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It is brought to your kind notice that information which is below could be changed according to unforeseen circumstances.

2026/2027 study year, SPRING SEMESTER

CODE	COURSE TITLE	ECTS CREDITS	SUMMARY
Study programme ELECTRICAL AND AUTOMATION ENGINEERING, MECHANICAL ENGINEERING, TRANSPORT ENGINEERING			
	Human and Civil Safety	3	The course is designed for the students to understand the structure of civil and labor safety system, its elements, control and the influence of human factor. During the studies of the course the students review the fundamentals of civil protection and rescue systems, ways for protection of humans, their property and means in the case of extreme situations, get introduced to the principles of employees safety and healthy work, the main ergonomic requirements, the impact of hazardous factors and the ways of their elimination or reduction.
	Materials Engineering	3	The subject is intended to examine the engineering materials used in the manufacture of automobiles, the standards for marking engineering materials used in the EU. Subject content includes material structure, microanalysis, properties, mechanical tests (strength, hardness), application of ferrous and non-ferrous metals, their alloys, hard alloys, materials, heat and thermochemical treatment, blanks production methods, non-metallic, composite and polymeric materials, their production methods, environmental protection. The course examines the thermodynamics, kinetics and equilibrium of chemical processes in homogeneous and heterogeneous systems, electrochemical processes in chemical power sources and corrosion of metals, methods of corrosion protection of metals.
	Electrical Circuits Analysis	6	The subject is intended to consolidate the previously formed abilities to understand the electric and electromagnetic phenomena and establish their interconnection, to teach

			the calculation of circuit parameters, analyse, compare and use the acquired knowledge in practice.
	Applied Programs	3	The course is designed to develop students' ability to apply knowledge of information and communication technologies for solving engineering tasks and managing application software.
	Engineering Economics	6	This course is designed to introduce students to the fundamentals and principles of economic theory. During the course, the functions and forms of markets, as well as the factors of monetary and fiscal policies affecting the business sector, are analyzed. The course provides structured knowledge about the concept, organizational structure, and management of automobile transport companies, the basics of accounting, and cost calculation. It fosters logical thinking by teaching students to analyze economic processes and the impact of various external and internal factors on the activities of economic entities. The themes and content of practical sessions are closely linked to the student's future professional
	Electronics	3	The subject is intended to acquaint the students with the fundamental knowledge of electronics, to study the key parameters and characteristics of electronic components, understand their applied character, apply basics of electronics in construction of various devices, assess electronic equipment and know the purpose of various electronic devices and compound elements.
	Electrotechnical Materials	3	The subject is devoted to studying of electrical engineering material structure, composition, mechanical, electrical, thermal, physical, and chemical properties. Students will be familiarized with essential properties of conducting, insulating, semi conducting materials, their application; modern electrical engineering materials.
	Basics of Automation Control	6	The subject is intended to introduce the concepts and definitions of automation, automation elements, their characteristics and diagrams. The possibilities of using automation elements in control, monitoring and signaling systems are examined. Knowledge is provided about the application of sensors, relays, motor starters and control devices in production facilities. The content of the subject is based on the studies of general electrical engineering, electrical circuit analysis and electromechanical converters.

	Automatic Control Systems	7	The subject is intended to introduce the principles and methodologies of calculation and design of automatic control systems. The content of the subject is based on the studies of mathematics, information technology, electrical circuit analysis, electrical and automation equipment, automation fundamentals, discrete automatic systems, and programming. The principles of computer design are introduced using the Matlab/Simulink software package.
	Electrical Energetics	3	Upon completion of the course, students will be able to understand the operating principles and processes of electrical power systems and networks, design electrical networks, install and operate electrical equipment, analyze the technical parameters of power systems, calculate network characteristics, select appropriate devices, and evaluate their control behavior.
	Renewable Energy Systems	6	The subject is intended to consolidate theoretical and practical skills in the operation and design of solar and wind renewable energy sources, to usefully apply the information provided by technical documentation, to be able to name and understand the purpose and functions of equipment elements, to know their structure and operating principle, and to be able to select them.
	Design of Renewable Energy Systems	7	The student will acquire practical knowledge of solar and wind renewable energy source design based on the latest technical solutions and inventions, will be able to design solar and wind renewable energy systems, will be able to apply knowledge and understand solar and wind renewable energy design problems, which they will creatively solve by applying known methods, will be able to analyze solar and wind renewable energy engineering design tasks and select appropriate design methods and technical equipment to solve them, will be able to combine theoretical and practical design knowledge and select modern solar and wind renewable energy engineering systems, will be able to evaluate and select structural and economic solutions for the systems.
	Electrical Safety	3	The subject is intended to familiarize students with the dangers of current to the human body, protection against the effects of electric current, electromagnetic fields and electric arcs, and to understand and be able to apply the requirements of the safety rules for the operation of electrical equipment when organizing and performing work in operating electrical equipment. Knowledge is provided about the selection of means and methods of protection against electrical exposure. Basic concepts and

