



Lodz University
of Technology

Study programme

Faculty:	Faculty of Organization and Management
Major:	Logistics
Level of study:	first-cycle programme (inżynier)
Form of study:	full-time studies
Academic year:	2026/27

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Basic information

Name of the field of study:	Logistics
Level of study:	first-cycle programme (inżynier)
Study profile:	general academic
Form of studies:	full-time studies
Duration of studies (number of semesters):	8
The number of ECTS points required to complete studies:	240
Total number of hours of classes:	3050
The number of ECTS points a student obtains as part of classes conducted with the direct participation of academic teachers or other persons conducting classes:	122
Professional title awarded to graduates:	inżynier
ISCED code:	0419
Language of study:	polish

Assigning the course to the disciplines to which the learning outcomes relate

Discipline	Percentage share
Management science and quality	84%
Technical computing and telecommunications	16%

Learning outcomes (in relation to the PQF)

No.	Learning outcome code	Learning Outcome Content	Reference to the universal characteristics of the first level of PRK	Reference to the second-level characteristics of the PRK, taking into account the second-level characteristics enabling the acquisition of engineering competences
1	1LOG1	Knows and understands the mathematical and physical concepts necessary to describe phenomena and processes, knows and understands advanced concepts and methods of logistics management and their application in practice, taking into account logistics aspects, customer needs and legal requirements and ethical standards, as well as the principles of corporate social responsibility.	P6U_W, P6U_U	P6S_WG, P6S_WK, P6S_WK_inż, P6S_UW_inż
2	1LOG2	Knows advanced methods, techniques, and tools related to the digitization of logistics management processes and multifaceted data analysis, and can effectively apply them in practice.	P6U_W, P6U_U	P6S_WG, P6S_WK, P6S_WG_inż, P6S_UW_inż
3	1LOG3	Demonstrates an advanced understanding of the role of technical solutions in the functioning of logistics processes and supply chain security; is able to identify potential risks.	P6U_W, P6U_U	P6S_WG, P6S_WK, P6S_WG_inż, P6S_UW_inż
4	1LOG4	Knows and understands the principles of sustainable development and circular economy in logistics, the life cycle of products and logistics services, and can apply them in practice, skillfully selecting appropriate packaging.	P6U_W, P6U_U	P6S_WG, P6S_WK, P6S_WG_inż, P6S_UW_inż
5	1LOG5	Can apply advanced IT tools to manage logistics processes.	P6U_U	P6S_UW, P6S_UW_inż
6	1LOG6	Can lead advanced and diverse logistics projects, implementing appropriate concepts, methods, techniques, and tools using available IT technologies.	P6U_U	P6S_UW, P6S_UW_inż
7	1LOG7	Can advancedly diagnose various problems in supply chains and propose effective solutions.	P6U_U	P6S_UW, P6S_UW_inż
8	1LOG8	Is able to work and communicate in teams, especially interdisciplinary and international ones, conduct presentations in Polish and a foreign language at B2 level using specialist terminology used in supply chains and ICT technologies.	P6U_U	P6S_UK, P6S_UO
9	1LOG9	Can work in an interdisciplinary team, integrating various fields of knowledge, and is ready to make decisions related to supply chains in accordance with the principles of responsible business, including environmental protection, intellectual property protection, and consumer rights.	P6U_K	P6S_KK, P6S_KO, P6S_KR
10	1LOG10	Is ready to make responsible decisions in the field of logistics management, consciously manage their professional career through continuous improvement of engineering and managerial competences, taking into account current trends and needs of the labor market.	P6U_U, P6U_K	P6S_UU, P6S_KK, P6S_KO, P6S_KR

Matrix of course modules in relation to learning outcomes and curriculum content

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
1	Management	The essence of the management process. The organization and its place in the environment. The evolution of management sciences. Managerial roles and competencies. Planning in the organization. Enterprise strategy. Decision-making. Organizing the company's activities. Types of organizational structures. Basics of employee motivation. Methods and tools for motivating staff. Leadership and leadership styles. Control in the organization.	x					x		x		
2	Economics	Micro- and Macroeconomics: Definitions, the essence of the economic process, scarcity of resources and factors of production. The market and market relationships. Theory of the consumer. Theory of the firm. Markets for factors of production. Macroeconomic problems. National income accounting. Determinants of national income. The role of the state in the economy. Money and the banking system. The business cycle. Unemployment and inflation. Problems of an open economy.	x					x				
3	Basics of Logistics	The essence, origins and development of logistics Phase division of logistics - a detailed description of each of the supply, production, distribution and reverse logistics phases. Functional division of logistics - a detailed description of the processes of transport, storage, order handling, inventory management and packaging. Logistics and supply chain management.	x					x				
4	Physics	Vibrations and waves. Interference and diffraction of waves. Standing waves. Wave properties of light. Electromagnetic waves. Polarization of light. Structure and principle of operation of LCD. External photoelectric phenomenon. Wave-particle duality. Matter waves. Atomic nucleus. Nuclear radiation. Motion of a charged particle in a magnetic field. Elementary particles.	x		x			x				
5	Mathematics I	Vector calculus, operations on matrices. Finite systems of linear equations. Eigenvalues and eigenvectors of linear transformations. Full characterization of the plane and the line by equations. Limit, continuity and differentiability of a real function of one variable. Higher order derivatives, Taylor's formulas and their applications, L'Hopital's rules and asymptotes of functions. Antiderivative and basic methods of integration. Riemann integral on a bounded interval and its properties, basic integral theorems. Applications of the definite integral to calculating standard geometric quantities. Improper integrals. Methods of integration. Riemann integral on a bounded interval and its properties, basic integral theorems. Applications of the definite integral to calculating standard geometric quantities. Improper integrals.	x					x				
6	Engineering Graphics and Computer Aided Design	Principles of projection in technical drawing. Views and sections. General principles of dimensioning and description of surface conditions. Drawing and dimensioning of threads. Tolerancing dimensions. Drawing and dimensioning of elastic elements, gears and welded joints. Assembly drawing. Computer-aided design. Commands, drawing elements. Creating and working with blocks in a drawing. Dimensioning of drawing elements. Three-dimensional drawing elements. Rendering.		x	x		x					
7	Digitalization and Cybersecurity	Introduction to digitalization. Basic information and communication technologies, Information systems in logistics (ERP, MRP, DRP, LRP, WMS). Data management. Cybersecurity and organizational security policies, Personal data protection. Network security. Incident management. The future of digitalization in logistics.		x	x		x					

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
8	Civil Law	Introduction to civil law: General principles, definitions and sources of civil law. Legal and natural persons: Rights and obligations, legal capacity and capacity to perform legal acts. Civil contracts: Types of contracts, principles of their conclusion and legal effects. Civil liability: Principles of tortious and contractual liability, premises and principles of compensation. Civil procedure: Structure of civil proceedings, principles of civil court proceedings.	x									
9	Logistics Costs	Concept and classification of logistics costs. Layout and structural cross-section of logistics costs. Logistics costs and activity-based costing. Logistics costing models. Budgeting and cost control.	x	x								
10	English B2 module I	First part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
11	Environmental Emissions of Logistics	Basic issues of vibroacoustics. Measurement transducers. Analysis of signals in the domains of amplitude, time and frequency. Correction curves A, B, C, D. Assessment of the harmfulness of noise and vibrations during continuous and intermittent exposure. Acoustic environment. Measurements of traffic noise. Measurements of noise from machines and devices. Methods of minimizing noise and vibrations.			x			x				
12	English C1 module I	First part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
13	Commercial Law	Introduction to commercial law: Definition, sources and scope of commercial law. Commercial law entities: Types of entrepreneurs, business registration. Commercial contracts: Principles of concluding commercial contracts, most commonly used contracts (e.g. sales, distribution). Corporate law: Types of companies, principles of establishing and operating commercial companies. Bankruptcy proceedings: Principles of proceedings in the event of an entrepreneur's insolvency.	x									
14	Acoustic Impact of Logistic Processes	Introduction to transport ecology issues, including a discussion of basic legal acts related to the subject matter. Presentation of basic environmental threats resulting from the current development of transport. Impact of logistics processes on the environment and human health. Introduction to basic acoustic issues. Acoustic environment. Measurements of traffic noise. Measurements of noise from machines and devices. Methods of minimizing noise and vibrations.			x			x				

