Lodz University of Technology

Study programme

Faculty:	Faculty of Organization and Management
Major:	Digital Management (in English)
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:	Digital Management (in English)
Level of study:	first-cycle programme (inżynier)
Study profile:	practical
Form of studies:	full-time studies
Duration of studies (number of semesters):	7
The number of ECTS points required to complete studies:	210
Total number of hours of classes:	2625
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:	105
Professional title awarded to graduates:	inżynier
ISCED code:	0413
Language of study:	English

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

Discipline	Percentage share
Management science and quality	62%
Technical computing and telecommunications	38%

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	**1DMO1**	Has advanced knowledge and understanding of the basic sciences and theoretical foundations of computer science, as well as selected topics from various areas of computer science, and has knowledge of key digital technologies, including artificial intelligence and machine learning, human-computer interaction, immersive technologies, and management decision support systems.	P6U_W	P6S_WG, P6S_WG_inż
2	**1DMO2**	Has advanced knowledge and understanding of selected theories, principles, methods, and tools supporting decision-making and management processes, and also has knowledge of selected detailed issues, including those related to the management of digital organisations, and is able to apply this knowledge in professional practice.	P6U_W	P6S_WG, P6S_WK, P6S_WG_inż
3	**1DMO3**	At an advanced level, he/she knows and understands the principles of planning, undertaking, and conducting business activities and the processes of change occurring in business as a result of the widespread use of digital and Internet technologies, taking into account aspects of intellectual property protection.	P6U_W	P6S_WK, P6S_WK_inż
4	**1DMO4**	Has advanced knowledge and understanding of the non-technical conditions for conducting engineering activities in the digital economy, including social and ethical aspects and the principles of sustainable development.	P6U_W	P6S_WK, P6S_WG_inż
5	**1DMO5**	Is able to select, design, implement, and evaluate technologies and digital tools supporting the management of organisations, as well as identify new business opportunities based on collected, processed, and analysed digital data, business analyses, and market research.	P6U_U	P6S_UW, P6S_UW_inż
6	**1DMO6**	Is able to use his/her knowledge to plan, undertake, and run business activities, with particular emphasis on activities based on information technologies, including modelling, simulations, and business analyses.	P6U_U	P6S_UW, P6S_UW_inż
7	**1DMO7**	Is able to analyse complex problems in the field of digital management and propose solutions, using planned and conducted research, as well as interpreting the obtained results, formulating conclusions, and performing critical analysis, recognising their importance and the need for implementation for the functioning of a business organisation in the digital environment.	P6U_U	P6S_UW, P6S_UW_inż
8	**1DMO8**	Is able to plan his/her own work and the work of professional team members, including business, interdisciplinary, and distributed/virtual teams, as well as participate in debates, present the results of his/her own work, and communicate in a clear and understandable way, also in a foreign language at level B2 of the Common European Framework of Reference for Languages.	P6U_U	P6S_UK, P6S_UO, P6S_UU, P6S_UW_inż

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
9	**1DMO9**	Is ready to consciously play an active role in a digital organisation, striving to improve the quality of life of stakeholders and sustainable development by initiating and promoting modern digital solutions in IT and business projects.	P6U_K	P6S_KO, P6S_KR
10	**1DMO10**	Is ready to critically evaluate the knowledge possessed and the content received to solve managerial problems and ethical dilemmas related to initiated and conducted projects within the digital society.	P6U_K	P6S_KK, P6S_KR

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

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
1	Mathematics I	Matrices. Determinants. Systems of linear equations. Properties of functions. Sequences. Derivatives of functions. Differential of functions. Indefinite and definite integral.	x						x	x		
2	C1 Business Communication for Engineers 1	Selected lexical and grammatical structures; topics relevant to the academic and professional environments of university graduates; improving receptive and productive language skills; developing essential soft skills required in the workplace.								x		x
3	C2 Business Communication for Engineers 1	Selected lexical and grammatical structures; topics relevant to the academic and professional environments of university graduates; improving receptive and productive language skills; developing essential soft skills required in the workplace.								x		x
4	Physics	Energy. Motion. Vibrations. Waves. Acoustics. Electromagnetism. Optics. Quantum mechanics.	x						x	x		
5	Techno-Humanities	The role of humans in development. Environmental challenges. Social models. Legal aspects of governance in the digital economy. Critical analysis of internet content.				x				x		x
6	Digital Organization	Digital organization. Building a digital organization. Building an online community. Campaigns. Communication. The essence of negotiation.		x			x			x		
7	Information Technology	Operating systems, local and access networks, internet services, office suites, open source software, programming and programming languages, algorithmics.	x				x		x			
8	Mathematics II	Complex numbers. Elements of probability theory. Statistics.	x						x	x		
9	Microeconomics					x				x		x
10	C1 Business Communication for Engineers 2	Selected lexical and grammatical structures; topics relevant to the academic and professional environments of university graduates; improving receptive and productive language skills; developing essential soft skills required in the workplace.								x		x
11	C2 Business Communication for Engineers 2	Selected lexical and grammatical structures; topics relevant to the academic and professional environments of university graduates; improving receptive and productive language skills; developing essential soft skills required in the workplace.								x		x
12	Engineering Drawing and Modelling (CAD)	Engineering software. 2D and 3D graphics. Manufacturing using CAD systems. Additive methods.						x		x		
13	Critical Thinking					x				x		x