			definitions are introduced, rules for the maintenance of special electrical equipment, and the procedure for safe work in electrical equipment. The knowledge gained during lectures and practical work will be applied when organizing work in electrical equipment.
	Electrical Converters and Actuators*	6	The course is designed to examine the theoretical foundations of electromechanical converters (electric machines) and drives, including key concepts, types of electric machines, and their operating principles. Students will analyze electric machines, their characteristics, equations, calculation methods, and the selection of components, as well as operating modes, electrical circuits, and operational features, including their application in drive engineering.
	Power Electronics*	5	The course is designed to introduce the fundamentals of power electronics, to learn how power electronic circuits operate, to understand their practical applications, and to apply knowledge of power electronics fundamentals in the design of power devices.
	Discrete Automatic Systems*	5	The course is intended to introduce digital devices, logic elements, and digital circuits, as well as the operation of digital devices and their application in the design of more complex systems. Students learn to design combinational circuits using logic gates and programmable logic arrays, and to select appropriate digital integrated circuits, understanding their parameters and technological series. The course also covers flip-flops, registers, counters, encoders, decoders, multiplexers, and demultiplexers.
	Electrical Measurements	3	Students will be familiarized with SI-system units, master plates, counters and measuring elements, error of measurement, and instrument ratings of measurement equipment and devices.
	Technological Practice I: Electrical Equipment Mounting Practice	6	Subject of a practice is designed to familiarize students with electrical drawings, measuring instruments, and tools. During the practice, various electrical consumers (lighting, motors, etc.) and energy consumption accounting schemes are installed. Various methods of electrical circuit protection will be used. During the practice, students will learn how to install circuits, acquire the skills necessary for studying specialized subjects, and become familiar with the properties of control devices. They will learn to develop and analyze installation technologies and use technical documentation. They will be able to organize safe and environmentally friendly installation work.

	Engineering Mechanics	3	The subject is designed to provide students with the theoretical mechanics, mechanics of materials, theoretical knowledge and practical skills. Course covers theoretical mechanics: statics, kinematics, dynamics fundamentals; mechanics of Materials Basics: tension and compression, cutting, twisting, bending; mechanical machinery elements, interconnections, mechanical gears, shafts, axles, bearings, couplings.
	Robotics	3	The subject is intended to introduce to the role of robots, their design and operation features. For performing practical works, various simulated real-life situations are used and optimal solution is searched. Theoretical knowledge gained during lectures will be adapted in practical work.
	Mechatronic Systems	3	The subject is designed to provide students with the theoretical knowledge of the elements of mechatronic systems, analyze the links between elements in the wiring diagram, mechatronic systems parameters and modes.
	Equipment of Metal Manufacturing Technology	6	The subject is intended to introduce the students to the equipment of metal processing technologies, present their technical characteristics, operating principles and construction features, control ways, equipment and tools.
13TF	Automobiles Constructions	6	The subject is designed to provide knowledge of automobile equipment, the structural differences, and structural trends. The internal combustion engine structure is provided, the structural differences, power systems, automobile transmission, chassis, steering, structure, and operation principles.
14TF	Technical Measurements	3	The subject is intended to introduce students to the standardization system of the Republic of Lithuania and international standards, to teach students to assess parts suitability and technical measurements.
	Automobile Electrical Equipment	6	The subject is designed to introduce electrical equipment used in a car, their structures, components and practical electrical devices working principle testing. The device parameters, characteristics and verification of methodology provided are analyzed.
	Engines	6	The subject is designed for students to master internal combustion engine theoretical and actual work cycles, mechanism and system operation and design features. Indicated and efficient engine characteristics are analyzed theoretically examined and practically: torque, power, absolute and comparative fuel costs, comparative power, engine efficient and thermal coefficients of performance, environmental and other parameters. Crankshaft-connecting rod mechanism kinematics and dynamics calculations are carried out.