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
15	Mathematics II	Basic concepts of statistics. Description of the structure of phenomena. Definition of a random variable. Discrete and continuous random variables. Probability and its parameters. Estimators and their properties. Verification of statistical hypotheses. Construction of tests. Parametric tests. Correlation and regression analysis. Interest theory. Calculation of the present and future value of cash flows. Capital annuities: constant consistent, delayed, infinite, payable in arrears, payable in advance. Calculation of the present and cumulative value. Repayment of loans and credits. Determination of the amount of the principal installment, calculation of the interest installment. Discount methods of investment project evaluation. Evaluation of the efficiency of investment projects.	x				x					
16	Social Law	Introduction to social law: Definitions, objectives and sources of social law. Employment and employees: Employee rights, employment contracts, employment principles. Social security system: Types of benefits, principles of granting and payment. Protection of social rights: The role of state institutions and non-governmental organizations. The right to strike and organize trade unions: Principles of functioning of trade unions and the right of employees to strike.	x									
17	Basics of Programming	Introduction to Python. Data Types and Operations. Program Flow Control. Functions and Modules. Creating and Calling Functions. Fundamentals of Object-Oriented Programming.		x			x					
18	English B2+ module I	First part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
19	German B2 module I	First part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
20	Business Process Modeling	Modeling and simulation modeling, advantages of simulation modeling. Agent-based modeling, system dynamics modeling, discrete modeling. Market model, creating a population of agents. Defining behavior, creating a stock and flow diagram. Levels of abstraction, simulation experiments. AnyLogic and FlexSim environment, model structure, 3D visualization, KPI visualization.	x	x				x	x			
21	Tax Law	Introduction to tax law: Definitions, types of taxes and sources of tax law. Taxpayer obligations: Registration, filing tax returns, payment deadlines. Types of taxes: Income tax, VAT, property tax, and the principles of their calculation. Tax reliefs and exemptions: Types of reliefs and the principles of their application. Tax audit: Tax audit procedures, rights and obligations of the taxpayer during the audit.	x									

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
22	Administrative Law	Introduction to administrative law: Definitions, general principles and sources of administrative law. Public administration bodies: Structure and competences of administrative bodies, principles of their operation. Administrative proceedings: General principles of administrative proceedings, stages of the proceedings. Administrative decisions: Types of decisions, legal effects, possibility of appeal. Administrative control: Mechanisms of control over the activities of public administration, complaints and applications.	x									
23	Marketing	The essence and concept of modern marketing. The company's environment and its influence on shaping the elements of marketing. Buyer behavior and its influence on shaping the elements of marketing. Composition of the marketing mix elements. (Product, Price, Promotion, Distribution, Personnel). Market and marketing research.	x					x				
24	Human Beings in Digital Civilization	Information society and information civilization. Determinants of information society. Homo informaticus - man in the digital world. The singularity is coming. Technology and ethics. Women and information civilization - cyberfeminism. Dilemmas of the information society.	x								x	x
25	German B2 module II	Second part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
26	English B2 module II	Second part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
27	Critical Thinking	The idea of critical thinking. Types of names and the basis of conceptual analysis. Forms and types of definitions. Relations between sentences and the laws of propositional calculus. Deductive and nondeductive reasoning. Types of arguments. Common flaws in reasoning.	x								x	x
28	English B2+ module II	Second part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
29	English C1 module II	Second part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
30	Legal and Customs Aspects in Supply Chains	Introduction to the law in supply chains. Customs law. International trade regulations. Legal liability in the supply chain. Legal and customs risk management. Transport law. Transport liability.	x					x				

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
31	Organization of Transport Processes	The role of transport in logistics. The relationship between transport and the supply chain. Basic modes of transport. Intermodal transport. The transport process. Transport costs. Cost function. Development of individual modes of transport. International transport. Carriers. Legal forms of carriers. Documentation in transport. Drivers' working time.	x		x	x	x		x	x		
32	Commodity Science	The essence, purpose and scope of commodity science - commodity science as an interdisciplinary science Division of commodity science - industrial and food commodity science Commodities - properties, classifications, labeling principles, life cycle analysis, packaging economy Quality of goods - quality features, factors determining quality, quality testing, evaluation and control The consumer as a starting point for shaping and analyzing the quality of goods - studying the expectations and behavior of external and internal customers.				x		x	x			
33	Logistics Teams Management	Human resources management in a logistics enterprise. Professional competencies of logistics employees. Characteristics of teamwork. Typology of teams. Social and psychological conditions of team functioning. Structure, power and leadership in a team. Leadership styles. Key competencies in managing a logistics team. Team roles. Interpersonal communication. Planning and organizing teamwork. Mobilizing and motivating the team. Monitoring and evaluating team work. Managing change in teamwork. Designing a logistics team.	x					x				
34	Modeling of Transport Processes	Spheres of application of optimization and econometrics in an enterprise Selected problems of econometric and optimization modeling Building decision-making models in a transport enterprise Modeling technical and economic indicators in a transport enterprise Modeling cargo transportation Econometric analysis of the economy of a transport enterprise.		x	x		x	x				
35	Artificial Intelligence	Basic concepts and types of AI. Machine learning algorithms. Application of algorithms in logistics data analysis. Optimization of logistics processes. Data analysis using AI. Application of AI in automation and robotization in logistics. Challenges related to AI implementation in logistics. The future of artificial intelligence in logistics. Development trends in AI and their impact on the logistics industry. Application of AI in innovations and new business models in logistics.		x			x					
36	Negotiations in Logistics	Fundamentals of interpersonal communication, the essence and goals of conducting negotiations, the duration of negotiations, competences in negotiations, principles of conducting negotiations, negotiation phases. Methods of conducting negotiations. Negotiation models. The most well-known techniques and strategies of conducting negotiations, communication in negotiations, analysis of the characteristics of a good negotiator, negotiations of unusual situations and problems, negotiations with a difficult client, manipulation of emotions during negotiations.	x								x	x
37	German B2 module III	Third part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
38	Modern IT Technologies in Logistics	IT in logistics management. Data capture techniques. Enterprise logistics information system. Mobile applications supporting logistics processes.		x			x					

