalar (V/f) and basic vector control strategies. 3. Implement and simulate induction motor drive systems.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5023	AI Applications in Electrical Engineering I	English	2026-2027 / Fall	5	1. Apply AI techniques (neural networks, fuzzy logic) to EEE problems. 2. Develop AI-based solutions for power system fault diagnosis. 3. Evaluate AI-based system performance in engineering contexts.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5025	Advanced Power Electronics	English	2026-2027 / Fall	5	1. Analyse advanced converter topologies including multi-level structures. 2. Design high-performance power electronic circuits and filters. 3. Apply advanced modulation and control strategies for converters.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5026	Power Plants	English	2026-2027 / Fall	5	1. Explain operating principles of thermal, hydro and nuclear power plants. 2. Evaluate energy conversion efficiency and environmental impacts. 3. Apply engineering criteria to power plant planning and operation.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.

Master's Degree in Electrical and Electronics Engineering	EEM-5027	Energy Efficiency in Lighting	English	2026-2027 / Fall	5	1. Evaluate energy consumption patterns in different lighting systems. 2. Apply energy-efficient lighting technologies and control strategies. 3. Design lighting installations complying with efficiency standards.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5029	Electronic Measurement Methods	English	2026-2027 / Fall	5	1. Apply advanced electronic measurement techniques to engineering signals. 2. Design measurement systems with appropriate accuracy and resolution. 3. Process and interpret measurement data using statistical methods.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5031	Semiconductor Power Converters	English	2026-2027 / Fall	5	1. Analyse switching characteristics and losses of power semiconductor devices. 2. Design DC-DC, AC-DC and DC-AC converter circuits. 3. Evaluate thermal management and protection requirements.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5033	Image Processing	English	2026-2027 / Fall	5	1. Apply digital image processing algorithms for engineering applications. 2. Implement filtering, segmentation and feature extraction techniques. 3. Develop image analysis pipelines for pattern recognition tasks.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5035	Object-Oriented Programming	English	2026-2027 / Fall	5	1. Apply OOP principles to develop structured engineering software. 2. Design class hierarchies with inheritance and polymorphism. 3. Build modular and reusable software modules for engineering applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5037	Lighting Engineering and Photometry	English	2026-2027 / Fall	5	1. Apply photometric quantities and measurement techniques. 2. Use luminous flux, illuminance and luminance in lighting calculations. 3. Design lighting systems meeting photometric and visual comfort standards.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5038	Electric and Hybrid Vehicles	English	2026-2027 / Fall	5	1. Analyse EV/HEV powertrain architectures and component characteristics. 2. Evaluate energy storage technologies and power management strategies. 3. Design electric drive systems for automotive applications.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5039	Advanced Battery Management Systems and Control	English	2026-2027 / Fall	5	1. Analyse electrochemical characteristics of battery chemistries. 2. Design BMS algorithms for SoC/SoH estimation and cell balancing. 3. Implement charging strategies and thermal management for battery packs.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5040	Optimization Techniques in Electric Vehicles	English	2026-2027 / Fall	5	1. Apply optimisation algorithms to EV energy management problems. 2. Optimise powertrain parameters for range extension and efficiency. 3. Develop optimal control strategies for EV operating modes.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5041	Advanced Motor Drive Systems and Control	English	2026-2027 / Fall	5	1. Analyse advanced motor drive topologies for industrial applications. 2. Design field-oriented and model-predictive control strategies. 3. Implement and evaluate high-performance drive system algorithms.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5042	Advanced Fiber Optic Systems	English	2026-2027 / Fall	5	1. Analyse fiber propagation characteristics and signal degradation mechanisms. 2. Design single-mode fiber optic communication links. 3. Evaluate system performance under different transmission conditions.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5043	Modern Power Systems and Microgrid Applications	English	2026-2027 / Fall	5	1. Analyse microgrid architecture, components and operating modes. 2. Integrate renewable energy sources into microgrid configurations. 3. Design energy management and control systems for autonomous microgrids.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5502	Field of Specialization II	English	2026-2027 / Spring	9	1. Extend and deepen knowledge in the chosen specialisation area. 2. Synthesise findings from current research literature. 3. Formulate the conceptual framework for the MSc thesis.	Supervised independent study guided by academic advisor. Face-to-face.	Completion of Field of Specialization I (EEM-5501).
Master's Degree in Electrical and Electronics Engineering	EEM-5602	Thesis Preparation Study II	English	2026-2027 / Spring	1	1. Develop and refine the MSc thesis research plan. 2. Collect and analyse preliminary research data. 3. Present progress reports to the thesis advisory committee.	Individual thesis preparation under academic supervision. Face-to-face.	Completion of Thesis Preparation Study I (EEM-5601).
Master's Degree in Electrical and Electronics Engineering	EEM-5701	Seminar	English	2026-2027 / Spring	5	1. Present research findings clearly to an academic audience. 2. Develop scientific communication and presentation skills. 3. Engage constructively in academic discussions and peer evaluation.	Student presentations and Q&A discussions on research topics. Face-to-face.	Enrollment in the EEE MSc programme.