	Automotive Diagnostics	3	The subject is designed to introduce the automotive maintenance and repair system, performance technology, automotive technical operation companies use diagnostic tools, engines, control systems, electrical equipment, transmission, steering, and chassis diagnosis technology for and analysis of automotive technical condition evaluation results. Technological equipment used for automotive maintenance repairs are analyzed.
	Automobile Maintenance Technology	6	The subject is designed to provide students with knowledge of car reliability, and processes of technological maintenance. Theoretical sessions and laboratory- practical work explore possible parts defects, their causes, and possible solutions. During the exercises car parts repair technologies are designed.
	Control Systems of Automobiles	6	The subject is designed to introduce the car control system components, their characteristics, use features. The practical tasks are modeled on different types and various car function control systems, their functions, operational problems of different control systems functions are solved.
	Technological Practice II: Destruction and Assemblage Practice	6	The objective of this practice is to introduce car structure, chassis equipment, steering mechanism, and practical application of theoretical knowledge working with engine mechanisms, transmissions, chassis disassembly and assembly according to the car manufacturer provided technologies. Understanding car components disassembly and assembly specifics, skills and abilities will enable to work better and help to organize the work at companies.
	Technological Practice I: automobile repair practices	6	The objective of this practice is to introduce various car transport companies, work, equipment, and structure, and the car models being repaired, ejèaw. During the practice students will weld, solder, and do electrical wiring work. They will apply theoretical knowledge about equipment and materials for welding and soldering work and analyze work safety requirements.
	Computer Modeling	3	The subject is intended to get acquainted with SolidWorks 3D design package. During the course of studying, the skills and abilities of designing the product are acquired: modeling 3D objects and drawing two-dimensional (2D) drawings. The subject provides knowledge of the design of shaft and plate types parts, sheet metal products, welded joints, products from standard profiles, castings, assembly units, and the use of standard element library. The subject provides skills for the engineering tools of the SolidWorks package.

23TF	Engineering Graphics	6	The course is designed to acquaint students with the theoretical concepts of engineering graphics, requirements of national standards, design and drawing rules, and to develop the capacity to apply them. Students are taught to make technical drawings according to design and drawing rules, to analyse them, to understand the geometric shapes of products according to their images, interconnection and their position in space, to make schematic drawings and draw up specification tables.
	Operation Systems	5	The subject purpose is to introduce OS structure, the main functions of the processes, memory control and virtual memory, management of input/output and file systems, protection and safety of operation system. The main operation systems are analyzed: MS Windows OS; Unix-like OS: Unix, Linux.. The course ends with an examination.
	Discreet Mathematics	5	The course is aimed at acquainting students with the concepts of probability theory and mathematical statistics, rules, tasks solving algorithms, to teach them describe simple, depending on chance, eventualities in the language of probability theory. They will be able to correctly formulate tasks of probability theory and statistics, and to solve them. The course is completed with examination.
	Programming	6	The course is aimed at familiarizing students with principles of programs and algorithms, systems of programs and construction, programming methods, it teaches students to develop applied information programs using object-oriented programming language. Course content covers all stages of program development, data types, the basic object-oriented programming language elements, data and control structures, classes, introduces design programs for Windows systems environment.
	Information Systems Design	5	The course is designed to provide students with the basics of information systems development and design, object design methodology, unified modelling language UML. The course teaches to compose structured diagrams of behaviour and interface, to use UML CASE tools for creating models of information systems. Students learn to design information systems, select and apply appropriate framework for the relevant requirements. The subject is taught in the third semester. The third semester is completed by an individual work.
29TF	Database Management and Design Fundamentals	6	The course unit is designed to introduce the principles of modern database engineering, relational database management systems, the basic concepts of databases (DBs), an overview of the basic design phases of relational databases, and to teach how to design databases for future application systems. The content of the course unit covers working

			with data in an existing database, creating relational database objects and introduces all phases of database design: conceptual, logical and physical. The course unit is taught in the fourth semester. The course unit studies end with an independent thesis of the student.
	Cyber Security	6	The course unit is designed to introduce students to modern technical systems, the principles of building secure information systems, operating system security, cryptography and secure information transmission. It covers information security management, the architecture of information transmission networks, the basics of information routing, as well as the security of e-business, the web, email, mobile networks; security measures for different services; general information systems security issues: threat classification, risk assessment, human factors, network infrastructure espionage, password and login interception.
	Mathematics	6	The course is designed to analyse fundamentals of mathematics, to apply the knowledge in technological and technical calculations, to analyse and assess the results of theoretical and experimental activity, to acquaint students with concepts, laws, rules of theory of probability and mathematical statistics, algorithms. The course is completed with examination.
	Technological Practice 2 (Data Base Systems)	6	The subject is designed to deepen knowledge of application construction methods and systems, programming methods, to deepen knowledge in developing applications in the objective programming language and using the structured query language (SQL). The content of the subject includes the stages of program development, data and management structures, introduction to program construction systems in Windows environment (MS Visual Studio, Oracle APEX). The subject is taught in the fifth semester and ends with the student's independent work.
	Human and Computer Interaction	4	The subject is designed to acquire knowledge about the quality assurance methods of human-computer interaction in the project systems development project, to develop the competence of conceptualization of interoperability, to teach to apply principles and methods to various paradigms of interaction.