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
39	English B2 module III	Third part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
40	Business Activities and Company Finance Management	Definition of economic activity and its importance. Types of organizational and legal forms of enterprises and their impact on economic activity. Basic aspects of financial management. The role of financial management in making strategic and operational decisions in the context of economic activity. Planning and budgeting in an enterprise. Effective management of working capital. Sources of financing for operations. Analysis of the efficiency of the enterprise's operations. Financial indicators. Risk management in economic activity, market, operational and financial risk.	x									
41	Business Activity and Financial Management of an Enterprise	Team communication Team building principles. Conditions for effective cooperation. Dysfunctions in team management. Time management and delegation of authority. The essence of leadership and its models, leadership styles. Power and sources of power in an organization. Motivating and assessing employees.	x								x	x
42	English B2+ module III	Third part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
43	English C1 module III	Third part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
44	Production Logistics	The essence and scope of production logistics, specificity of logistics processes (transport, storage, packaging, inventory management and order handling) occurring in production systems. Discussed methods, tools and systems for optimizing production flows (e.g. KANBAN; Just in Time and Just in Sequence), as well as logistics processes in production (including MilkRun). Simulation of selected issues of production logistics within selected products.	x					x	x			
45	Product and Packaging Life Cycle	Introduction to Product Life Cycle. Life Cycle Analysis (LCA). The Role of Packaging in the Product Life Cycle. Sustainable Product and Packaging Design. Managing End-of-Life of Product and Packaging. Trends and Innovations in the Product Life Cycle. Effective Product and Packaging Life Cycle Management. Best Practices.	x		x	x		x	x			
46	Supply Chain Security Management	Supply chain and its essence. Logistic conditions for the functioning of supply chain security. Classification of threats in the context of supply chain functioning. Supply chain security in logistics requirements and standards. Security of road, rail, container, internal transport. Security of the information stream. Security and logistics costs.			x			x	x			
47	Data Analysis in Logistics	Spreadsheet-based IT solutions supporting logistics processes, including selected functions and functionalities enabling the collection of external data, transformation, consolidation, analysis and presentation of data, development of complex mechanisms for solving logistics problems.		x			x	x				

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
48	Communication and Electronic Identification Systems	Basic methods of electronic object identification, including the use of barcodes and radio frequency identification (RFID) tags. Parameters of radio identification systems, principles of operation, and communication protocols. Methods for reading data identifying objects. Techniques for determining the location of objects in space and tracking their movement. Methods for designing RFID circuits and identification systems.		x	x		x					
49	Occupational Safety Management and Ergonomics	Concepts of occupational health and safety management. Safety in internal transport. Safety in the warehouse. Accidents at work and occupational risk assessment. Systematic safety management according to standards . System documentation and continuous improvement of occupational health and safety management systems. Effectiveness of occupational health and safety management systems. Definitions, subject and scope of ergonomics. Nature of ergonomic activities. Role and importance of ergonomics in logistics. Anthropometry and elements of biomechanics. Types of loads, research and assessment methods. General principles of designing the load on the human body. Basics of ergonomic research methodology. Legal basis in the field of ergonomics in logistics.	x					x	x			
50	English B2 module IV	Fourth part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
51	Mobile Systems in Logistics	Programming environment. Java programming for mobile devices. Mobile application design. Application components. Network services and applications. Additional devices found in mobile equipment.		x			x					
52	Data Visualization in Logistics	Descriptive Statistics and Basic Visualization. Data Distribution. Time Series Signals and Noise. Image Signals and Noise. Data Clustering.		x			x					
53	Distribution Logistics and Logistics Services	The essence of distribution Distribution and inventory management. Distribution management in DRP and LRP systems. Contemporary trends in distribution management. E-commerce in distribution logistics. Distribution channels. The concept and role of logistics services in the supply chain. Classification of logistics services. Demand and supply of logistics services, demand and supply side entities. Transport and forwarding services. Logistics centers and parks. Warehouse service. The role of packaging in the provision of logistics services, loading units. Outsourcing of logistics services within integrated chain management. Pricing of logistics services.	x					x	x			
54	English B2+ module IV	Fourth part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
55	E-commerce and Cross-Border Trade	Cross-border trade - basic concepts and theories. Forms of foreign trade, types of international markets, entities on the international market. Documentation in international trade. International Incoterms (ICC) rules. Settlements and risk in international trade. Negotiations and arbitration in international trade. Transport and forwarding in international trade. Macroeconomic conditions. The concept of electronic commerce (e-commerce). Components and models of E-Commerce. Security of electronic transactions. Legal aspects of electronic commerce in Poland and worldwide. Electronic payments, electronic banking.	x	x	x		x					

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
56	English C1 module IV	Fourth part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
57	Logistic Management Concepts	Lean Logistics Agile Logistics Leagile Logistics Green Logistics Resilient Logistics Total Logistics Management. Logistical efficiency of the product.	x					x				
58	German B2 module IV	Fourth part of a business language course with elements of industry-specific terminology; development of all language skills; development and improvement of soft skills oriented around the future working environment of the university graduate.								x		
59	Quality Management and Standardization in Logistics	Quality management principles with particular emphasis on relationship management. Process approach - definitions, model. Quality Management System Requirements ISO 9001 and ISO 28000. Quality management methods and techniques. Supplier selection criteria and their assessment. Customer satisfaction survey using the CSI method. Design of system documents. Computer-aided quality management. Standardization and certification - standardization and certification systems in the European Union, standards - structure, classification and numbering, standardization organizations.	x	x			x					
60	Logistics Application Programming	Creating functions. Creating and using functions with a cell range. Creating and editing macros. Basics of communicating with a database.		x			x					
61	Logistics Process Design	Process design - methods and techniques of process design. Project evaluation. Identification of business needs of enterprises using a selected research tool. Organizing project teams. Using problem assessment techniques. Establishing a hierarchy and levels of detail of identified problems - Designing changes that increase the efficiency of the organization.	x	x	x	x	x	x	x			
62	Social and Managerial Issues in English	The essence, significance and goals of the management process. The essence and characteristics of managerial work. Types of managers, managerial roles and skills. Management functions Information and communication in management. Teamwork.	x							x	x	x
63	Data Warehouses	Basic definitions (operating system, analytical system, metadata, Data Warehousing). Knowledge extraction process. Global and topical warehouses. Warehouse implementation. Multidimensional modeling. OLAP operations. Data models. Data warehouse development process. Example of a warehouse project for a manufacturing corporation.		x			x					
64	Social-Managerial Issues in French	The essence, significance and goals of the management process. The essence and characteristics of managerial work. Types of managers, managerial roles and skills. Management functions. Information and communication in management. Teamwork.	x							x	x	x
65	Ecologistics	Ecologistics and environmental protection. Waste management. Legal regulations regarding waste management. Waste and by-product.	x		x				x	x		