Master's Degree in Electrical and Electronics Engineering	EE582	Electrical Vehicles	English	2026-2027 / Spring	5	1. Analyse the fundamental principles and technologies of electric vehicles. 2. Evaluate different EV architectures, motors, and battery systems. 3. Design and assess energy management strategies for electric vehicles.	Lectures delivered in English covering EV fundamentals, design, and performance analysis. Face-to-face.	Power electronics and electrical machines background.
Master's Degree in Electrical and Electronics Engineering	EEM-5004	Mechatronics	English	2026-2027 / Spring	5	1. Integrate mechanical, electrical and computational subsystems in a unified design. 2. Select and apply sensors, actuators and microcontrollers appropriately. 3. Design and prototype mechatronic solutions for engineering problems.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.

Master's Degree in Electrical and Electronics Engineering	EEM-5006	Power System Analysis II	English	2026-2027 / Spring	5	1. Perform asymmetrical fault analysis using symmetrical components. 2. Apply optimal power flow methods for system operation. 3. Model and simulate complex power network scenarios.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Power System Analysis I (EEM-5005).
Master's Degree in Electrical and Electronics Engineering	EEM-5008	Analysis of Control Systems II	English	2026-2027 / Spring	5	1. Apply state-space methods for system analysis and controller design. 2. Design observers and state feedback controllers. 3. Analyse robust stability and performance of multivariable systems.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Analysis of Control Systems I (EEM-5007).
Master's Degree in Electrical and Electronics Engineering	EEM-5010	Numerical Analysis	English	2026-2027 / Spring	5	1. Apply numerical methods to solve ordinary and partial differential equations. 2. Implement linear system solvers and root-finding algorithms. 3. Evaluate accuracy, convergence and stability of numerical schemes.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5014	Dynamics of Electrical Machines II	English	2026-2027 / Spring	5	1. Develop advanced dynamic models of synchronous and reluctance machines. 2. Apply field-oriented control principles to machine drive analysis. 3. Simulate complex machine drive systems under transient conditions.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Dynamics of Electrical Machines I (EEM-5013).
Master's Degree in Electrical and Electronics Engineering	EEM-5016	Control of Power Systems	English	2026-2027 / Spring	5	1. Design automatic generation control and load-frequency control schemes. 2. Analyse voltage regulation and reactive power control strategies. 3. Implement excitation control and stabiliser design for synchronous generators.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5018	Harmonics in Power Systems	English	2026-2027 / Spring	5	1. Analyse harmonic distortion sources and propagation in distribution networks. 2. Evaluate effects of harmonics on power system equipment and power quality. 3. Design passive and active harmonic filtering solutions.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5020	Fuzzy Logic and Applications	English	2026-2027 / Spring	5	1. Apply fuzzy set theory and membership functions to engineering problems. 2. Design Mamdani and Sugeno type fuzzy inference systems. 3. Implement fuzzy controllers and evaluate their performance.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5022	Induction Motor Control II	English	2026-2027 / Spring	5	1. Apply field-oriented and direct torque control algorithms. 2. Design sensorless speed estimation methods for induction motor drives. 3. Implement and evaluate high-performance drive control systems.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Induction Motor Control I (EEM-5021).
Master's Degree in Electrical and Electronics Engineering	EEM-5024	AI Applications in Electrical Engineering II	English	2026-2027 / Spring	5	1. Apply deep learning architectures to advanced EEE problems. 2. Develop hybrid AI systems combining neural networks and optimisation. 3. Evaluate and benchmark AI solutions for power and control applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	AI Applications in Electrical Engineering I (EEM-5023).
Master's Degree in Electrical and Electronics Engineering	EEM-5028	Modeling of Electrical Circuits	English	2026-2027 / Spring	5	1. Develop mathematical state-space and graph-theoretic models of circuits. 2. Apply Kirchhoff laws systematically to linear and nonlinear networks. 3. Simulate circuit models and validate against experimental results.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5030	Process Control Instrumentation Technology	English	2026-2027 / Spring	5	1. Apply process measurement and sensor selection principles. 2. Design PID and cascade control loops for industrial processes. 3. Integrate instrumentation into DCS/SCADA process control systems.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5032	Design and Optimization of Electrical Machines	English	2026-2027 / Spring	5	1. Apply design principles to develop specifications for rotating machines. 2. Use optimisation algorithms to improve machine efficiency and torque. 3. Evaluate machine designs using analytical and FEM-based methods.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Bachelor's degree in Electrical-Electronics Engineering or equivalent undergraduate background.
Master's Degree in Electrical and Electronics Engineering	EEM-5034	Advanced Image Processing and Applications	English	2026-2027 / Spring	5	1. Apply advanced image segmentation, morphology and object detection algorithms. 2. Implement deep learning based computer vision for engineering tasks. 3. Develop real-time image processing pipelines for industrial applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Image Processing (EEM-5033).