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
14	Fundamentals of Management in Digital Organizations	Organizational management. Types of managers. Types of organizational structures. The process of planning, organizing, motivating, and controlling an organization.		x			x		x			
15	Economics for Engineers					x				x		x
16	Finance and Digital Accounting	Digital accounting. Digitalization of financial data. Financial management. Business models. Functioning of digital companies. Interest rate. Project efficiency assessment.			x		x	x				
17	Human Resources Management	Human resource planning and development. Compensation and benefits. Industrial relations. Law.		x			x			x		
18	Fundamentals of Artificial Intelligence	Neural networks. Types of networks. Training networks. Building a model. Analyzing results. Techniques for creating effective prompts for AI.	x				x		x	x		
19	Circular Economy					x				x		x
20	Digital Marketing	Online marketing. Consumer behavior. Marketing research methods. Analytical tools. Campaign planning, Results monitoring.		x	x		x	x	x			
21	German A2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
22	Sustainable Development					x				x		x
23	Digital Transformation of Enterprise				x		x	x				
24	German B1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
25	German B2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
26	Occupational Safety and Health	Legal protection of work. Employer and employee obligations. Standardization of systems. Assessment of occupational risk. Occupational health and safety costs. Occupational health and safety culture.				x				x	x	
27	Environmental Impact Assessment					x				x		x
28	Digital Business Management Tools and Techniques	Methods and techniques of managing a digital organization. Strategic assessment of the functioning of a digital organization. Methods of analysis in the management process.		x	x		x		x	x		

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
29	Spanish A2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
30	Fundamentals of Human-Computer Interaction		x				x		x	x		
31	Spanish B1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
32	Spanish B2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
33	French A2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
34	French B1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
35	French B2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
36	Italian A1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
37	Italian A2 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
38	German A1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
39	Spanish A1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
40	French A1 block I	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
41	Modeling Simulation in Process Management						x	x	x			
42	German A2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
43	German B1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
44	Entrepreneurship	Digital entrepreneurship. Starting and running a business. Startups. Digital innovation. Trade concepts. Big data in business. Product management. Ethical aspects.			x		x	x				
45	German B2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
46	Technology Management				x			x	x			
47	Spanish A2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
48	Business Simulation Games and Data Analysis						x	x	x			
49	Spanish B1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
50	Data Intelligence	Analysis and interpretation of data from various sources. IoT systems, biometric sensors (EEG, EMG, eye tracking), environmental sensors. Data quality. Interpretation of results. Data visualization tools. Databases. SQL query language. Creating and modifying table structures. Programming database servers.	x				x		x	x		
51	Spanish B2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
52	French A2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
53	French B1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
54	French B2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
55	Italian A1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
56	Italian A2 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
57	German A1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
58	Spanish A1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
59	French A1 block II	Selected lexical and grammatical structures at different levels; topics relevant to academic mobility within the Erasmus+ programme; improvement of all language skills; development of the necessary interpersonal competences required in an international environment.								x		x
60	Marketing Research			x	x		x	x	x			