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
66	Databases in Logistics	DB system, its properties, basic concepts related to Database modeling. DBMS - database management system, purpose, structure, most common solutions, kernel functions. Data models. Database languages. Principles of designing Database systems. SQL query language. Components of a database system. Creating complex criteria. Normalization of logical schemas. Data security in enterprises.		x			x					
67	Logistic Workshops and Study Visits	Logistics issues related to the functioning of selected enterprises in the Łódź region. Meetings with practitioners in the field of supply chain functioning and presentation of selected technical, IT and organizational solutions.	x								x	x
68	Data Analytics Using BI Tools	Introduction to data analytics and BI. Data sources in logistics. Data collection and integration of data from various systems. BI tools. Data analysis and reporting. Creating reports and dashboards in BI tools. Data visualization. Managing data quality and ensuring its integrity in analytical processes. Application of data analytics using BI in logistics.		x			x					
69	Social-Managerial Issues in German	The essence, significance and goals of the management process. The essence and characteristics of managerial work. Types of managers, managerial roles and skills. Management functions. Information and communication in management. Teamwork.	x							x	x	x
70	Storage Systems and Food Storage	The essence and tasks of a warehouse in the logistics system. Warehouse operation and equipment. Technology and organization of warehouse work. Storage of goods. Storage costs. Food storage. Methods of extending storage life. Conditions of food transport and storage. Types and kinds of storage facilities. Principles of development and operation of storage facilities and cold rooms. 1Food packaging systems. Disinfection, deodorization and deratization of rooms. Means of refrigerated transport and conditions of transport of refrigerated and frozen products. Cold chain.	x		x	x		x	x			
71	Optimization in Logistics	Mathematical models. Linear programming problems and their applications. Geometric interpretation of linear programming problems, basic solutions, simplex method and its modifications. Duality in linear programming, Sensitivity analysis. Elements of nonlinear programming.		x			x					
72	Internal Transport Systems and Devices	Functioning and organizing modern in-plant transport systems. Characteristics of means of internal transport. Characteristics of transported materials and carriers. Load units. Characteristics of in-plant storage systems. Transport cycle of basic means of transport. The concept of efficiency. Conveyor transport systems for unit and bulk materials. Modern systems supporting cargo picking processes. - Innovative solutions in means of transport. Health and safety in in-plant logistics systems.			x	x		x	x			
73	Project Management	Selected project management methods. Project time management. Project cost management. Project quality management. Project risk management. IT support for project implementation.	x	x			x	x				

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
74	Logistics Challenges	Detailed analysis of selected areas and indication of development recommendations for Europe and Poland based on Mario Draghi's report on the condition of the European economy. Conducting field research. Understanding the perception of phenomena in society, as well as expectations and level of knowledge about the development of these areas. Development projection and recommendations for technical, legal development, social and cultural consequences. Quantitative measures of the assessment of phenomena as a function of time. Detailed research and recommendations for Poland and Europe in relation to the USA and China.	x					x			x	x
75	Forecasting and Simulations in Logistics	Basic concepts in forecasting. The forecasting process in logistics. Evaluating forecast accuracy. Time series components. Time series models with a constant level of the forecasted variable. Time series models with trend. Time series models with seasonality. Models for non-stationary processes. Forecasting using a regression model. Qualitative forecasting methods. Combined forecasts. Types of simulation.		x			x					
76	Business Ethics	Research areas and main problems of ethics. Economics and ethics. Moral value of work. Professional codes and ethical standards. Ethical standards of good management. The concept of social responsibility. Ethical aspects of creating a company's image.	x								x	
77	Market Access	Basic concepts in TSL market research. Analysis and evaluation of logistics services. Research into customer needs and expectations in the TSL market. Strategies for accessing the TSL market.			x				x			
78	Introduction to Sociology	Concepts and scope of sociology. The place of the individual in society. Social groups and types of societies. Social norms and culture. Social conflicts and theories of social development. Modernity and postmodernity.	x								x	
79	Inventory and Supply Management	Inventory management in the supply chain, including the role and classification of inventory, methods and techniques in the field of computer-aided inventory management, the role of inventory in the supply chain, and types of costs associated with inventory. Supply chain logistics, strategies, methods and techniques used in supply management, supplier selection and evaluation, cooperation and planning in supply chains.	x	x		x						
80	Financial Forecasting in the Enterprise	Theoretical foundations of forecasting. Evaluation of forecast accuracy. The process of forecasting revenues and costs as elements of financial statements. Forecasting based on time series models. Forecasting based on an econometric model. Integration of quantitative and qualitative forecasting methods. Structure of a financial statement. Functions of financial forecasts.		x			x					
81	Technical Standards and Technical Aspects of Activity	Vehicle regulations and standards. Vehicle operating regulations. Special transport regulations. Combined transport technology.			x				x			
82	Traffic Safety	Traffic safety status - definitions of traffic incidents, traffic incident statistics, ways of collecting data on traffic incidents. Methods of assessing the state of risk in traffic areas. Road networks. Ways of improving safety by influencing: user, vehicle, infrastructure. Requirements for drivers in cases of passenger and goods transport. Fundamentals of vehicle crash mechanics and road incident analysis. Cargo securing techniques.			x				x			

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
83	Research Methodology	Research procedure and stages of scientific research. Formulation of research problems. Sources of scientific literature search. Methodology of systematic literature review using artificial intelligence. Quantitative methods in management sciences. Qualitative methods in management sciences. Conclusions in scientific research.	x					x	x			
84	Safety Systems in Vehicles	Legal and Normative Requirements for Vehicle Safety. Classification of Vehicle Safety Systems. Structure and Operation of Selected Safety System Components. Evaluation of the Effectiveness of Vehicle Safety Systems.			x				x			
85	Modeling in Inventory Management	Construction of decision models. Graphical method, simplex, conjugate gradients, Newton Single- and multi-stage transportation problem. Network programming. Game theory. Queuing theory. Dynamic programming and multi-criteria programming. Selected problems of econometric and optimization modeling Construction of econometric models in a transport enterprise.	x	x			x	x	x			
86	Technology Transfer, Commercialization of Research Results and Protection of Intellectual Property	Conditions for technology development. Science-business relations. Technology transfer models. Technology assessment and valuation methods. Technology transfer strategies. Risk analysis and sources of financing for technology development. The essence and areas of intellectual property Industrial property protection in Poland in relation to patents, industrial designs, utility models, integrated circuit topographies, trademarks and geographical indications. Transferability of industrial property rights.	x								x	
87	Logistics Issues in English	The essence of logistics. Logistics processes. Functional division of logistics. Phase division of logistics. Logistics chain of the enterprise.	x							x	x	x
88	Logistics Application Design	Supplementing information related to system design and implementation.		x			x	x				
89	Diploma Seminar	The content of education is adequate to the issues of the research topics selected and accepted by the RKS and the supervisor, undertaken by the graduates. The structure of the diploma thesis. Technical issues related to the preparation of the diploma thesis – editorial requirements Creating a literature database (APA) – methods of collecting data. Presentations of subsequent stages of the implementation of diploma theses – discussion of examples of diploma theses. Discussion of the principles of operation of the anti-plagiate system. Transfer of knowledge on the principles of preparation, content and technical issues related to the competency exam – discussion of a selected example.	x									x
90	Logistics Issues in French	The essence of logistics. Logistics processes. Functional division of logistics. Phase division of logistics. Logistics chain of the enterprise.	x							x	x	x
91	Final Project	Formulating the topic and scope of the work. Developing a work outline. Agreeing on the work plan. Review of literature. Developing research methods and tools. Successive submission of fragments of the work for evaluation by the supervisor.	x					x	x			