Master's Degree in Electrical and Electronics Engineering	EEM-5036	Computer-Aided Lighting Engineering Applications	English	2026-2027 / Spring	5	1. Use professional lighting design software (DIALux/Relux) for project work. 2. Develop and validate lighting simulations against IEC/EN standards. 3. Optimise indoor and outdoor lighting installations using CAD tools.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Lighting Engineering and Photometry (EEM-5037).
Doctorate Degree in Electrical and Electronics Engineering	EEM-6501	Field of Specialization I	English	2026-2027 / Fall	9	1. Develop original, advanced knowledge in the doctoral research area. 2. Critically synthesise current literature to identify research frontiers. 3. Formulate novel research questions for doctoral-level investigation.	Supervised independent study under doctoral advisor. Face-to-face.	Enrollment in the EEE PhD programme.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6001	Electrical Network Losses	English	2026-2027 / Fall	5	1. Analyse the sources and mechanisms of energy losses in electrical networks. 2. Apply advanced calculation methods for technical and non-technical losses. 3. Develop optimal network operation strategies to minimise losses.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.

Doctorate Degree in Electrical and Electronics Engineering	EEM-6003	Linear Control Systems	English	2026-2027 / Fall	5	1. Apply advanced linear system theory including controllability and observability. 2. Design LQR and H∞ controllers for engineering systems. 3. Implement state-feedback and observer-based control methodologies.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6005	Advanced Electromagnetic Theory I	English	2026-2027 / Fall	5	1. Apply Maxwell's equations to complex media and boundary conditions. 2. Analyse electromagnetic wave propagation and guided-wave phenomena. 3. Solve advanced radiation and scattering problems analytically.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6007	System Design with FPGA I	English	2026-2027 / Fall	5	1. Design complex digital systems using VHDL/Verilog on FPGA platforms. 2. Implement high-performance algorithms on reconfigurable hardware. 3. Apply IP core design and hardware co-simulation methods.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6009	Special Lighting Systems and Virtual Applications	English	2026-2027 / Fall	5	1. Design specialised lighting systems for demanding application environments. 2. Develop and use virtual simulation environments for luminous analysis. 3. Evaluate advanced lighting technologies against performance specifications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6011	Optimization Techniques	English	2026-2027 / Fall	5	1. Apply classical and metaheuristic optimisation algorithms to engineering problems. 2. Formulate multi-objective optimisation models for design problems. 3. Evaluate and compare algorithm performance for specific applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6013	Advanced Signal Processing Techniques	English	2026-2027 / Fall	5	1. Apply adaptive filtering and spectral estimation to engineering signals. 2. Implement subspace methods and higher-order statistics techniques. 3. Develop advanced DSP solutions for measurement and communication systems.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6015	Photovoltaic Energy Systems	English	2026-2027 / Fall	5	1. Analyse PV cell characteristics and array configuration strategies. 2. Design grid-connected and standalone PV energy systems. 3. Apply MPPT algorithms and inverter control for PV systems.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6017	Embedded System Design	English	2026-2027 / Fall	5	1. Design real-time embedded systems using hardware-software co-design. 2. Apply RTOS concepts for scheduling and resource management. 3. Implement safety-critical embedded solutions for engineering applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6019	Control of Electrical Machines	English	2026-2027 / Fall	5	1. Apply model-predictive and sensorless control to machine drive systems. 2. Design high-performance torque and flux control algorithms. 3. Analyse and optimise drive system dynamics under varying loads.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6021	Advanced Image Processing	English	2026-2027 / Fall	5	1. Apply deep-learning-based image analysis for engineering research. 2. Develop algorithms for object detection, segmentation and classification. 3. Implement and benchmark state-of-the-art computer vision systems.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6023	Fuzzy Logic Theory and Applications	English	2026-2027 / Fall	5	1. Apply type-2 fuzzy sets and interval fuzzy logic to complex systems. 2. Design fuzzy rule-based decision and control systems. 3. Develop hybrid fuzzy-neural architectures for intelligent applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6025	Analog and Digital Filter Design	English	2026-2027 / Fall	5	1. Design analog filters (Butterworth, Chebyshev, elliptic) to given specifications. 2. Apply digital filter design methods including windowing and Parks-McClellan. 3. Implement and test filters on hardware and software platforms.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6026	Programmable Controllers	English	2026-2027 / Fall	5	1. Programme PLCs using ladder logic, FBD and structured text languages. 2. Design HMI interfaces for industrial automation systems. 3. Integrate PLCs into fieldbus and industrial Ethernet networks.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6027	Artificial Neural Networks and Deep Learning	English	2026-2027 / Fall	5	1. Design and train CNN, RNN and transformer architectures for engineering tasks. 2. Apply transfer learning and regularisation strategies effectively. 3. Evaluate and optimise deep learning models for research applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6029	Advanced Digital Signal Processing	English	2026-2027 / Fall	5	1. Apply multirate signal processing and filter bank theory. 2. Implement wavelet analysis and compressed sensing methods. 3. Develop real-time DSP solutions on specialised hardware.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.