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
61	Environmental Performance of Enterprises					x				x		
62	Methods of Measuring Customer Satisfaction					x			x			
63	Logical Basis of Thinking and Communication					x				x		
64	Modelling Production Systems						x	x	x			
65	New Technologies in the Industry 4.0						x	x	x			
66	Product and Service Design in the Era of AI and Industry 5.0				x			x	x			
67	E-commerce			x	x		x	x	x			
68	Financial Forecasting						x	x	x			
69	Leadership in the Digital Era			x	x		x	x	x			
70	Evidence-Based Management			x			x			x		
71	Negotiations in Business in the Digital Era			x			x			x		
72	People Analytics			x			x			x		
73	Financial Markets and Digital Business Perspectives			x	x		x	x	x			
74	Artificial Neural Networks in Economic Prediction						x		x			
75	Internship I	Acquiring practical knowledge and new professional competencies in the natural conditions of the workplace.								x	x	
76	Capstone Module (PBL)	Project (CBL, PBL) - issues related to the field of study and verification of the achievement of learning outcomes specified for a given study program, including standardization issues.	x	x	x	x	x	x	x	x		

No.	Course name	Program content	1DMO1	1DMO2	1DMO3	1DMO4	1DMO5	1DMO6	1DMO7	1DMO8	1DMO9	1DMO10
77	Low-code/No-code Tools in Business Solutions	Design, develop and implement business applications using low-code and no-code platforms. Workflow automation.					x	x	x			
78	Project Management	Agile methodology. Scrum and Kanban techniques. Project planning, monitoring and evaluation. Multicultural teams.			x		x	x	x	x		
79	User Experience Design	Research methods used in informatics and digital technology with a human-centered approach. Understanding the needs and expectations of users, analyzing their experiences related to Form of classes: CBL.	x				x		x	x		
80	Human-AI Cooperation	Interactions between humans and artificial intelligence. Models of human-AI cooperation. Working with technologies: language models (LLM), generative AI, recommender systems, chatbots, AI supporting decision-making, business process automation, AI ethics.	x				x		x	x		
81	Diploma Thesis	Solution of a complex engineering task and preparation of a report on this task in the form of a thesis, and presentation of the assumptions and results of this work. Preparation of an engineering thesis in accordance with accepted standards and its defense.					x	x	x			
82	Legal Aspects of Digital Management						x	x	x			
83	Quality Management in the Digital Word						x	x	x			
84	Internship II	Acquiring practical knowledge and new professional competencies in the natural conditions of the workplace.								x	x	
85	Diploma Seminar	Requirements for engineering thesis. Methodology of writing an engineering thesis. Concept and layout of the content of the thesis. Discussion of the problems of the thesis area selected by the graduate student.		x	x				x	x		
86	Customer Relationship Management (CRM)						x	x	x			
87	AI for Business						x	x	x			
88	Digitalization in Logistics						x	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	Mathematics I	7				7
2	C1 Business Communication for Engineers 1	3		3		3
3	C2 Business Communication for Engineers 1	3		3		3
4	Physics	5				5
5	Techno-Humanities	5	5			5
6	Digital Organization	3			3	3
7	Information Technology	7			7	7
8	Mathematics II	7				7
9	Microeconomics	2	2	2		2
10	C1 Business Communication for Engineers 2	2		2		2
11	C2 Business Communication for Engineers 2	2		2		2
12	Engineering Drawing and Modelling (CAD)	2			2	2
13	Critical Thinking	2	2	2		2
14	Fundamentals of Management in Digital Organizations	3				3
15	Economics for Engineers	2	2	2		2
16	Finance and Digital Accounting	6			6	6
17	Human Resources Management	2				2
18	Fundamentals of Artificial Intelligence	6			6	6
19	Circular Economy	3		3	3	3
20	Digital Marketing	7			7	7

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
21	German A2 block I	3		3		3
22	Sustainable Development	3		3	3	3
23	Digital Transformation of Enterprise	3			3	3
24	German B1 block I	3		3		3
25	German B2 block I	3		3		3
26	Occupational Safety and Health	1				1
27	Environmental Impact Assessment	3		3	3	3
28	Digital Business Management Tools and Techniques	6			6	6
29	Spanish A2 block I	3		3		3
30	Fundamentals of Human-Computer Interaction	7			7	7
31	Spanish B1 block I	3		3		3
32	Spanish B2 block I	3		3		3
33	French A2 block I	3		3		3
34	French B1 block I	3		3		3
35	French B2 block I	3		3		3
36	Italian A1 block I	3		3		3
37	Italian A2 block I	3		3		3
38	German A1 block I	3		3		3
39	Spanish A1 block I	3		3		3
40	French A1 block I	3		3		3
41	Modeling Simulation in Process Management	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
42	German A2 block II	3		3		3
43	German B1 block II	3		3		3
44	Entrepreneurship	6			6	6
45	German B2 block II	3		3		3
46	Technology Management	4			4	4
47	Spanish A2 block II	3		3		3
48	Business Simulation Games and Data Analysis	7			7	7
49	Spanish B1 block II	3		3		3
50	Data Intelligence	8			8	8
51	Spanish B2 block II	3		3		3
52	French A2 block II	3		3		3
53	French B1 block II	3		3		3
54	French B2 block II	3		3		3
55	Italian A1 block II	3		3		3
56	Italian A2 block II	3		3		3
57	German A1 block II	3		3		3
58	Spanish A1 block II	3		3		3
59	French A1 block II	3		3		3
60	Marketing Research	3		3	3	3
61	Environmental Performance of Enterprises	2		2	2	2
62	Methods of Measuring Customer Satisfaction	1		1	1	1