No.	Course name	Program content	1LOG1	1LOG2	1LOG3	1LOG4	1LOG5	1LOG6	1LOG7	1LOG8	1LOG9	1LOG10
92	Challenges of Supply Chains in the 21st Century	Discussing selected challenges facing supply chains in the 21st century, such as pandemics, terrorist attacks, Industry 4.0, environmental changes, etc. Indicating how these challenges affect changes in supply chains. Indicating potential solutions.	x			x						
93	Logistics Issues in German	The essence of logistics. Logistics processes. Functional division of logistics. Phase division of logistics. Logistics chain of the enterprise.	x							x	x	x
94	Sustainable Supply Chain Management	Introduction to Sustainable Supply Chain Management. The Circular Economy. Types and Role of Packaging in Sustainability and Logistics. The Impact of Product Life Cycle on the Logistics Chain. Sustainable Practices in Logistics. Supplier Management and Responsible Sourcing. Challenges and the Future of Sustainable Management.	x			x		x				
95	Logistics Security	Classification of threats to logistics systems in enterprises. Security of selected logistics systems. Security and logistics costs. Information technologies in managing the security of logistics systems.			x							
96	IT Tools in Management	Work in the LAN of the OiZ Department, network structure, servers, logging in Internet (setting up e-mail accounts, sending, receiving e-mail, attachments, configuring inboxes MS Outlook Express other service programs, Google tools, introduction to designing WWW pages, etc.). Creating multimedia presentations using Power Point. Advanced techniques of working with a text editor. Working with a spreadsheet.		x			x	x				
97	Internship	Enterprise logistics system and basic logistics processes, supply, production and distribution logistics, supply chain management, IT systems in logistics. Legal status, formal and legal basis of operation. Organizational structure of the enterprise. Basic processes implemented in the enterprise. Document flow and information flow. Marketing activity. Human resources management. Functioning of financial and accounting services.						x			x	x
98	Interdisciplinary Project	As part of the subject, groups of students carry out a project involving the solution of a complex logistical problem (requiring knowledge and skills from various areas).	x	x			x	x	x	x	x	x
99	Risk Management	Risk, risk management methods, integrated project risk management. Holistic approach to risk management, methods of dealing with risk. Risk measurement. Risk measures. Subjective approach in risk analysis and risk attitude measures. ISO 31000 standard.	x						x			
100	Change Management	Concepts and classifications of change in organizations. Methods and techniques of introducing change in an organization. The role of the manager in a change situation. Resistance accompanying change. Tools for identifying potential resistance to change. Principles and tools for introducing change in organizations. Development of a detailed change project using the Case Teaching methodology.	x						x			
101	Improvement and Audit in Quality Management Systems	The role of internal audits in the quality management system. Auditing guidelines, interpretation of ISO 19011:2018 requirements (auditors' competences). Internal audit documentation. Internal audit process. Scope of post-audit activities.	x						x			

ECTS - subjects

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
1	Management	4			4	
2	Economics	4			4	
3	Basics of Logistics	4			4	
4	Physics	5			5	
5	Mathematics I	7			7	
6	Engineering Graphics and Computer Aided Design	3				
7	Digitalization and Cybersecurity	3				
8	Civil Law	1	1	1		
9	Logistics Costs	3			3	
10	English B2 module I	2		2		
11	Environmental Emissions of Logistics	3		3		
12	English C1 module I	2		2		
13	Commercial Law	1	1	1		
14	Acoustic Impact of Logistic Processes	3		3		
15	Mathematics II	7			7	
16	Social Law	1	1	1		
17	Basics of Programming	3			3	
18	English B2+ module I	2		2		
19	German B2 module I	2		2		
20	Business Process Modeling	5			5	

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
21	Tax Law	1	1	1		
22	Administrative Law	1	1	1		
23	Marketing	3			3	
24	Human Beings in Digital Civilization	3	3	3		
25	German B2 module II	2		2		
26	English B2 module II	2		2		
27	Critical Thinking	3	3	3		
28	English B2+ module II	2		2		
29	English C1 module II	2		2		
30	Legal and Customs Aspects in Supply Chains	3			3	
31	Organization of Transport Processes	7			7	
32	Commodity Science	4			4	
33	Logistics Teams Management	4			4	
34	Modeling of Transport Processes	4			4	
35	Artificial Intelligence	3			3	
36	Negotiations in Logistics	4		4		
37	German B2 module III	2		2		
38	Modern IT Technologies in Logistics	3		3		
39	English B2 module III	2		2		
40	Business Activities and Company Finance Management	3		3		
41	Business Activity and Financial Management of an Enterprise	4		4		

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
42	English B2+ module III	2		2		
43	English C1 module III	2		2		
44	Production Logistics	5			5	
45	Product and Packaging Life Cycle	6			6	
46	Supply Chain Security Management	3			3	
47	Data Analysis in Logistics	2			2	
48	Communication and Electronic Identification Systems	5			5	
49	Occupational Safety Management and Ergonomics	6			6	
50	English B2 module IV	3		3		
51	Mobile Systems in Logistics	3		3		
52	Data Visualization in Logistics	3		3		
53	Distribution Logistics and Logistics Services	4			4	
54	English B2+ module IV	3		3		
55	E-commerce and Cross-Border Trade	4				
56	English C1 module IV	3		3		
57	Logistic Management Concepts	2			2	
58	German B2 module IV	3		3		
59	Quality Management and Standardization in Logistics	6			6	
60	Logistics Application Programming	2			2	
61	Logistics Process Design	4			4	
62	Social and Managerial Issues in English	2		2		2

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
63	Data Warehouses	3		3		
64	Social-Managerial Issues in French	2		2		2
65	Ecologistics	4			4	
66	Databases in Logistics	3		3		
67	Logistic Workshops and Study Visits	2				
68	Data Analytics Using BI Tools	3		3		
69	Social-Managerial Issues in German	2		2		2
70	Storage Systems and Food Storage	8			8	
71	Optimization in Logistics	3		3		
72	Internal Transport Systems and Devices	4			4	
73	Project Management	3			3	
74	Logistics Challenges	7		7	7	
75	Forecasting and Simulations in Logistics	3		3		
76	Business Ethics	3	3	3		
77	Market Access	2		2		
78	Introduction to Sociology	3	3	3		
79	Inventory and Supply Management	5			5	
80	Financial Forecasting in the Enterprise	3		3		
81	Technical Standards and Technical Aspects of Activity	2		2		
82	Traffic Safety	2		2		
83	Research Methodology	2			2	

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
84	Safety Systems in Vehicles	2		2		
85	Modeling in Inventory Management	2			2	
86	Technology Transfer, Commercialization of Research Results and Protection of Intellectual Property	2			2	
87	Logistics Issues in English	1		1		1
88	Logistics Application Design	1		1		
89	Diploma Seminar	3			3	
90	Logistics Issues in French	1		1		1
91	Final Project	15		15	15	
92	Challenges of Supply Chains in the 21st Century	1		1		
93	Logistics Issues in German	1		1		1
94	Sustainable Supply Chain Management	2			2	
95	Logistics Security	1		1		
96	IT Tools in Management	1		1		
97	Internship	6				
98	Interdisciplinary Project	2		2	2	
99	Risk Management	1		1		
100	Change Management	1		1		
101	Improvement and Audit in Quality Management Systems	1		1		

ECTS indicators

Name	Value
The total number of ECTS credits that a student must obtain through elective courses (amounting to no less than 30% of the total ECTS credits required to obtain the qualification corresponding to the given level of study)	72/240 (30%)
The total number of ECTS credits to be earned by a student through courses in the fields of humanities or social sciences	10
The total number of ECTS credits that a student must obtain from courses related to research conducted at the university, amounting to more than 50% of the total ECTS credits required to graduate from a given level of study	174/240 (72.5%)

Methods of verifying and assessing learning outcomes

The verification of the achieved learning outcomes is carried out using various forms of student assessment, appropriate to the categories of knowledge, skills and social competences to which these outcomes relate. The selection of appropriate tools depends on the specifics of the subject and the form of conducting classes and is described in the subject cards. The achievement of the required learning outcomes will be verified using:

- written works (exams, colloquia, reports, essays, projects, reports, diploma thesis, etc.),
- oral statements (oral knowledge tests, public speaking, presentations, etc.),
- practical and/or project tasks (individual and team),
- observation and assessment of students' activity during classes,
- self-assessment and peer assessment of students (especially in the case of team projects),
- competency exam and diploma exam.