Doctorate Degree in Electrical and Electronics Engineering	EEM-6031	Semiconductor Technology	English	2026-2027 / Fall	5	1. Analyse semiconductor device physics and fabrication processes. 2. Evaluate wide-bandgap semiconductor materials for power applications. 3. Apply semiconductor characterisation techniques to device analysis.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6033	Optoelectronics	English	2026-2027 / Fall	5	1. Analyse operating principles of photodetectors, LEDs and laser diodes. 2. Design optical sensing and communication subsystems. 3. Apply optoelectronic technologies to photonic engineering applications.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6034	Introduction to Machine Learning	English	2026-2027 / Fall	5	1. Apply supervised and unsupervised ML algorithms to engineering datasets. 2. Select and evaluate appropriate models using cross-validation. 3. Implement ML solutions using standard frameworks and tools.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6035	System Modeling with Artificial Neural Networks	English	2026-2027 / Fall	5	1. Develop ANN-based models for nonlinear dynamic system identification. 2. Apply recurrent and NARX networks for time-series system modelling. 3. Validate ANN models against experimental data and refine iteratively.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6036	High-Speed Optical Communication	English	2026-2027 / Fall	5	1. Analyse high-speed optical transmission systems and impairment mechanisms. 2. Apply coherent modulation and digital signal processing for optical links. 3. Design WDM and space-division multiplexed systems for high capacity.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6502	Field of Specialization II	English	2026-2027 / Spring	9	1. Advance original research in the doctoral specialisation area. 2. Produce and present preliminary research results. 3. Refine the doctoral thesis research plan based on initial findings.	Supervised independent study under doctoral advisor. Face-to-face.	Completion of Field of Specialization I (EEM-6501).
Doctorate Degree in Electrical and Electronics Engineering	EEM-6002	Protection Systems in Electrical Installations	English	2026-2027 / Spring	5	1. Analyse protection requirements for industrial and utility electrical systems. 2. Design and coordinate relay protection schemes for electrical networks. 3. Evaluate protection equipment performance under fault conditions.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6004	Nonlinear Control Systems	English	2026-2027 / Spring	5	1. Analyse stability of nonlinear systems using Lyapunov methods. 2. Design feedback linearisation and sliding-mode controllers. 3. Apply backstepping and passivity-based control strategies.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Linear Control Systems (EEM-6003).
Doctorate Degree in Electrical and Electronics Engineering	EEM-6006	Advanced Electromagnetic Theory II	English	2026-2027 / Spring	5	1. Apply computational electromagnetics methods (MoM, FEM, FDTD). 2. Analyse antenna radiation patterns and electromagnetic compatibility. 3. Develop EM models for advanced engineering design problems.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Advanced Electromagnetic Theory I (EEM-6005).
Doctorate Degree in Electrical and Electronics Engineering	EEM-6008	System Design with FPGA II	English	2026-2027 / Spring	5	1. Design high-speed FPGA interfaces (DDR, PCIe, high-speed serial). 2. Implement complex DSP and communication algorithms on reconfigurable hardware. 3. Develop FPGA-based research prototypes with hardware verification.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	System Design with FPGA I (EEM-6007).
Doctorate Degree in Electrical and Electronics Engineering	EEM-6010	Artificial Neural Network Applications in Lighting Engineering	English	2026-2027 / Spring	5	1. Apply ANN methods to lighting design optimisation and control. 2. Develop predictive models for luminous environment parameters. 3. Implement intelligent lighting control systems using neural approaches.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6012	Fundamentals of Detection and Estimation	English	2026-2027 / Spring	5	1. Apply Bayesian and Neyman-Pearson detection frameworks. 2. Design maximum-likelihood and MMSE estimators for signal processing. 3. Evaluate detection/estimation performance using Cramér-Rao bounds.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6014	Optimization of Renewable Energy Systems	English	2026-2027 / Spring	5	1. Apply meta-heuristic and mathematical programming to RES sizing problems. 2. Develop optimal dispatch strategies for hybrid renewable energy systems. 3. Implement multi-objective optimisation for cost-reliability trade-offs.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6016	Modeling of Renewable Energy Data	English	2026-2027 / Spring	5	1. Apply statistical and ML techniques for solar and wind resource assessment. 2. Develop short-term and long-term RES generation forecasting models. 3. Evaluate model accuracy and quantify forecast uncertainty.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6018	Control of Power Systems	English	2026-2027 / Spring	5	1. Apply advanced control to FACTS devices and HVDC systems. 2. Design wide-area monitoring and coordinated control strategies. 3. Develop adaptive and robust controllers for power network stability.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.