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
63	Logical Basis of Thinking and Communication	2		2		2
64	Modelling Production Systems	3		3	3	3
65	New Technologies in the Industry 4.0	4		4	4	4
66	Product and Service Design in the Era of AI and Industry 5.0	2		2	2	2
67	E-commerce	2		2	2	2
68	Financial Forecasting	2		2	2	2
69	Leadership in the Digital Era	3		3	3	3
70	Evidence-Based Management	2		2	2	2
71	Negotiations in Business in the Digital Era	3		3	3	3
72	People Analytics	2		2	2	2
73	Financial Markets and Digital Business Perspectives	4		4	4	4
74	Artificial Neural Networks in Economic Prediction	1		1	1	1
75	Internship I	12			12	12
76	Capstone Module (PBL)	7		7	7	7
77	Low-code/No-code Tools in Business Solutions	2			2	2
78	Project Management	2			2	2
79	User Experience Design	5			5	5
80	Human-AI Cooperation	2			2	2
81	Diploma Thesis	15		15	15	15
82	Legal Aspects of Digital Management	1		1		1
83	Quality Management in the Digital Word	1		1		1

No.	Course name	ECTS	Subjects in the field of humanities and social sciences	Elective subjects	Profile items	Classes in a foreign language
84	Internship II	12			12	12
85	Diploma Seminar	2				2
86	Customer Relationship Management (CRM)	1		1		1
87	AI for Business	1		1		1
88	Digitalization in Logistics	1		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)	69/210 (32.86%)
The total number of ECTS credits to be earned by a student through courses in the fields of humanities or social sciences	7
The total number of ECTS credits that a student must obtain from courses developing practical skills, amounting to more than 50% of the total ECTS credits required to graduate from a given level of study	158.93/210 (75.68%)

Methods of verifying and assessing learning outcomes

The verification of achieved learning outcomes requires the use of diverse assessment methods appropriate to the categories of knowledge, skills, and social competencies to which these outcomes pertain. The selection of suitable tools also depends on the specific nature of the subject and the format of the classes and is described in detail in the course syllabi. The achievement of the required learning outcomes is assessed through:

1. Written assignments (exams, quizzes, reports, essays, projects, posters, thesis, etc.);
2. Oral assessments (oral exams, public speaking, e.g., delivering a paper, presentation, etc.);
3. Practical and/or project-based tasks (both individual and group work);
4. Observation and evaluation of students' participation and activity during classes;
5. Self-assessment and peer evaluation (especially in the case of group projects);
6. Competency exams and final diploma examinations.

Verification can be formative (partial, conducted multiple times during the course) and/or summative (final grade assessment). The final verification result is given according to the currently applicable grading scale.

The course coordinator or instructor is required to present the course syllabus during the first class and to clearly define and formally communicate the assessment methods and conditions for verifying learning outcomes.

Professional internships

Duration: 6 months

ECTS credits: 24

Internships are carried out in accordance with the study program in a format adapted to the profile and specifics of the field of study, following the regulations set by the faculty and the university.

Characteristics of the course

Graduate profile

A graduate of the Digital Management programme is a person proficient in navigating the conditions of the digital economy. They understand the modern world and the contemporary customer, as well as the surrounding smart technologies, such as artificial intelligence (AI), the metaverse, immersive technologies (AR, VR, XR, and MR), social media, and automation and robotics, which are transforming the functioning of companies. The graduate possesses knowledge in the engineering sciences, including computer science, programming, modelling, reverse engineering, databases, intelligent sensors, and human-computer and human-AI interactions. At the same time, they have competencies in managing digital organisations as well as in economics, finance, marketing, project management, and communication in the digital world. The graduate is proficient in using modern information systems that support decision-making processes in businesses, such as business applications or software for simulating business processes, data analysis, and statistical processing, as well as cloud-based systems for managing enterprise finances. Additionally, they understand the principles of human-computer interaction, the basics of programming, engineering modelling software, and reverse engineering technologies in business. The graduate is highly skilled in the digital world and recognises the development opportunities for every organisation that arise from the phenomenon of digital transformation. Furthermore, the programme's English delivery enables graduates to function confidently in an international environment.