The verification may be formative (partial, repeatedly during classes) and/or summative (final grade). The final result of the verification will be given in the applicable grading scale in accordance with the current TUL Study Regulations.

The above-mentioned methods and techniques for verifying the major learning outcomes will be used both during classes at the university and in enterprises during study visits, internships, projects and the implementation of diploma theses. The subject manager together with the persons implementing a given subject is responsible for verifying the learning outcome indicators.

A subject card is developed for each subject specified in the study program, containing, among others:

- learning outcome indicators, depending on the form of classes conducted, including knowledge/skills/social competences,
- methods of verifying indicators adapted to the category of the learning outcome,
- knowledge/skills/social competences defined for the entire field of study, the achievement of which is realized through learning outcome indicators,
- forms and conditions of passing the subject,
- number of ECTS points, number of hours and type of classes,
- recommended literature.

In addition, in addition to the information included in the subject card, in accordance with § 14 sec. 2 of the TUL Study Regulations, each teacher will be required to discuss the content of the subject card during the first class and present students with the subject implementation conditions card, which contains the conditions for passing and prerequisites.

An element that allows for verification of the student's achievement of the major learning outcomes will also be a competency exam conducted in the diploma semester. The assumption of this exam is to verify the knowledge and skills of students in all three areas described in Bloom's taxonomy, which create a comprehensive form of education. The competency exam will be based on a case study and will be conducted by a committee appointed by the Vice-Dean for Student Affairs. Representatives of entrepreneurs may sit on the committee. The result of the competency exam becomes part of the grade for studies, in accordance with the TUL Study Regulations.

The learning outcomes are also verified in the diploma thesis, which is an integral part of the study program.

Professional internships

Students are required to complete a minimum of 6 weeks of internship.

Internships are held in logistics, manufacturing, service and trade enterprises. The aim of the internship is to familiarize students with the scope of the enterprise's activities, its organizational and legal structure, processes implemented in the enterprise and the technical and information technologies used, as well as to familiarize them with the methods of project implementation and problem identification.

Interns must familiarize themselves with and comply with the internship regulations, comply with occupational health and safety regulations; familiarize themselves with the scope of their duties, regulations and rules of conduct, procedures and work methods used in the enterprise; be in constant contact with the internship supervisor from the company, and cooperate skillfully in a team.

After completing the internship, students prepare a written report on the tasks assigned in the enterprise. The number of ECTS points assigned to the professional internship is 6. The internship may be completed by the student before the last semester with the consent of the internship supervisor at the Faculty. The internship must be settled before taking the diploma exam.

Characteristics of the course

Graduate profile

The Logistics major is offered at the Faculty of Organization and Management of the Lodz University of Technology. Some of the classes related to information technologies are conducted by employees of the Faculty of Electrical Engineering, Electronics, Computer Science and Automation.

A graduate of the Logistics major has interdisciplinary education covering competences in the field of logistics, management, use of information technologies, data analysis, design of logistics processes, sustainable development and circular economy. He is prepared to work as a manager specializing in supply chain management, working in logistics and transport departments in logistics, production, trade and service companies. He is able to combine issues in the field of management and the use of information technologies in the entire supply chain. He is prepared to conduct research related to logistics and supply chains. The graduate knows and understands the challenges facing logistics in the field of sustainable development and circular economy. He has engineering knowledge and skills necessary in an economy based on digital solutions. He is able to think strategically, analyze the causes of problems in supply chains and subject them to critical evaluation. Selects organizational, technical and IT solutions, effectively eliminating problems and improving logistics processes.

The study program allows the graduate to obtain the "Certificate of professional competence in road transport".

The graduate is able to take on various roles in a team, is prepared to lead it. Has language competences in the field of management and quality science and ICT technology, in accordance with the requirements specified for level B2 of the Common European Framework of Reference for Languages.

The graduate understands the need for continuous and in-depth expansion of their professional competences, in accordance with current trends and needs of the labor market.

A graduate of the Logistics major is a specialist with interdisciplinary preparation, with professional competences that give the opportunity to take up work in various areas of broadly understood logistics, both in large enterprises and small companies, is also prepared in the field of running their own business.

Examples of positions in which a graduate can be employed:

- logistics specialist,
- transport management specialist,
- supply specialist,
- purchasing specialist,
- warehouse management specialist,
- freight forwarder,
- internal transport specialist,
- supply chain coordinator,
- warehouse manager,
- logistics process engineer,
- demand forecasting specialist,
- logistics consultant,
- inventory management specialist,
- quality engineer in logistics,
- sustainable development specialist in logistics,
- packaging management specialist,
- production planner,
- data analyst.

Graduates may continue their education in second-cycle studies at the Faculty of Organization and Management of the Lodz University of Technology, in related fields, as well as undertake second-cycle studies at other faculties of the Lodz University of Technology or outside the Lodz University of Technology.

The relationship between the field of study and the university's strategy

Education in the field of Logistics is in line with the mission of the Lodz University of Technology formulated in the university strategy for the years 2025-2030, because:

- it ensures the education of interdisciplinary specialists who contribute to the construction of a knowledge-based economy in accordance with the principles of sustainable development, minimizing the negative impact of logistics processes on the natural environment and improving the quality of life of residents. Graduates use the latest achievements of science and technology, know innovative solutions and are able to apply them in practice,
- classes in the field of Logistics are conducted using modern methods of education combined with business practice,
- graduates are very well assessed by employers due to their good preparation for the challenges posed to them by the labor market,
- the field study Logistics is conducted in close cooperation with local and global enterprises, taking into account diversity and multiculturalism,
- the field of study is also in line with the Regional Smart Specialization for the Lodz province, which is Mobility and logistics of the future.

The Logistics major allows for the implementation of the goal set out in the TUL strategy in the field of Sustainability, as it supports scientific research and the education of staff for the economy supporting the achievement of sustainable development goals.

Educational objectives and employment and continuing education opportunities

Educational objectives

1. Developing interdisciplinary competences of graduates in the field of logistics, management, information technology, data analysis and design of logistics processes.
2. Preparing graduates to work in managerial positions related to supply chain management, in logistics and transport departments in logistics, production, trade and service enterprises.
3. Developing skills in integrating knowledge from management and information technology in order to optimize processes throughout the supply chain.
4. Developing research competences in the area of logistics and supply chain management, enabling analysis and development of innovative solutions.
5. Increasing awareness of the challenges of sustainable development and the circular economy that contemporary logistics face.
6. Developing engineering knowledge and digital skills necessary to function in an economy based on modern technologies.
7. Shaping strategic thinking and analytical skills, enabling identification of problems in supply chains and their critical assessment.
8. Preparation for the selection and implementation of organizational, technical and IT solutions leading to effective problem solving and improvement of logistics processes.

Employment opportunities and continuing studies

A graduate of Logistics can take up employment in various areas of broadly understood logistics and supply chain, both in large and small manufacturing, trade and service enterprises, including logistics. He is also prepared to run his own business.

A graduate can continue his education in second-cycle studies at the Faculty of Organization and Management of the Lodz University of Technology, in related fields, as well as take up second-cycle studies in other faculties of the Lodz University of Technology or outside the Lodz University of Technology. A graduate can also continue his education in postgraduate studies.