Doctorate Degree in Electrical and Electronics Engineering	EEM-6020	Smart Grids, Modeling and Applications	English	2026-2027 / Spring	5	1. Analyse smart grid cyber-physical architecture and communication protocols. 2. Model distributed energy resources and demand response programs. 3. Develop and evaluate smart grid management and control strategies.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6022	Digital Signal Processing	English	2026-2027 / Spring	5	1. Apply DFT/FFT-based spectral analysis to engineering signals. 2. Design FIR and IIR digital filters for specific applications. 3. Implement DSP algorithms for real-time measurement and control.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6024	Digital Communication Systems and Applications	English	2026-2027 / Spring	5	1. Analyse digital modulation schemes and their BER performance. 2. Design channel coding systems using convolutional and LDPC codes. 3. Evaluate OFDM-based systems for wireless communication applications.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6028	Smart Clothing Technologies	English	2026-2027 / Spring	5	1. Analyse the integration of electronic components into textile substrates. 2. Design smart textile systems with embedded sensing and actuation. 3. Evaluate wearable technology performance for health and industrial applications.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6030	Engineering Applications with Python	English	2026-2027 / Spring	5	1. Apply Python scientific libraries (NumPy, SciPy, Pandas) to engineering problems. 2. Develop data analysis and visualisation tools for research. 3. Implement simulation and optimisation scripts for EEE applications.	Delivered through lectures and laboratory/computational sessions. Assessment: midterm exam, final exam, lab reports and project.	Master's degree in Electrical-Electronics Engineering or related field.
Doctorate Degree in Electrical and Electronics Engineering	EEM-6032	MEMS (Micro-Electro-Mechanical Systems)	English	2026-2027 / Spring	5	1. Analyse MEMS device physics, fabrication processes and design rules. 2. Model mechanical, thermal and electrical behaviour of MEMS structures. 3. Evaluate MEMS sensor and actuator applications in engineering systems.	Delivered through lectures and problem-solving sessions. Assessment: midterm exam, final exam, assignments and/or project.	Master's degree in Electrical-Electronics Engineering or related field.
Physics Masters Degree	FİZ-5005	Advanced Nuclear Physics I	English	Starting from the Fall semester of the 2027-2028 academic year	5	1. Identifies basic nuclear properties and outline their theoretical descriptions 2. Understands the differences between various decay modes, state selection rules, and determine wether a given decay can take place 3. Knows nuclear models related to atomic nucleus 4. Learns and apply general concepts about nuclear events 5. Associates knowledge interdisciplinary and apply 6. Applies the related fundamental sciences 7. Analyzes natural events 8. Summarises and accounts for the main aspects of at least one application of nuclear physics.	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Physics Masters Degree	FİZ-5006	Advanced Nuclear Physics II	English	Starting from the Spring semester of the 2027-2028 academic year	5	1. Calculates Q-values for alpha and beta decays and for nuclear reactions 2. Applies conservation laws to nuclear reactions and transform quantities between laboratory and centre-of-mass frames 3. Compares and constrasts different reaction mechanisms in relation to cross-sections, excitation functions, and angular distributions 4. Associates knowledge interdisciplinary and apply the related fundamental sciences 5. Summarises and accounts for the main aspects of at least one application of nuclear physics.	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Physics Masters Degree	FİZ-5032	Advanced Quantum Physics I	English	Starting from the Fall semester of the 2027-2028 academic year	5	1. Practices Schrodinger wave equation for problems 2. Understands the basic Fundamentals of Quantum Physics course 3. Practices onedimensional potantial equations for problems 4. Investigates the subjects of quantum in the area of Physics 5. Have the ability of giving examples about Quantum physical views for today circumstances	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Physics Masters Degree	FİZ-5033	Advanced Quantum Physics II	English	Starting from the Spring semester of the 2027-2028 academic year	5	1. Explains importance of operator methods 2. Obtains information on angular momentum matrix representation Dirac notation Spin and Perturbation theory 3. Practices Schrodinger equations for problems Investigation the subjects of quantum in the area of Physics 4. Have the ability of giving examples about Quantum physical views for today circumstances 5. Understands the differences between matrix and Dirac notation	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Physics Doctorate Degree	FİZ-6028	Advanced Quantum Mechanics I	English	Starting from the Fall semester of the 2027-2028 academic year	5	1. Practices Schrodinger wave equation for problems 2. Understands the basic Fundamentals of Quantum Mechanics course 3. Practices onedimensional potantial equations for problems 4. Investigates the subjects of quantum in the area of Physics 5. Have the ability of giving examples about Quantum mechanical views for today circumstances.	Theoretical explanation on blackboard using slide show, and having dialogue	*None*