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

Education in the Digital Management programme aligns with the mission of the Lodz University of Technology, as outlined in the university's strategy for 2025-2030. The mission focuses on building a sustainable research university based on modern forms of education and innovations that bring benefits to society on a regional, national, and global scale. Providing opportunities to acquire knowledge, skills, experiences, and social competencies at the highest level in this programme will enable the achievement of both general and specific objectives set in relation to key areas of development at the university. The creation of this new programme and the preparation of young, ambitious managers who stand out with their knowledge of the latest solutions in digital management, as well as their openness to the challenges of the contemporary market environment, clearly contribute to the realisation of the university's goals in the following areas: innovation, impact on the socio-economic environment, talent, sustainable development, education, internationalisation, and students.

Education in the Digital Management programme, utilising the latest teaching methods, will facilitate the development of talents by discovering and nurturing students' abilities and individual passions, as well as focusing their intellectual, creative, and social potential for the common good of the university community and society at large. Including this programme in the educational offerings of the Lodz University of Technology will allow the university to distinguish itself from other academic institutions, enhance its positive image, and make it an even more valuable partner for business representatives, local governments, and other academic institutions. It will also increase its attractiveness as a unique place of study for both Polish and international young enthusiasts of digital management.

Therefore, the implementation of the Digital Management programme will strategically support the goals outlined in the development strategy of the Lodz University of Technology for 2025-2030.

Educational objectives and employment and continuing education opportunities

The goal of launching the Digital Management programme is to prepare professional specialists in digital management with exceptional hard engineering competencies and soft skills in the area of the latest organisational and managerial solutions. These specialists will be proficient in operating in the virtual environment and capable of shaping it.

The prepared curriculum for the Digital Management programme consists of two parts – a managerial part and a specialisation part in information technologies.

Education in this programme will be based on attractive forms and methods of teaching, such as Design Thinking, Problem-Based Learning, Challenge-Based Learning, and Flipped Education, while also considering the digital transformation of the courses, which will be conducted as distance learning.

In the consultation phase before developing the curriculum for the Digital Management program, consultations were held with the socio-economic environment and based on available reports on future trends in the job market. As a result of the consultations and the analysis of available documents, the report "Analysis of the Needs for Launching the Digital Management Program at the Faculty of Organisation and Management of the Lodz University of Technology" was created. The Education Department at the Lodz University of

Technology received this report. The report identified potential professions for digital management graduates, such as:

1. Data Analyst and Data Scientist – individuals responsible for analysing and interpreting large datasets to support decision-making processes.
2. AI and Machine Learning Specialists are individuals who are engaged in the development and implementation of artificial intelligence and machine learning algorithms.
3. Software Programmer and Analyst – creating new applications and software systems and developing existing digital solutions.
4. Process Automation Specialist – responsible for implementing automation in companies, particularly in industrial and technological sectors.
5. Data Security Specialist (Cybersecurity) – protecting systems and data from cyberattacks and managing digital risks.
6. UX/UI Designer – designing user interactions with digital systems and ensuring positive user experiences.
7. Technology Transformation Specialist – implementing digital solutions in enterprises and managing transformation projects.
8. IT Project Manager.
9. Artificial Intelligence Specialist.
10. Software Developer – individuals with advanced programming skills working on creating applications, systems, and digital solutions that are fundamental to digital transformation.
11. Process Automation Specialist (RPA Developer) – specialists who design and implement systems that automate business processes.
12. E-commerce Expert – individuals with digital skills who can develop careers in managing e-commerce platforms and digital marketing.
13. Digital Transformation Consultant – specialists supporting companies in the digitalisation process and implementing modern technologies such as AI, big data, or cloud computing.
14. IoT Specialist – working with IoT technologies that connect physical devices to the internet across industrieslike logistics, healthcare, and agriculture.
15. ESG Specialist – integrating technology with sustainability goals, such as environmental management (green technologies) and ESG reporting.

