



MODULE DESCRIPTION

Module code	full-time studies:	Z-ZIP1-E-509a
	part-time studies:	Z-ZIPN1-E-509a
Module name	Innovations in Technique	
Module name in Polish	Innowacje w technice	
Valid from academic year	2023/2024	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	MANAGEMENT AND PRODUCTION ENGINEERING
Level of education	1st degree
Studies profile	General
Form and method of conducting classes	Full-time and Part-time
Specialisation	All
Unit conducting the module	Department of Production Engineering
Module co-ordinator	Artur Szmidt, PhD
Approved by:	Dariusz Bojczuk, PhD, DSc

MODULE OVERVIEW

Type of subject / group of subjects	Major
Module status	Non-compulsory
Language of conducting classes	English
Module placement in the syllabus - semester	Semesetr V
Initial requirements	No requirements
Examination (YES/NO)	NO
Number of ECTS credit points	1

Method of conducting classes		Lecture	Classes	Laboratory	Project	Other
Per semester	full-time studies:	15				
	part-time studies:	9				

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	A student has knowledge as regards the most interesting inventions published in scientific papers.	ZIP1_W18
	W02	A student has knowledge about digital cameras, as well as sensors in computed tomography scanners, scanners, etc; he has knowledge as regards obtaining electric energy from traditional, nuclear, thermonuclear power plants as well as from renewable resources.	ZIP1_W18
	W03	A student has knowledge as regards the newest technical solutions applied in medicine (controlling sensors of prostheses in the nervous system, the principles of operations concerning CT scanning and MRI, etc.) and in motorisation (the methods of controlling petrol and diesel engines, know the newest trends in suspension systems, etc.).	ZIP1_W18
	W04	A student has knowledge about particular computer elements and knows what mili- and microrobotics do.	ZIP1_W05 ZIP1_W11
Skills	U01	A student is able to assess the usefulness of new inventions and the possibilities of their application.	ZIP1_U01 ZIP1_U04
Social competences	K01	A student understands the need to constantly supplement knowledge in the field of innovative solutions (photography and automotive, medicine, IT, PC construction and energy) and transferring it to society.	ZIP1_K01 ZIP1_K06

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	The definitions of innovations, the role of innovations, licences and patenting new inventions. The inventions at the turn of the 21 st century. Photography. The construction of modern professional cameras. Motorisation. Technological thought in designing and car construction. Medicine. Innovations in IT – development directions. Robotics – the application of micro- and milirobots. Innovative sources of obtaining electric energy.

METHODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes (select X)					
	Oral exam	Written exam	Test	Project	Statement	Other
W01					X	X
W02					X	X
W03					X	X
W04					X	X
U01					X	X
K01					X	X

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Obtaining at least 50% of points from the final report and its presentation.

STUDENT WORKLOAD

Balance of ECTS points												
No.	Type of student's activity	Student's workload										Unit
		full-time					part-time					
1.	Participation in the activities	Lc	C	Lb	P	O	Lc	C	Lb	P	O	h
		15					9					
2.	Other (consultation, exam)	2					2					h
3.	Number of hours of a student's as- sisted work	17					11					h
4.	Number of ECTS credit points which are allocated for assisted work	0,7					0,4					ECTS
5.	Number of hours of a student's un- assisted work	8					14					h
6.	Number of ECTS credit points which a student receives for unassisted work	0,3					0,6					ECTS
7.	Work input connected with practical classes	0					0					h
8.	Number of ECTS credit points which a student receives for practical classes	0,0					0,0					ECTS
9.	Total number of hours of a stu- dent's work	25					25					h
10.	Punkty ECTS za moduł <i>1 ECTS=25 hours</i>	1										ECTS

LITERATURE

1. Tidd J., Bessant J. (2009), *Managing innovation. Integrating Technological, Market and Organizational Change*, John Wiley & Sons, Ltd (Available online: https://nibmehub.com/opac-service/pdf/read/Managing%2520innovation%2520_%2520integrating%2520technological.pdf)
2. Schilling M.A. (2013), *Strategic Management of Technological Innovation*, McGraw-Hill (Available online: <http://ndl.ethernet.edu.et/bitstream/123456789/87807/5/Strategic%20Management%20of%20Technological%20Innovation%2C%20Fourth%20Edition%20%28%20PDFDrive.com%20%29.pdf>)

MAGAZINES:

3. Mechatronics
4. Archive of Mechanical Engineering
5. Archives of Control Sciences

WEBSITES:

1. The Scientist (<https://www.the-scientist.com/tag/techniques>)

2. MIT Technology Review (<https://www.technologyreview.com/magazines/the-innovation-issue/>)
3. The specific websites provided by the academic teacher