GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Non-technical aspects of the engineering profession, PG_00064829		
Field of study	Mechanical Engineering		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Humanistic-social subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division of Mechatronics -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksandra Wiśniewska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	0.0	15.0	15

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	15	11.0	24.0	50

Subject objectives

Providing students with non-technical knowledge that is important from the perspective of an engineer's work, and preparing future graduates for the demands of the modern job market and the societal expectations placed on engineers.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K13] is ready for responsible performance of proffesional roles, considering ever-changing need of the society, including self developement and supporting and fullfiling work ethics	The student is ready to work in a multicultural team and is able to solve communication and organizational problems in teams (assessment of group work skills).	[SK1] Assessment of group work skills
[K7_U12] dvelops her/his own potential and independently plans own, lifelong learning, while also being able to guide others in this regard	The student demonstrates the ability to plan his/her career and is able to set development goals, focusing on lifelong learning (assessment of the ability to analyze and plan development activities).	[SU2] Assessment of ability to analyse information
[K7_K12] is ready for fullfiling social commitement and initation of actions for public interest including entrepreneurial thinking and acting	The student is able to identify social and professional changes resulting from the development of technology and is prepared to fulfill a professional role in accordance with the requirements of the future labor market (assessment of adaptation skills and entrepreneurial thinking).	[SK1] Assessment of group work skills
[K7_W13] explains the main principles of individual and teamwork organization, including various forms of entrepreneurship utilizing knowledge from the field of engineering and technical sciences and disciplines relevant to the course of study	The student understands the role of an engineer in society and is able to explain the basic principles of social responsibility and professional ethics (assessment of knowledge contained in the text study).	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	Course content – seminar Individual topics are led mainly by industry representatives, under the substantive supervision of faculty teachers. Detailed subject content: **1. Social responsibility of an engineer** • **Topics:** The role of an engineer in society, the impact of engineering projects on the community and environment, sustainable development, solving social problems using technology. • **Form of implementation:** Lecture and workshops with case studies of projects implemented locally with elements of social responsibility. **2. Professional ethics** • **Topics:** Basics of engineering ethics, professional responsibility, examples of ethical dilemmas in the engineering profession, engineer's code of ethics. • **Form of implementation:** Discussions and case study analysis on ethical issues, simulations of negotiations of ethical problems in groups. **3. Legal aspects of an engineer's work** • **Topics:** Intellectual property rights, patents, legal responsibility, contracts and contract negotiations, data protection and compliance with legal regulations. Legal, licensing and certification requirements for designing and introducing devices to the market. • **Form of implementation:** Lectures and workshops with a lawyer specializing in industrial law, simulations of creating contracts and negotiations. **4. Trends in the contemporary labor market** • **Topic scope:** Changing engineer competences, expectations on the labor market, technological development and its impact on the engineering profession, digitalization and automation of work. • **Method of implementation:** Lectures and workshops conducted by HR representatives from large companies, case studies, analysis of market trends. **5. Self-development and career planning** • **Topic scope:** Building a career path, self-development and time management techniques, stress management, the role of mentoring, principles of lifelong learning. • **Method of implementation:** Workshops with elements of own work, exercises in setting goals, guest visits from mentors from the industry. **6. Working in a multicultural team** • **Topic scope:** Cultural differences, managing multicultural teams, conflict resolution techniques, building relationships in a team. • **Method of implementation:** Workshops and simulations of work in a multicultural team, classes with elements of intercultural psychology. **7. Prospects for social and professional change in the light of the development of Artificial Intelligence** • **Topic scope:** The impact of AI on the engineering profession, automation and its social consequences, AI ethics, expected directions of development of the labor market under the influence of AI. • **Form of implementation:** Lectures conducted by AI specialists and workshops on creating AI implementation strategies, analysis of process automation cases. Proposed forms of assessment: • **Assessment of projects and analyses**: individual studies and group projects that will reflect the ability to apply knowledge from different subject areas. • **Team presentations**: presentations of case study results in groups with an assessment of cooperation and conclusions drawn. • **Workshop assessment:** participation in workshops and simulations, assessment of commitment, ability to solve problems in a group, effectiveness of communication. Such a program will help students better understand non-technical aspects of the engineering profession, and equip them with the competencies needed to make informed decisions and act effectively in a dynamically changing professional environment.
Prerequisites and co-requisites	
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
Partial tests for each subject	51.0%	100.0%