Description of the process and outcome of consultations on the proposed study program with the socio-economic environment

In the process of modifying the study program in the field of Logistics, consultations were held with representatives of the socio-economic environment, including analysis of the labor market and surveys of enterprises, using the Business Council operating at the Faculty of Organization and Management and, above all, the LODZistics Cluster of the Logistics Business Network of Central Poland. A review of current job offers from the industry and industry reports was conducted, including those presenting competences of the future, skills desired in logistics, with particular emphasis on digital competences and in the field of transport processes, soft skills, as well as those related to sustainable development and circular economy. The results of the interviews and assessments of the current program allowed us to draw conclusions that the current program requires minor corrections and expansion in the field of digital competences and care for the development of soft skills in students.

Employers indicated high competences of students and graduates, which is confirmed by the fact that most students start professional activity from the second year of studies.

One of the suggestions was to consider changing the education profile to a practical one and introducing part-time studies.

As part of the consultations on the study program, consultations were also held with students and graduates. Students and graduates

indicated the need to change the order of some subjects (e.g. logistics workshops and study visits), increase the practical aspects of classes and meetings with practitioners. On this basis, the so-called "Workshop Band" was introduced at the Faculty of Organization and Management, which is provided for in the class schedule, and within the framework of which representatives of many companies conduct workshops, trainings, lectures and meetings for students. Students and graduates drew attention to the excessive number of programming languages they encounter during their studies, which has been limited in the new program.

Consultations showed a good connection between the study program and business practice, students' acquisition of competences in the field of data analysis. Unfortunately, students of higher semesters complained about the large number of classes at the University.

The opinions of all stakeholders, including employees of the Faculty of Organization and Management, were taken into account in the modification of the study program, which will contribute to increasing the competences of graduates on the labor market.

Description of competencies expected from a candidate applying for admission to studies

Candidates are accepted for the first-cycle studies in the Logistics field of study after a qualification procedure, which is based on the results of the exam entered in the secondary school leaving certificate or equivalent (obtained outside the Polish education system) in the subjects required for qualification for this field of study (mathematics, foreign language and - to choose an additional subject in accordance with the resolution of the Senate of the Lodz University of Technology). A vocational diploma of a technician is also taken into account in accordance with the resolution of the Senate of the Lodz University of Technology. Admission to studies in the recruitment procedure is based on the ranking list (except for participants in olympiads and competitions) prepared by the University Recruitment Committee, which is based on the conversion of results from the qualifying subjects for a given field of study.

Admission to first-cycle studies in the Logistics field of study, which is on the list of fields of study whose students can apply for admission to studies in the confirmation of learning outcomes procedure, is also possible in the confirmation of learning outcomes procedure after a qualification procedure, which is based on the decision of the committee on the confirmation of learning outcomes.

The unit organizing education

Faculty of Organization and Management

Education program

Semester 1

Course	Number of hours	ECTS points	Form of verification	Obligatory
Management	Tutorials: 30 Lecture: 30	4	Exam	Obligatory
Economics	Tutorials: 30 Lecture: 30	4	Graded assignment	Obligatory
Basics of Logistics	Tutorials: 30 Lecture: 30	4	Exam	Obligatory
Physics	Laboratory classes: 45 Lecture: 15	5	Graded assignment	Obligatory
Mathematics I	Tutorials: 60 Lecture: 30	7	Graded assignment	Obligatory
Engineering Graphics and Computer Aided Design	Laboratory classes: 45 Lecture: 15	3	Graded assignment	Obligatory
Digitalization and Cybersecurity	Laboratory classes: 15 E-learning: 30	3	Graded assignment	Obligatory
Sum	435	30		

Semester 2

Course	Number of hours	ECTS points	Form of verification	Obligatory
Logistics Costs	Tutorials: 30 Lecture: 15	3	Graded assignment	Obligatory
Mathematics II	Tutorials: 30 Laboratory classes: 30 Lecture: 30	7	Exam	Obligatory

Course	Number of hours	ECTS points	Form of verification	Obligatory
Basics of Programming	Laboratory classes: 30	3	Graded assignment	Obligatory
Business Process Modeling	Laboratory classes: 30 Project work: 15 Lecture: 15	5	Graded assignment	Obligatory
Marketing	Tutorials: 15 Lecture: 15	3	Exam	Obligatory
Foreign Language Module 1		2	Graded assignment	Obligatory group
The student chooses one module from the group.				
English B2 module I	Tutorials: 30	2	Graded assignment	Optional
English C1 module I	Tutorials: 30	2	Graded assignment	Optional
English B2+ module I	Tutorials: 30	2	Graded assignment	Optional
German B2 module I	Tutorials: 30	2	Graded assignment	Optional
Elective Courses 1		3	Graded assignment	Obligatory group
The student chooses 1 subject.				
Environmental Emissions of Logistics	Laboratory classes: 15 Project work: 15 Lecture: 15	3	Graded assignment	Optional
Acoustic Impact of Logistic Processes	Laboratory classes: 15 Project work: 15 Lecture: 15	3	Graded assignment	Optional
Elective Courses 2		4	Graded assignment	Obligatory group
The student chooses 4 subjects.				
Civil Law	Lecture: 15	1	Graded assignment	Optional
Commercial Law	Lecture: 15	1	Graded assignment	Optional
Social Law	Lecture: 15	1	Graded assignment	Optional
Tax Law	Lecture: 15	1	Graded assignment	Optional
Administrative Law	Lecture: 15	1	Graded assignment	Optional

Course	Number of hours	ECTS points	Form of verification	Obligatory
Physical Education 1	Tutorials: 30	0	Pass	Obligatory
Sum	420	30		

Semester 3

Course	Number of hours	ECTS points	Form of verification	Obligatory
Legal and Customs Aspects in Supply Chains	Tutorials: 15 Lecture: 15	3	Exam	Obligatory
Organization of Transport Processes	Tutorials: 15 Laboratory classes: 15 Project work: 15 E-learning: 30	7	Exam	Obligatory
Commodity Science	Tutorials: 15 Lecture: 30	4	Graded assignment	Obligatory
Logistics Teams Management	Tutorials: 30 Lecture: 30	4	Graded assignment	Obligatory
Modeling of Transport Processes	Laboratory classes: 30 Lecture: 15	4	Graded assignment	Obligatory
Artificial Intelligence	E-learning: 45	3	Graded assignment	Obligatory
Elective Courses 3		3	Graded assignment	Obligatory group
The student chooses 1 subject.				
Human Beings in Digital Civilization	Tutorials: 30 Lecture: 15	3	Graded assignment	Optional
Critical Thinking	Tutorials: 30 Lecture: 15	3	Graded assignment	Optional
Foreign Language Module 2		2	Graded assignment	Obligatory group
The student chooses one module from the group.				