Both the consultations and reviews confirmed the uniqueness of the Digital Management programme and the demand in the labour market for specialists with holistic skills, equipping graduates not only with hard IT and analytical competencies but also combining them with soft skills, such as navigating the digital communication environment and social media, effective planning, preparing, and monitoring business activities.

Graduates can continue their studies in master's degree programs (second-cycle studies).

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

The report "Analysis of the Needs for Launching the Digital Management Program at the Faculty of Organisation and Management at Lodz University of Technology" submitted to the Education Department at LUT includes an analysis of global and Polish trends in digital and green competencies of the future, an analysis of professions for Digital Management graduates, recommendations from the business environment regarding the Digital Management curriculum, an analysis of labour market demand based on job offer reviews from 2024, and an analysis of competitive study programmes both in Poland and abroad. The summary of the report concludes that the planned digital management programme meets these needs by offering a curriculum tailored to the requirements of the contemporary market. The introduction of a unique programme like Digital Management, leading to an engineering degree, will distinguish the university in the educational market and attract students focused on development in modern sectors of the economy. Graduates of this programme will be able to find employment not only in Poland but also on the international labour market, significantly increasing the attractiveness of the programme and potentially increasing the number of applications to the university, including from international students. Furthermore, such a programme encourages cooperation with international companies and research institutions, raising the university's prestige.

The launch of the Digital Management programme will also foster closer relationships with the university's business partners. Companies are looking for qualified employees who can navigate the digital world, and this programme can be a source of talent ready to start working from day one after graduation. By engaging partners in the creation of internships, projects, and case studies, the university enables a better alignment of its educational offer with business needs. As a result, graduates of the programme will be better prepared for market realities, and companies will have easier access to well-trained personnel.

Additionally, the Digital Management programme has undergone review by two business entities. The reviews highlighted the strengths of the programme, including, among others:

- Thoughtful program structure – the educational content takes into account the key needs of the contemporary labour market, global technological trends, and the challenges related to the digital and green transformation of the economy. Below, the main

advantages of the program are discussed in detail.
- Interdisciplinary nature of the programme – a multidisciplinary character that combines issues from the fields of digital technologies, management, data analysis, entrepreneurship, and socio-economic aspects. Students gain both theoretical knowledge and practical skills that enable them to operate effectively at the intersection of technology and business.
- Alignment with the requirements of the modern labour market – the programme focuses on the development of future competencies, which ensures that its graduates will be well-prepared for jobs that are gaining significance in the era of the digital economy.
- Modern teaching approach – the programme features a modern educational approach that emphasises active learning, interdisciplinary projects, and the use of advanced educational technologies, including the use of Virtual Reality (VR) in teaching STEM subjects.
- Comprehensive soft skills development – the programme places significant emphasis on the development of soft skills, such as teamwork (including in a virtual environment), communication in English at the B2 level, which allows graduates to easily navigate international business environments, and critical thinking and problem-solving skills.

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

Not applicable.

The unit organizing education

Faculty of Organization and Management

Education program

Semester 1

Course	Number of hours	ECTS points	Form of verification	Obligatory
Mathematics I	Tutorials: 60 Lecture: 30	7	Exam	Obligatory
Physics	Tutorials: 15 Laboratory classes: 30 Lecture: 15	5	Graded assignment	Obligatory
Techno-Humanities	Tutorials: 20 Seminar: 20 Project work: 20	5	Graded assignment	Obligatory
Digital Organization	Tutorials: 15 Project work: 20 Lecture: 15	3	Graded assignment	Obligatory
Information Technology	Laboratory classes: 60 Project work: 35 E-learning: 15	7	Exam	Obligatory
Business Communication for Engineers 1		3	Graded assignment	Obligatory group
The student chooses one module from the group.				
C1 Business Communication for Engineers 1	Tutorials: 60	3	Graded assignment	Optional
C2 Business Communication for Engineers 1	Tutorials: 60	3	Graded assignment	Optional
Sum	**430**	**30**		

