



COURSE CARD

1. Basic information

Course name in English:	How to talk about science? Science communication - basics for young researchers	
Course name in Polish:	Jak popularyzować naukę? Komunikacja naukowa – podstawy dla młodych naukowców	
Number of hours:	15	
Type of course:	Elective course	
Form of course:	mixed forms (combination of lecture, seminar and laboratory)	
Code of course:		
Course leader:	<i>Maciej Mulak, Lucyna Róg-Wolska</i>	
Faculty of the course leader:	W11 Faculty of Fundamental Problems of Technology	
Email address of the course leader:	maciej.mulak@pwr.edu.pl , lucyna.rog-wolska@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	<input checked="" type="checkbox"/>
	Automation, electronic, electrical engineering and space technologies	<input checked="" type="checkbox"/>
	Information and communication technology	<input checked="" type="checkbox"/>
	Biomedical engineering	<input checked="" type="checkbox"/>
	Chemical engineering	<input checked="" type="checkbox"/>
	Civil engineering, geodesy and transport	<input checked="" type="checkbox"/>
	Materials engineering	<input checked="" type="checkbox"/>
	Mechanical engineering	<input checked="" type="checkbox"/>
	Environmental engineering, mining, and energy	<input checked="" type="checkbox"/>
	Mathematics	<input checked="" type="checkbox"/>
	Chemical sciences	<input checked="" type="checkbox"/>
	Physical sciences	<input checked="" type="checkbox"/>
	Management and quality studies	<input checked="" type="checkbox"/>

2. Objectives

The aim of the course is to prepare participants to communicate science professionally using modern tools. The class is aimed both at those who are thinking of becoming more involved in popularising science and at those scientists who would like to learn how to work with the media to promote their research.

3. Content

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

No.	Topic	Number of hours	Form of classes
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1	How to talk about science? What scares people away from scientific topics? The importance of storytelling, visualization techniques, ethical aspects etc.	2	seminar
2	Basics of public presentations		seminar
3	Diction, voice emission, working with a microphone - practical workshops on Radio Luz		laboratory
4	Working with a camera and a prompter - a visit to the recording studio		laboratory
5	Social media – how they work and what you need to know in order to communicate science		lecture
6	Interviews, authorization and other legal aspects connected to science communications		seminar
7	Presentations of final projects		seminar
8			Select form
9			Select form
10			Select form
11			Select form
12			Select form
13			Select form
14			Select form
15			Select form

4. Prerequisites

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

This course is open to all young scientists who want to learn how to talk about science to interest others and how to explain science to be understood. Not only PhD candidates who would like to get involved in popularizing science in the future are encouraged to participate, but also young scientists who would like to learn how to cooperate with the media, write popularizing articles about their scientific research and talk about their research topics so that interest not only other scientists.

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	
	<i>KNOWLEDGE. Doctoral student knows and understands:</i>	
SzD_W3	the main trends in the development of the scientific or artistic disciplines covered in the curricula;	<input checked="" type="checkbox"/>
SzD_W4	research methodology;	<input checked="" type="checkbox"/>
SzD_W5	the rules for the dissemination of scientific results, including in open access mode;	<input checked="" type="checkbox"/>
SzD_W6	the fundamental dilemmas of modern civilization;	<input checked="" type="checkbox"/>
SzD_W7	the legal and ethical conditions of scientific activity;	<input checked="" type="checkbox"/>
SzD_W8	the economic and other relevant conditions of scientific activity;	<input checked="" type="checkbox"/>



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.	<input checked="" type="checkbox"/>
<i>SKILLS. Doctoral student is able to:</i>		
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;	<input checked="" type="checkbox"/>
SzD_U3	communicate on specialised topics to the extent that they enable an active participation in the international scientific community;	<input checked="" type="checkbox"/>
SzD_U4	disseminate research results, including in popular forms;	<input checked="" type="checkbox"/>
SzD_U5	initiate debates and participate in a scientific discourse;	<input checked="" type="checkbox"/>
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;	<input checked="" type="checkbox"/>
SzD_U7	plan and implement an individual or collective research or creative activity, including in an international environment;	<input checked="" type="checkbox"/>
SzD_U8	independently plan and act for one's own development and inspire and organize the development of others;	<input checked="" type="checkbox"/>
SzD_U9	plan classes or groups of classes and implement them using modern methods and tools.	<input checked="" type="checkbox"/>
<i>SOCIAL COMPETENCES. Doctoral student is ready to:</i>		
SzD_K3	fulfilling the social obligations of researchers and creators, initiate public interest activities, thinking and acting in an entrepreneurial way;	<input checked="" type="checkbox"/>
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.	<input type="checkbox"/>

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.

The final project will involve preparing a short presentation (in the form of a public speech or video) on a selected scientific topic. Part of the grade for the course will also be a grade for a short popularizing article.

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.



Multimedia Presentations: analysis of best practices and examples from real scientific presentations.

Discussions: debate-style exercises that teach argumentation and responding to audience questions.

Literature Studies: analysis of articles, books, and popular science talks and drawing conclusions about effective narrative techniques and styles.

Creating Written Documents: developing popular science texts (e.g., articles, social media posts, podcast scripts).

Independent Work: Preparing individual communication projects (e.g., presentations, videos, scientific posters).

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.

1. "Don't Be Such a Scientist: Talking Substance in an Age of Style". Randy Olson.
2. "Made to Stick: Why Some Ideas Survive and Others Die", Chip Heath, Dan Heath
3. "Escape from the Ivory Tower: A Guide to Making Your Science Matter". Nancy Baron
4. "Am I Making Myself Clear? A Scientist's Guide to Talking to the Public", Cornelia Dean
5. "Komunikowanie nauki. Przewodnik po efektywnym przekazie" – Andrzej Chodubski (lub inne polskie publikacje poświęcone popularyzacji nauki)

9. Other remarks

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

After completing the course, PhD students should be able to clearly and convincingly explain complex scientific concepts, familiar with tools and techniques for effective science communication, be able to adapt their style and form of communication to different audiences and be aware of the importance of science popularization in fostering social dialogue.