Physics Doctorate Degree	FİZ-6029	Advanced Quantum Mechanics II	English	Starting from the Spring semester of the 2027-2028 academic year	5	1. Explains importance of operator methods 2. Obtains information on angular momentum matrix representation Dirac notation Spin and Perturbation theory 3. Practices Schrodinger equations for problems Investigation the subjects of quantum in the area of Physics 4. Have the ability of giving examples about Quantum mechanical views for today circumstances 5. Understands the differences between matrix and Dirac notation.	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Physics Doctorate Degree	FİZ-6034	Core Theory I	English	Starting from the Fall semester of the 2027-2028 academic year	5	1. Identifies basic nuclear properties and outline their theoretical descriptions 2. Understands the differences between various decay modes, state selection rules, and determine wether a given decay can take place 3. Knows nuclear models related to atomic nucleus 4. Learns and applies general concepts about nuclear events 5. Associates knowledge interdisciplinary and apply 6. Applies the related fundamental sciences and will be able to analyse natural events	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Physics Doctorate Degree	FİZ-6035	Core Theory II	English	Starting from the Spring semester of the 2027-2028 academic year	5	1. Calculates Q-values for alpha and beta decays and for nuclear reactions 2. Applies conservation laws to nuclear reactions and transform quantities between laboratory and centre-of-mass frames 3. Compares and constrast different reaction mechanisms in relation to cross-sections, excitation functions, and angular distributions 4. Associates knowledge interdisciplinary and apply 5. Applies the related fundamental sciences	Theoretical explanation on blackboard using slide show, and having dialogue	*None*
Department of Geomatics Engineering	*HRT-5027*	*GNSS Ölçümlerinde Multipath Etkisi ve Giderilmesi (Multipath Effect in GNSS Measurements and Its Mitigation)*	*Türkçe-İngilizce*	*Master*	*5*	*LO1 - Acquiring knowledge about Multipath* *LO2 - Having knowledge about Multipath mitigation techniques* *LO3 - Having knowledge about signal processing* *LO4 - Learning the processing/evaluation of GNSS data* *LO5 - Learning to process/evaluate using GNSS software*	*Classes are held in person in the classrooms of the Faculty of Engineering. The language of instruction is Turkish and English.*	*Suitable for Masters's and Doctorate Degree Students*
Department of Geomatics Engineering	*HRT-5034*	*GNSS Teknolojisinde Hassas Nokta Konumlama (PPP) Tekniği (Precise Point Positioning (PPP) Technique in GNSS Technology)*	*Türkçe-İngilizce*	*Master*	*5*	*LO1 - Defining the basic principles of GNSS technology and precise positioning methods* *LO2 - Being able to explain the working principles and advantages of the Precise Point Positioning (PPP) technique* *LO3 - Determining the applications and areas of use of PPP* *LO4 - Performing accuracy and precision analyses of PPP*	*Classes are held in person in the classrooms of the Faculty of Engineering. The language of instruction is Turkish and English.*	*Suitable for Masters's and Doctorate Degree Students*
Department of Geomatics Engineering	*HRT-6021*	*Mühendislik Ölçmelerinde RTK ve CORS Tekniği (RTK and CORS Techniques in Engineering Surveys)*	*Türkçe-İngilizce*	*Doctorate*	*5*	*LO1 - Learning RTK GPS surveying techniques* *LO2 - Learning CORS surveys/measurements* *LO3 - Having knowledge about Engineering Surveys and their applications* *LO4 - Learning the VRS Technique* *LO5 - Learning the FKP Technique*	*Classes are held in person in the classrooms of the Faculty of Engineering. The language of instruction is Turkish and English.*	*Suitable for Masters's and Doctorate Degree Students*
Department of Geomatics Engineering	*HRT-6034*	*Uydu Tabanlı Zaman Serileri Analizi ve Filtrelenmesi (Satellite-Based Time Series Analysis and Filtering)*	*Türkçe-İngilizce*	*Doctorate*	*5*	*LO1 - Can define the basic concepts and analysis techniques of time series* *LO2 - Gains the skill to analyze time series using regression analysis and moving averages* *LO3 - Understands the basic principles of Kalman and particle filtering techniques* *LO4 - Develops the ability to apply basic methods for filtering and analyzing satellite-based time series*	*Classes are held in person in the classrooms of the Faculty of Engineering. The language of instruction is Turkish and English.*	*Suitable for Masters's and Doctorate Degree Students*
Civil Engineering	*INS-5031*	*ULAŞTIRMA PLANLANLAMASI (TRANSPORTATION PLANNING)*	*English*	*2026-2027 Spring*	*5*	*Establishes the relationship between transportation planning and society. Knows general transportation planning methods. Establishes the relationship between urban planning and transportation planning. Establishes the relationship between transportation planning and the economy. Knows the fundamental statistical information required in transportation planning and modeling. Establishes a relationship between traffic management and transportation planning. Knows four-step transportation modeling and can perform numerical analysis.*	*Within the scope of the course, the fundamental concepts of transportation planning, the relationship between transportation and society, the statistical foundations required for transportation planning, the relationships between land use and the transportation system, and the transportation planning process are covered. Additionally, the establishment and analysis of the transportation model, collection and evaluation of traffic data, as well as trip generation, trip distribution, traffic assignment, and modal split topics within the scope of four-step transportation modeling are examined. The lectures are conducted through theoretical instruction, sample problem solutions, and numerical applications.*	*None*