Recommended reading	Basic literature	**1. Social Responsibility of an Engineer** **Books:** P. Hąbek, Social Responsibility for Engineers, Silesian University of Technology 2016, ISBN: 978-83-7880-370-6. B. Tharp, Defining Culture and Organizational Culture, 2012. T. H. Davenport, Social Responsibility in the Engineering Profession, 2018. **Articles:** M. Prensky, Digital Natives, Digital Immigrants, On the Horizon, 2001. S. A. Rynes, Social Responsibility in Engineering, Journal of Business Ethics, 2020. **2. Professional ethics** **Books:** P. Wajszczyk, Ethics of the engineering profession in the light of selected codes, Etyka w życie gospodarym 16/1, 2013. R. M. Martin, Ethics in Engineering, 2020. M. Davis, Thinking Like an Engineer: Studies in the Ethics of a Profession, 1998. **Journals:** Science and Engineering Ethics articles on engineering ethics. Journal of Business Ethics sections devoted to ethical dilemmas in technology. **3. Legal Aspects of Engineering Work** **Books:** D. Bainbridge, Intellectual Property, 2018. G. Kamal, Legal Aspects of Engineering, 2019. **Articles:** R. A. Dorf, Patent and Intellectual Property Basics for Engineers, IEEE Transactions, 2019.

T. Müller, Legal Obligations in Engineering Practices, International Journal of Engineering, 2020.

4. Trends in the Modern Labor Market

Books:

R. Florida, The New Urban Crisis, 2017.

D. Susskind, A World Without Work, 2020.

Articles:

G. Harrell, How AI is Changing the Job Market, Forbes, 2022.

Deloitte Insights reports on the future of work and market trends.

5. Self-development and career planning

Books:

S. Covey, The 7 Habits of Highly Effective People, 1989.

Cal Newport, Deep Work: Rules for Focused Success in a Distracted World, 2016.

Articles:

J. H. Greenhaus, Career Management, Journal of Vocational Behavior, 2020.

Harvard Business Review: How to Plan for a Long Career in Engineering, 2021.

6. Working in a multicultural team

Books:

E. T. Hall, Beyond Culture, 1976.

D. Livermore, The Cultural Intelligence Difference, 2010.

Journals:

Cross-Cultural Management Journal articles on managing multicultural teams.

		7. Prospects for Social and Professional Change in the Light of Artificial Intelligence Development **Books:** K. Tegmark, Life 3.0: Being Human in the Age of Artificial Intelligence, 2017. J. Kaplan, Artificial Intelligence: What Everyone Needs to Know, 2016. **Articles:** Y. N. Harari, 21 Lessons for the 21st Century chapter on automation and the future of work. McKinsey Quarterly: Artificial Intelligence and the Future of Work, 2022.

Supplementary literature	**1. Social Responsibility of an Engineer** **Websites:** International Federation of Consulting Engineers (FIDIC) section on Sustainability and Social Responsibility. **YouTube**: TEDx Talks: Engineering Social Responsibility. World Economic Forum Videos on Corporate and Social Responsibility. **2. Professional Ethics** **Online Resources:** Code of Ethics National Society of Professional Engineers Code of Ethics. **YouTube:** Practical Engineering Channel: Ethical Dilemmas in Engineering. MIT OpenCourseWare: Ethics for Engineers course. **3. Legal Aspects of an Engineer's Work** **Websites:** Polish Patent Office resources on intellectual property protection. Patent iPrawo blog about patent laws. **YouTube:** LawShelf Channel: Introduction to Patent Law. World Intellectual Property Organization (WIPO) videos and webinars on intellectual property. **4. Trends in the Modern Job Market** **Online Resources:**

	World Economic Forum - Future of Work articles and reports on job trends. McKinsey Global Institute reports on job trends in technology. **YouTube:** World Economic Forum channel: Jobs of the Future. Big Think: The Future of Jobs in a World with AI. **5. Self-development and career planning** **Online Resources:** Career Development Blog by MIT tips and advice for tech professionals. **YouTube:** Simon Sinek channel: Start with Why career-building videos. Impact Theory with Tom Bilyeu: Conversations on goal setting and productivity. **6. Working in a multicultural team** **Online Resources**: Hofstede Insights tools and articles on cultural differences. **YouTube:** TEDx Talks: How to Build Multicultural Teams. MindTools channel: Videos on working in diverse teams. **7. Perspectives on Social and Professional Change in the Light of Artificial Intelligence** **Developments Websites:** OpenAI resources on AI developments, blog. Future of Life Institute articles, reports on AI and its impact on society.

