

**DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND  
TECHNOLOGY**

**SUPERVISOR DECLARING/CONDUCTING COURSE:** Justyna Rybak, PhD, DSc  
**DEPARTMENT:** Faculty of Environmental Engineering  
**SCIENTIFIC DISCIPLINE:** environmental engineering, mining and energy

**COURSE CARD**

**Course name in Polish:** Najnowsze postępy w naukach biologicznych

**Course name in English:** Advances in bioscience

**Course language:** ~~polish~~ / english

**University-wide general course type\*:**

**The course is intended for all PhD students:** YES / ~~NO~~

1) ~~BASIC COURSE~~

2) ~~SPECIALIST COURSE~~

3) ~~SEMINAR~~

4) ~~HUMANISTIC COURSE~~

5) ~~LANGUAGE~~

**Subject code:** IGQ100223W

\* delete as applicable

	Lecture	Foreign language course	Seminar	Mixed forms
Number of hours of organized classes in university (ZZU)	15			
Grading	Exam	Exam	Oral presentation	Exam, inspection, evaluation classes

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. The basic knowledge of biology
2. The basic knowledge of chemistry

**COURSE OBJECTIVES**

- C1. Gaining knowledge about new developments in bioscience  
 C2. Gaining inspiration to apply and create new solutions in different disciplines

**PROGRAM CONTENTS**

<b>Form of classes</b>		<b>Number of hours</b>
Lec1	Introduction, requirements, purpose and content of the course. Synthetic Biology- definition, examples and perspectives	2
Lec2	The effect of pollution on people- new ideas, new developments. Issues concerning the immune system – new challenges. Cancer biology – perspectives and new developments	2

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Lec3	The used of biological material for power supply- examples, new perspectives. Organ donation issue – new perspectives	2
Lec4	Drones, lasers and artificial intelligence –new technologies.	2
Lec5	Bioacustics- new ideas and perspectives.	2
Lec6	Agriculture of the future. Food and new challenges.	2
Lec7	The science innovations of the year	2
Lec8	The science innovations of the year	1
	Total hours	15

**TEACHING TOOLS USED**

N1. Information lecture  
N2. Problematic lecture

**ACHIEVED SUBJECT LEARNING OUTCOMES**

Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	P8S_WG	- has advanced knowledge of major subjects in a given discipline or interdisciplinary subjects - has advanced knowledge in relation to the discipline and subject matter related to the area of scientific research, including the latest research results and new achievements
Skills	P8S_UW	- has scientific and technological skills related to methodology of conducting scientific research and a critical evaluation of the results obtained

**PRIMARY AND SECONDARY LITERATURE**

**PRIMARY LITERATURE:**

All new scientific papers in renowned scientific journals with high IF

**SECONDARY LITERATURE:**

Advances in Biological Science Research 1st Edition Surya Nandan Meena Milind Naik  
Academic Press, 2019

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

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