Civil Engineering	*INS-5010*	*BİTÜMLÜ KARIŞIMLAR (BITUMINOUS MIXTURES)*	*English*	*2026-2027 Spring*	5	*Knows the fundamental concepts related to bituminous mixtures and can compare bituminous mixture pavements with concrete road pavements. Knows the properties of aggregates used in bituminous mixtures and the testing methods applied to these materials. Can evaluate the properties, testing methods, and test results of bituminous binders. Can explain anti-icing methods on highways and the properties of electrically conductive asphalt pavements. Knows the principles of SUPERPAVE mix design and can evaluate test results. Knows the types of distresses (deteriorations), their causes, and repair methods observed in bituminous mixture pavements. Knows modified bitumen production techniques and additive types. Can explain the production stages of bituminous mixtures at the plant and in the field. Knows the production and properties of stone mastic asphalt mixtures. Knows the production methods and properties of warm mix asphalts. Knows the production methods and properties of cold mix asphalts. Can explain the fundamental principles of recycling in bituminous mixtures.*	*Within the scope of the course, the components of bituminous mixtures, the effects of aggregate and bituminous binder properties on mixture performance, natural and modified bitumens, alternative binders, stress distribution in road pavements, and pavement design are covered. The production, transportation, laying, and compaction of hot mix asphalts; pavement distresses and maintenance-rehabilitation methods; and Marshall, Hubbard-Field, Hveem, and SUPERPAVE mix design methods are examined. Furthermore, recycling, the use of waste materials in bituminous mixtures, special-type bituminous mixtures, and warm and cold asphalt mixtures are evaluated. The lectures are conducted through theoretical instruction, review of current scientific literature, practical/project work, and student presentations.*	*None*
Department of Mathematics	*MAT-5050*	*Advanced Real Analysis I*	*İngilizce-English*	*Güz-Fall*	*5*	*LO1: Explains advanced real analysis concepts.* *LO2: Analyzes the convergence of sequences and sequences of functions.* *LO3: Distinguishes convergence types and applies relevant theorems.* *LO4: Solves real analysis problems and proves results.* *LO5: Applies mathematical theorems to appropriate problems.*	*Theoretical exposition, examination of theorems and proofs, and the solution of sample problems, Lectures, examination of theorems and proofs, and solving example problems.*	*NONE*
Department of Mathematics	*MAT-5051*	*Advanced Real Analysis II*	*İngilizce-English*	*Bahar-Spring*	*5*	*LO1: Explains advanced concepts and theorems of real analysis.* *LO2: Examines the convergence of sequences and series of functions.* *LO3: Analyzes the relationships between pointwise and uniform convergence.* *LO4: Proves and applies fundamental theorems in real analysis.* *LO5: Solves advanced real analysis problems using mathematical methods.*	*Theoretical exposition, examination of theorems and proofs, and the solution of sample problems, Lectures, examination of theorems and proofs, and solving example problems.*	*NONE*
Department of Mathematics	*MAT-5074*	*Mathematical Inequalities I*	*İngilizce-English*	*Güz-Fall*	*5*	*LO1: Explains and applies fundamental mathematical inequalities.* *LO2: Solves mathematical problems using inequalities.* *LO3: Proves fundamental inequalities.*	*Theoretical exposition, proof of fundamental inequalities, and solution of example problems. Lectures, proofs of fundamental inequalities, and solving example problems.*	*NONE*
Department of Mathematics	*MAT-5075*	*Mathematical Inequalities II*	*İngilizce-English*	*Bahar-Spring*	*5*	*LO1: Explains and applies advanced mathematical inequalities.* *LO2: Solves advanced problems using inequalities.* *LO3: Proves mathematical inequalities and uses them to derive further results.*	*Theoretical exposition, proof of fundamental inequalities, and solution of example problems. Lectures, proofs of fundamental inequalities, and solving example problems.*	*NONE*
Department of Mathematics	*MAT-5036*	Complex Analysis I	*İngilizce-English*	*Güz-Fall*	*5*	*LO1: Explains the fundamental properties of complex numbers and complex functions.* *LO2: Applies the concepts of complex differentiation and analyticity.* *LO3: Evaluates complex integrals and applies fundamental theorems.*	*Theoretical exposition, proof of fundamental inequalities, and solution of example problems. Lectures, proofs of fundamental inequalities, and solving example problems.*	*NONE*
Department of Mathematics	*MAT-5037*	Complex Analysis II	*İngilizce-English*	*Bahar-Spring*	*5*	*LO1: Explains and applies advanced theorems in complex analysis.* *LO2: Evaluates complex integrals using residue methods.* *LO3: Solves problems involving Laurent series, singularities, and residues.*	*Advanced lectures, examination of theorems and proofs, and applied problem solving.. Advanced lectures, examination of theorems and proofs, and applied problem solving.*	*NONE*