Semester 2

Course	Number of hours	ECTS points	Form of verification	Obligatory
Mathematics II	Tutorials: 30 Laboratory classes: 30 Lecture: 30	7	Exam	Obligatory
Engineering Drawing and Modelling (CAD)	Laboratory classes: 15 Project work: 15	2	Graded assignment	Obligatory
Fundamentals of Management in Digital Organizations	Tutorials: 30 Lecture: 15 E-learning: 15	3	Graded assignment	Obligatory
Finance and Digital Accounting	Tutorials: 15 Seminar: 15 Laboratory classes: 30 Lecture: 15	6	Exam	Obligatory
Human Resources Management	Tutorials: 15 Lecture: 15	2	Graded assignment	Obligatory
Fundamentals of Artificial Intelligence	Laboratory classes: 30 Project work: 15 Lecture: 15	6	Graded assignment	Obligatory
Elective Course 1		2	Graded assignment	Obligatory group
The student chooses one subject.				
Microeconomics	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Critical Thinking	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Economics for Engineers	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Business Communication for Engineers 2		2	Exam	Obligatory group
The student chooses one module from the group.				
C1 Business Communication for Engineers 2	Tutorials: 30	2	Exam	Optional
C2 Business Communication for Engineers 2	Tutorials: 30	2	Exam	Optional
Physical Education 1	Tutorials: 30	0	Pass	Obligatory
Sum	**435**	**30**		

Semester 3

Course	Number of hours	ECTS points	Form of verification	Obligatory
Digital Marketing	Tutorials: 30 Seminar: 15 Laboratory classes: 30 Project work: 15 Lecture: 15	7	Exam	Obligatory
Digital Transformation of Enterprise	Seminar: 15 Laboratory classes: 30	3	Graded assignment	Obligatory
Occupational Safety and Health	Lecture: 15	1	Graded assignment	Obligatory
Digital Business Management Tools and Techniques	Tutorials: 30 Seminar: 15 Project work: 15	6	Exam	Obligatory
Fundamentals of Human-Computer Interaction	Seminar: 15 Laboratory classes: 30 Project work: 30	7	Graded assignment	Obligatory
Elective Course 2		3	Graded assignment	Obligatory group
The student chooses one subject.				
Circular Economy	Laboratory classes: 15 Project work: 15 Lecture: 15	3	Graded assignment	Optional
Sustainable Development	Laboratory classes: 15 Project work: 15 Lecture: 15	3	Graded assignment	Optional
Environmental Impact Assessment	Laboratory classes: 15 Project work: 15 Lecture: 15	3	Graded assignment	Optional
Foreign Language Block I		3	Graded assignment	Obligatory group
The student chooses one module from the group.				
German A2 block I	Tutorials: 60	3	Graded assignment	Optional

Course	Number of hours	ECTS points	Form of verification	Obligatory
German B1 block I	Tutorials: 60	3	Graded assignment	Optional
German B2 block I	Tutorials: 60	3	Graded assignment	Optional
Spanish A2 block I	Tutorials: 60	3	Graded assignment	Optional
Spanish B1 block I	Tutorials: 60	3	Graded assignment	Optional
Spanish B2 block I	Tutorials: 60	3	Graded assignment	Optional
French A2 block I	Tutorials: 60	3	Graded assignment	Optional
French B1 block I	Tutorials: 60	3	Graded assignment	Optional
French B2 block I	Tutorials: 60	3	Graded assignment	Optional
Italian A1 block I	Tutorials: 60	3	Graded assignment	Optional
Italian A2 block I	Tutorials: 60	3	Graded assignment	Optional
German A1 block I	Tutorials: 60	3	Graded assignment	Optional
Spanish A1 block I	Tutorials: 60	3	Graded assignment	Optional
French A1 block I	Tutorials: 60	3	Graded assignment	Optional
Physical Education 2	Tutorials: 30	0	Pass	Obligatory
Sum	**435**	**30**		

Semester 4

Course	Number of hours	ECTS points	Form of verification	Obligatory
Modeling Simulation in Process Management	Seminar: 15 Laboratory classes: 15	2	Graded assignment	Obligatory
Entrepreneurship	Tutorials: 15 Seminar: 15 Project work: 30 Lecture: 15	6	Exam	Obligatory