Course	Number of hours	ECTS points	Form of verification	Obligatory
German B2 module II	Tutorials: 30	2	Graded assignment	Optional
English B2 module II	Tutorials: 30	2	Graded assignment	Optional
English B2+ module II	Tutorials: 30	2	Graded assignment	Optional
English C1 module II	Tutorials: 30	2	Graded assignment	Optional
Physical Education 2	Tutorials: 30	0	Pass	Obligatory
Sum	405	30		

Semester 4

Course	Number of hours	ECTS points	Form of verification	Obligatory
Production Logistics	Laboratory classes: 30 Lecture: 30	5	Exam	Obligatory
Product and Packaging Life Cycle	Tutorials: 30 Laboratory classes: 15 Project work: 15 Lecture: 30	6	Graded assignment	Obligatory
Supply Chain Security Management	Project work: 15 Lecture: 15	3	Graded assignment	Obligatory
Data Analysis in Logistics	Laboratory classes: 30	2	Graded assignment	Obligatory
Communication and Electronic Identification Systems	Laboratory classes: 30 Lecture: 30	5	Exam	Obligatory
Elective Courses 4		3	Graded assignment	Obligatory group
The student chooses 1 subject (from the group or from ECIU).				
Modern IT Technologies in Logistics	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Business Activities and Company Finance Management	Tutorials: 30 Lecture: 15	3	Graded assignment	Optional

Course	Number of hours	ECTS points	Form of verification	Obligatory
Elective Course 5		4	Graded assignment	Obligatory group
The student chooses 1 subject.				
Negotiations in Logistics	Tutorials: 30 Lecture: 15	4	Graded assignment	Optional
Business Activity and Financial Management of an Enterprise	Tutorials: 30 Lecture: 15	4	Graded assignment	Optional
Foreign Language Module 3		2	Graded assignment	Obligatory group
The student chooses one module from the group.				
German B2 module III	Tutorials: 30	2	Graded assignment	Optional
English B2 module III	Tutorials: 30	2	Graded assignment	Optional
English B2+ module III	Tutorials: 30	2	Graded assignment	Optional
English C1 module III	Tutorials: 30	2	Graded assignment	Optional
Sum	390	30		

Semester 5

Course	Number of hours	ECTS points	Form of verification	Obligatory
Occupational Safety Management and Ergonomics	Tutorials: 15 Laboratory classes: 30 Lecture: 30	6	Graded assignment	Obligatory
Distribution Logistics and Logistics Services	Tutorials: 15 Lecture: 30	4	Exam	Obligatory
E-commerce and Cross-Border Trade	Laboratory classes: 30 Lecture: 30	4	Graded assignment	Obligatory
Logistic Management Concepts	Tutorials: 15 Lecture: 15	2	Graded assignment	Obligatory

Course	Number of hours	ECTS points	Form of verification	Obligatory
Quality Management and Standardization in Logistics	Tutorials: 30 Laboratory classes: 30 Lecture: 30	6	Exam	Obligatory
Logistics Application Programming	Laboratory classes: 30	2	Graded assignment	Obligatory
Foreign Language Module 4		3	Exam	Obligatory group
The student chooses one module from the group.				
English B2 module IV	Tutorials: 30	3	Exam	Optional
English B2+ module IV	Tutorials: 30	3	Exam	Optional
English C1 module IV	Tutorials: 30	3	Exam	Optional
German B2 module IV	Tutorials: 30	3	Exam	Optional
Elective Courses 6		3	Graded assignment	Obligatory group
The student chooses 1 subject.				
Mobile Systems in Logistics	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Data Visualization in Logistics	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Physical Education 3	Tutorials: 30	0	Pass	Obligatory
Sum	435	30		

Semester 6

Course	Number of hours	ECTS points	Form of verification	Obligatory
Logistics Process Design	Project work: 30 Lecture: 15	4	Graded assignment	Obligatory
Ecologistics	Laboratory classes: 15 Project work: 15 Lecture: 15	4	Exam	Obligatory

Course	Number of hours	ECTS points	Form of verification	Obligatory
Logistic Workshops and Study Visits	Seminar: 30	2	Graded assignment	Obligatory
Storage Systems and Food Storage	Laboratory classes: 15 Project work: 30 Lecture: 15 E-learning: 30	8	Exam	Obligatory
Internal Transport Systems and Devices	Laboratory classes: 15 Project work: 15 Lecture: 15	4	Exam	Obligatory
Project Management	Tutorials: 15 Project work: 15 Lecture: 15	3	Graded assignment	Obligatory
Elective Courses 7		2	Graded assignment	Obligatory group
The student chooses 1 subject (from the group or from ECIU).				
Social and Managerial Issues in English	E-learning: 30	2	Graded assignment	Optional
Social-Managerial Issues in French	E-learning: 30	2	Graded assignment	Optional
Social-Managerial Issues in German	E-learning: 30	2	Graded assignment	Optional
Elective Courses 8		3	Graded assignment	Obligatory group
The student chooses 1 subject.				
Data Warehouses	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Databases in Logistics	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Data Analytics Using BI Tools	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Optimization in Logistics	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Sum	375	30		

Semester 7

Course	Number of hours	ECTS points	Form of verification	Obligatory
Logistics Challenges	Project work: 75	7	Graded assignment	Obligatory subjects to choose from
Inventory and Supply Management	Tutorials: 15 Laboratory classes: 15 Lecture: 30	5	Exam	Obligatory
Research Methodology	Seminar: 30	2	Graded assignment	Obligatory
Modeling in Inventory Management	Laboratory classes: 30 Lecture: 15	2	Graded assignment	Obligatory
Technology Transfer, Commercialization of Research Results and Protection of Intellectual Property	Tutorials: 15 Lecture: 30	2	Graded assignment	Obligatory
Elective Courses 9		3	Graded assignment	Obligatory group
The student chooses 1 subject.				
Forecasting and Simulations in Logistics	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Financial Forecasting in the Enterprise	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Elective Courses 10		3	Graded assignment	Obligatory group
The student chooses 1 subject.				
Business Ethics	Tutorials: 15 Lecture: 30	3	Graded assignment	Optional
Introduction to Sociology	Tutorials: 15 Lecture: 30	3	Graded assignment	Optional
Elective Courses 11		6	Graded assignment	Obligatory group
The student chooses 3 subjects (from the group or from ECIU).				
Market Access	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional

Course	Number of hours	ECTS points	Form of verification	Obligatory
Technical Standards and Technical Aspects of Activity	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Traffic Safety	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Safety Systems in Vehicles	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Sum	435	30		

Semester 8

Course	Number of hours	ECTS points	Form of verification	Obligatory
Diploma Seminar	Seminar: 30	3	Graded assignment + exam	Obligatory
Final Project	Diploma Thesis: 0	15	Pass	Obligatory subjects to choose from
Sustainable Supply Chain Management	Project work: 30 Lecture: 15	2	Graded assignment	Obligatory
Internship	Internship: 0	6	Pass	Obligatory
Interdisciplinary Project	Project work: 30	2	Graded assignment	Obligatory subjects to choose from
Elective Courses 12		1	Graded assignment	Obligatory group
The student chooses 1 subject (from the group or from ECIU).				
Logistics Issues in English	E-learning: 15	1	Graded assignment	Optional
Logistics Issues in French	E-learning: 15	1	Graded assignment	Optional
Logistics Issues in German	E-learning: 15	1	Graded assignment	Optional
Elective Courses 13		1	Graded assignment	Obligatory group

Course	Number of hours	ECTS points	Form of verification	Obligatory
The student chooses 1 subject (from the group or from ECIU).				
Logistics Application Design	Project work: 15	1	Graded assignment	Optional
Challenges of Supply Chains in the 21st Century	Tutorials: 15	1	Graded assignment	Optional
Logistics Security	Tutorials: 15	1	Graded assignment	Optional
IT Tools in Management	Laboratory classes: 15	1	Graded assignment	Optional
Risk Management	Tutorials: 15	1	Graded assignment	Optional
Change Management	Tutorials: 15	1	Graded assignment	Optional
Improvement and Audit in Quality Management Systems	Tutorials: 15	1	Graded assignment	Optional
Sum	135	30		