Department of Mathematics	*MAT-6023*	Sequence Spaces and Summability I	*İngilizce-English*	*Güz-Fall*	*5*	*LO1: Analyzes fundamental sequence spaces and summability methods.* *LO2: Examines the structural properties of sequence spaces and convergence relations.* *LO3: Proves theorems and results in summability theory.*	*Advanced lectures, mathematical proofs, and research-oriented problem solving.. Advanced lectures, mathematical proofs, and research-oriented problem solving.*	*NONE*
Department of Mathematics	*MAT-6024*	Sequence Spaces and Summability II	*İngilizce-English*	*Bahar-Spring*	*5*	*LO1: Analyzes and compares advanced summability methods and sequence spaces.* *LO2: Investigates inclusion and convergence relations among different summability methods.* *LO3: Develops original mathematical results related to open problems in sequence spaces and summability theory*	*Examination of research articles, development of advanced theorems and proofs, and seminar presentations. Examination of research articles, development of advanced theorems and proofs, and seminar presentations.*	*NONE*
Molecular Biology and Genetics/Master's Degree	*MBG-5016*	*Plant Growth Regulators*	*English*	*2026-2027 Fall*	*5*	*1. Defines plant growth regulators and explains their fundamental properties and functions in plants.* *2. Classifies plant hormones according to their chemical structures and physiological functions.* *3. Explains the biosynthesis, transport, and metabolism of major plant hormones.* *4. Explains the physiological roles of auxins, gibberellins, cytokinins, abscisic acid, and ethylene in plant growth and development.* *5. Explains the mechanisms of plant hormone perception, signal transduction, and regulation of gene expression.*	*Face to face*	--
Molecular Biology and Genetics/Master's Degree	*MBG-5020*	*DIAGNOSTIC TESTS AND METHODS USED IN MICROBIOLOGY*	*English*	*2026-2027 Fall*	*5*	*1. Knows the substances in the composition of the medium and can prepare the medium.* *2. Gains knowledge of bacterial identification 3. Have information about the diagnosis of viral infection.* *4. Gains knowledge of basic microbiological analysis.*	*Face to face*	--
Molecular Biology and Genetics/Master's Degree	*MBG-5030*	*CELL CULTURE TECHNIQUES*	*English*	*2026-2027 Fall*	*5*	*1. Rational Teamwork Ability Effective Time Management Abstract Analysis and Synthesis Learning How to Learn Transforming Theoretical Knowledge into Practice Independent Work Organization and Planning*	*Face to face*	--

Molecular Biology and Genetics/Master's Degree	*MBG-5008*	*CONTROL OF CELL DIVISION*	*English*	*2026-2027 Fall*	*5*	*1. Learns about cells and their functions. 2. Learns about cell organelles and their functions. 3. Learns about the cell cycle and its control. 4. Learns about the relationship between the cell cycle and cancer. 5. Learns about the relationship between the cell cycle and aging.*	*Face to face*	--
Molecular Biology and Genetics/Doctorate	*MBG-6001*	*Molecular Basis of Cancer*	*English*	*2026-2027 Fall*	*5*	*1. By the end of the lesson, students will have gained knowledge about cancer development, the genes involved, and the genetic basis of cancer. 2. Students gain knowledge about oncogenes, tumor suppressor genes, and their functions. 3. They gain knowledge about the gene pathways involved in cancer development. 4. They gain knowledge about cancer types, metastasis, and selectivity in metastasis. 5. They gain knowledge about cancer treatment and current developments in this field. 6.They gain knowledge about the factors that cause cancer.*	*Face to face*	--
Molecular Biology and Genetics/Doctorate	*MBG-6025*	*BIOCHEMISTRY OF FREE RADICALS*	*English*	*2026-2027 Fall*	*5*	*1. Students will learn about the formation of free radicals in biological systems and their effects on cellular components. 2. Students will gain knowledge about oxidative stress and related diseases, oxidative stress and antioxidants. 3. Students will learn about cellular antioxidant defense systems against free radicals. 4. Students will gain knowledge about exogenous antioxidants and better understand the role of nutrition and antioxidants in nutrition.*	*Face to face*	--
Molecular Biology and Genetics/Doctorate	*MBG-6045*	*CELLULAR AGING AND CELL DEATH MECHANISM*	*English*	*2026-2027 fall*	*5*	*1. Explains the cell cycle and its regulation and death mechanisms. 2. Understands cellular aging and the mechanisms affecting cellular aging. 3. Learns about the effect of free radicals in the cell and antioxidant capacity. 4. Understands the effect of lysosomal damage and mitochondrial damage on aging. 5. Understands the relationship between telomeres and aging.*	*Face to face*	--
Material Science A.B.D.	*MLZ-5007*	*TECHNICAL GLASSES*	*ENGLISH*	*2026 - 2027 FALL*	*5*	*Defines glass materials, their key properties and applications; explains glass structure and formation theories; classifies technical glasses, compositions and raw materials; performs batch calculations and designs melting processes; characterizes the physical, chemical, mechanical, thermal, optical and nuclear properties of technical glasses; and designs glass compositions for radiation shielding and nuclear waste immobilization.*	*The course is conducted at the graduate level through theoretical lectures, literature-based discussions, case studies, and problem-solving activities focusing on technical glass systems. Students are expected to critically evaluate glass compositions, processing routes, properties, characterization methods, and advanced applications.*	*Students are expected to have a basic background in materials science, metallurgy and materials engineering, glass science, and general chemistry. No formal prerequisite course is required.*