Course	Number of hours	ECTS points	Form of verification	Obligatory
Technology Management	Tutorials: 15 Seminar: 15 Laboratory classes: 15 Project work: 15	4	Graded assignment	Obligatory
Business Simulation Games and Data Analysis	Laboratory classes: 60 Project work: 30	7	Graded assignment	Obligatory
Data Intelligence	Seminar: 15 Laboratory classes: 60 Project work: 30	8	Exam	Obligatory
Foreign Language Block II		3	Graded assignment	Obligatory group
The student chooses one module from the group.				
German A2 block II	Tutorials: 60	3	Graded assignment	Optional
German B1 block II	Tutorials: 60	3	Graded assignment	Optional
German B2 block II	Tutorials: 60	3	Graded assignment	Optional
Spanish A2 block II	Tutorials: 60	3	Graded assignment	Optional
Spanish B1 block II	Tutorials: 60	3	Graded assignment	Optional
Spanish B2 block II	Tutorials: 60	3	Graded assignment	Optional
French A2 block II	Tutorials: 60	3	Graded assignment	Optional
French B1 block II	Tutorials: 60	3	Graded assignment	Optional
French B2 block II	Tutorials: 60	3	Graded assignment	Optional
Italian A1 block II	Tutorials: 60	3	Graded assignment	Optional
Italian A2 block II	Tutorials: 60	3	Graded assignment	Optional
German A1 block II	Tutorials: 60	3	Graded assignment	Optional
Spanish A1 block II	Tutorials: 60	3	Graded assignment	Optional
French A1 block II	Tutorials: 60	3	Graded assignment	Optional
Physical Education 3	Tutorials: 30	0	Pass	Obligatory
Sum	**450**	**30**		

Semester 5

Course	Number of hours	ECTS points	Form of verification	Obligatory
Mobility Semester		30	Graded assignment	Obligatory group
Elective courses UBPO PŁ and/or ECIU/ Mobility Semester or Improvement in Partner Units				
Marketing Research	Tutorials: 30 Lecture: 15	3	Graded assignment	Optional
Environmental Performance of Enterprises	Project work: 15 Lecture: 15	2	Graded assignment	Optional
Methods of Measuring Customer Satisfaction	Project work: 15	1	Graded assignment	Optional
Logical Basis of Thinking and Communication	Tutorials: 15 Lecture: 15	2	Graded assignment	Optional
Modelling Production Systems	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
New Technologies in the Industry 4.0	Project work: 30 Lecture: 30	4	Graded assignment	Optional
Product and Service Design in the Era of AI and Industry 5.0	Project work: 15 Lecture: 15	2	Graded assignment	Optional
E-commerce	Laboratory classes: 20 Lecture: 10	2	Graded assignment	Optional
Financial Forecasting	Laboratory classes: 30	2	Graded assignment	Optional
Leadership in the Digital Era	Laboratory classes: 30 Lecture: 15	3	Graded assignment	Optional
Evidence-Based Management	Tutorials: 30	2	Graded assignment	Optional
Negotiations in Business in the Digital Era	Tutorials: 30 Lecture: 15	3	Graded assignment	Optional
People Analytics	Tutorials: 30	2	Graded assignment	Optional
Financial Markets and Digital Business Perspectives	Tutorials: 15 Project work: 30 Lecture: 15	4	Graded assignment	Optional

Course	Number of hours	ECTS points	Form of verification	Obligatory
Artificial Neural Networks in Economic Prediction	Laboratory classes: 15	1	Graded assignment	Optional
Sum	**375**	**30**		

Semester 6

Course	Number of hours	ECTS points	Form of verification	Obligatory
Internship I	Internship: 0	12	Pass	Obligatory
Capstone Module (PBL)	Laboratory classes: 60 Project work: 75	7	Graded assignment	Obligatory subjects to choose from
Low-code/No-code Tools in Business Solutions	Laboratory classes: 30 Lecture: 15	2	Graded assignment	Obligatory
Project Management	Laboratory classes: 15 Lecture: 15	2	Graded assignment	Obligatory
User Experience Design	Seminar: 15 Laboratory classes: 45 Project work: 30	5	Exam	Obligatory
Human-AI Cooperation	Laboratory classes: 15 Project work: 30	2	Graded assignment	Obligatory
Sum	**345**	**30**		

Semester 7

Course	Number of hours	ECTS points	Form of verification	Obligatory
Diploma Thesis	Diploma Thesis: 10	15	Pass	Obligatory subjects to choose from

Course	Number of hours	ECTS points	Form of verification	Obligatory
Internship II	Internship: 0	12	Pass	Obligatory
Diploma Seminar	Seminar: 15	2	Exam	Obligatory
Elective Course 4		1	Graded assignment	Obligatory group
The student chooses one subject.				
Legal Aspects of Digital Management	Tutorials: 15	1	Graded assignment	Optional
Quality Management in the Digital Word	Tutorials: 15	1	Graded assignment	Optional
Customer Relationship Management (CRM)	Tutorials: 15	1	Graded assignment	Optional
AI for Business	Tutorials: 15	1	Graded assignment	Optional
Digitalization in Logistics	Tutorials: 15	1	Graded assignment	Optional
Sum	**40**	**30**		