		YouTube: Computerphile channel: AI Explained. TEDx Talks: The Future of Artificial Intelligence.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Proposals of sample issues, questions and tasks that can be implemented within the individual topics of the subject "Non-technical aspects of the engineer's work": 1. Social responsibility of an engineer Topics: What are the basic principles of social responsibility in the engineering profession? How can engineers contribute to sustainable development? Examples of CSR (Corporate Social Responsibility) activities in technology companies. Discussion questions: How does social responsibility affect engineering decisions? Should engineers be responsible for the unintended consequences of their projects? Tasks: Case study analysis: a company implementing technologies that reduce carbon dioxide emissions. Group work: developing a CSR plan for a hypothetical engineering company. 2. Professional ethics Topics: The role of professional ethics in the work of an engineer. Engineer's code of ethics: standards and principles. Examples of ethical dilemmas in the design and implementation of technologies. Discussion questions: What consequences can result from neglecting the principles of ethics in engineering? Should an engineer always adhere to the principles of the code of ethics in situations of conflict of interest? Tasks: Case study: analysis of an example of an ethical conflict (e.g. related to product safety). Negotiation simulation: resolving an ethical conflict in a project team. 3. Legal aspects of an engineer's work Topics: Intellectual property and patents in an engineer's work. Legal aspects of data protection and privacy in engineering projects. Contracts, clauses and employee rights. Discussion questions: How can an engineer protect his rights to inventions and innovations? What legal risks are associated with the work of an engineer and how can they be prevented? Tasks: Preparation of a simulated project contract taking into account data protection clauses. Analysis of a scenario of a conflict regarding copyrights between an employee and a company. 4. Trends in the contemporary labor market Topics: The most important technological trends and their impact on the engineering profession. Competencies of the future: what technical and soft skills will be sought after? Changes in employment forms: remote work, freelancing. Discussion questions: What competencies may be key in the coming decade in engineering? What changes may occur in the traditional role of an engineer under the influence of digitization? Tasks: Analysis of a report on the future of the labor market and identification of key trends in the engineering industry. Case study: career project in a changing technological environment. 5. Self-development and career planning Topics: Methods of planning a career path. Building a personal brand as an engineer. The role of mentors and networking in career development. Discussion questions: What actions are worth taking at the beginning of your career to ensure development opportunities? What are the advantages and disadvantages of working in technical and managerial positions? Tasks: Creating an individual career development plan for the next 5 years. Networking exercise: simulation of industry meetings and developing a network of contacts. 6. Working in a multicultural team Topics: Cultural differences and their impact on teamwork. Intercultural communication and conflict resolution techniques. Managing diversity in organizations. Discussion questions: What are the challenges and benefits of working in a multicultural team? How can the effectiveness of international teams be increased? Tasks: Simulation of work in a multicultural team - solving a hypothetical design problem. Workshops with elements of intercultural psychology: identifying differences and common values. 7. Prospects for social and professional change in the light of the development of Artificial Intelligence Topics: How does the development of AI affect social and professional change? Automation and the labor market: threats and opportunities. AI ethics: responsibility for the development of technology. Discussion questions: Does the development of artificial intelligence pose a threat to traditional technical professions? In what areas can the work of an engineer be replaced by AI in the future? Tasks: Conducting an analysis of the impact of AI on a given industrial sector, identifying opportunities and challenges. Creating future scenarios: what will the work of an engineer look like in a world dominated by AI? Additional tasks involving the integration of knowledge from several modules: • Group project: Development of a hypothetical engineering project, taking into account ethical, legal, social and modern technology aspects. The team is tasked with considering the possible social and professional impacts of the project and simulating its implementation in different cultural contexts. • Panel discussions: Moderated by lecturers and industry guests, panel discussions on specific cases that illustrate the challenges and professional dilemmas that engineers face in their daily work. • Mini-project of personal development: Each student prepares an individual self-development plan, taking into account both short-term goals (e.g. completing courses) and long-term aspirations (e.g. developing a career in a given field). • Case study: Analysis of a real case from the technical industry that has caused social, legal and ethical impacts (e.g. autonomous vehicles, genetic engineering). Each group presents possible solutions and analyzes what actions were taken in reality. These issues, questions and tasks will help students develop analytical skills, decision-making ability and teamwork, implementing the learning outcomes of the subject.	
Practical activites within the subject	Not applicable	

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