Wrocław University of Science and Technology
Doctoral School

COURSE CARD

1. Basic information

Course name in English:	Research, Innovation, and Societal Impact	
Course name in Polish:	Badania, Innowacje i wpływ społeczny	
Number of hours:	30	
Type of course:	Elective course	
Form of course:	lecture	
Code of course:		
Course leader:	Dr Yash Chawla	
Faculty of the course leader:	W8 Faculty of Management	
Email address of the course leader:	yash.chawla@pwr.edu.pl	
Scientific discipline(s) assigned to the course (doctoral students representing the marked disciplines can participate in the course):	Architecture and urban planning	☒
	Automation, electronic, electrical engineering and space technologies	☒
	Information and communication technology	☒
	Biomedical engineering	☒
	Chemical engineering	☒
	Civil engineering, geodesy and transport	☒
	Materials engineering	☒
	Mechanical engineering	☒
	Environmental engineering, mining, and energy	☒
	Mathematics	☒
	Chemical sciences	☒
	Physical sciences	☒
	Management and quality studies	☒

2. Objectives

C1: To provide doctoral candidates with a deep, interdisciplinary understanding of DeepTech domains (e.g., AI, biotechnology, quantum computing) and their complex, multifaceted societal impacts

C2: To equip doctoral candidates with robust theoretical frameworks and practical methodologies for critically assessing, navigating, and mitigating the social, and economic challenges and opportunities presented by research and innovation advancements.

C3: To foster the development of critical thinking, responsible innovation principles, and a proactive stance towards shaping humane-centric and sustainable technological futures in the context of research and innovation.

C4: To enhance the capabilities of doctoral candidates to conduct rigorous, independent research on DeepTech's societal implications and to effectively communicate their findings and insights to both academic and broader societal audiences

3. Content

Detailed information about the course content, including topics and form of classes.

No.	Topic	Number of hours	Form of classes
1	Foundational concepts: DeepTech, society, and interdisciplinarity	3	lecture
2	Technology impact frameworks, RRI, and governance of emerging technologies	3	lecture
3	Assessing societal impact: methodologies and critical approaches	3	lecture
4	DeepTech case studies: critical analysis and foresight	3	lecture
5	Research communication, policy interface, and public engagement	3	lecture
6	Societal impact analysis integration to individual research	5	lecture
7	Prospects of integrating societal impact for research grant applications	5	lecture
8	Assessing societal impact of own research and presenting results	5	lecture

4. Prerequisites

List of prerequisites relating to knowledge, skills and other competences for course participants.

Is a doctoral (Ph.D.) student and can communicate in English.

5. Learning outcomes

List of learning outcomes at level 8 of the Polish Qualifications Framework assigned to the course (mark the learning outcomes in the last column).

Symbol	**Learning outcome**	
	KNOWLEDGE. Doctoral student knows and understands:	
SzD_W3	the main trends in the development of the scientific or artistic disciplines covered in the curricula;	☒
SzD_W4	research methodology;	☒
SzD_W5	the rules for the dissemination of scientific results, including in open access mode;	☐
SzD_W6	the fundamental dilemmas of modern civilization;	☒
SzD_W7	the legal and ethical conditions of scientific activity;	☐
SzD_W8	the economic and other relevant conditions of scientific activity;	☒
SzD_W9	basic principles of knowledge transfer to the economic and social spheres and commercialisation of results of scientific activity and know-how related to these results.	☒

	SKILLS. Doctoral student is able to:	
SzD_U2	use knowledge from different fields of science or art to creatively identify, formulate and innovatively solve complex problems or perform research tasks, in particular: - define the purpose and subject of scientific research, formulate a research hypothesis, - develop research methods, techniques and tools, and use them creatively, - draw conclusions on the basis of scientific research; critically analyse and evaluate the results of scientific research, expertise and other creative work and their contribution to knowledge development; transfer the results of scientific activities to the economic and social spheres;	☒
SzD_U3	communicate on specialised topics to the extent that they enable an active participation in the international scientific community;	☒
SzD_U4	disseminate research results, including in popular forms;	☒
SzD_U5	initiate debates and participate in a scientific discourse;	☒
SzD_U6	be able to speak a foreign language at B2 level of the Common European Framework of Reference for Languages to a level that enables them to participate in the international scientific and professional environment;	☒
SzD_U7	plan and implement an individual or collective research or creative activity, including in an international environment;	☒
SzD_U8	independently plan and act for one's own development and inspire and organize the development of others;	☐
SzD_U9	plan classes or groups of classes and implement them using modern methods and tools.	☐
	SOCIAL COMPETENCES. Doctoral student is ready to:	
SzD_K3	fulfilling the social obligations of researchers and creators, initiate public interest activities, thinking and acting in an entrepreneurial way;	☒
SzD_K4	maintaining and developing the ethos of research and creative environments, including: - carrying out scientific activities in an independent manner, - respecting the principle of public ownership of research results, taking into account the principles of intellectual property protection.	☒

6. Evaluation

Short description of the method(s) used to evaluate the learning outcomes assigned to the course, e.g., exam, test, report, presentation, etc.

Forming – during the course: Assessment of the quality of contributions to discussions, analytical depth in proposal, and clarity of presentation, documented by instructor evaluation.

Concluding presentation: Evaluation of the research plan. Assessment of the oral presentation's clarity, coherence, ability to respond to critical questions, and overall scholarly defence.

7. Teaching methods

Short description of the teaching methods used during the course, e.g., multimedia presentation, discussion, literature studies, developing written documents, own work, etc.

Teaching method used include: Lecture information, multimedia presentation, flipped classroom, demonstration, collaboration and group work, literature studies, developing written documents, presentation by students, group discussion and feedback.

8. Literature

List of primary and secondary literature used to prepare the course and including additional knowledge for participants, e.g., books, textbooks, research papers, standards, web pages, etc.

Primary:

a) European Commission, Directorate-General for Research and Innovation (2020). Integration of social sciences and humanities in Horizon 2020. Available at: https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/integration-social-sciences-and-humanities-horizon-2020_en (last accessed 21 May 2025)

b) Simon, D., Kuhlmann, S., Stamm, J., & Canzler, W. (Eds.). (2019). Handbook on science and public policy. Edward Elgar Publishing.

Secondary:

a) Kleinman, D. L., & Moore, K. (Eds.). (2014). Routledge handbook of science, technology and society. London and New York: Routledge.

9. Other remarks

Additional remarks, comments, (e.g., language of the course)

The course would be conducted in English, and would include forms of seminar classes and mini-project within the duration of the lecture classes.