

MODULE DESCRIPTION

Module code	Z-ZIP-250z
Module name	Innowacje w technice
Module name in English	Innovations in Technology
Valid from academic year	2016/2017

A. MODULE PLACEMENT IN THE SYLLABUS

Field of study	Management and Production Engineering
Level of education	1st degree <i>(1st degree / 2nd degree)</i>
Studies profile	General <i>(general / practical)</i>
Form and method of conducting classes	Full-time <i>(full-time / part-time)</i>
Specialisation	All
Unit conducting the module	The Department of Production Engineering
Module co-ordinator	Artur Szmidt, PhD
Approved by:	

B. MODULE OVERVIEW

Type of subject/group of subjects	Major <i>(basic / major / specialist subject / conjoint / other HES)</i>
Module status	Non-compulsory <i>(compulsory / non-compulsory)</i>
Language of conducting classes	English
Module placement in the syllabus - semester	5th semester
Subject realisation in the academic year	Winter semester <i>(winter / summer)</i>
Initial requirements	No requirements <i>(module codes / module names)</i>
Examination	No <i>(yes / no)</i>
Number of ECTS credit points	1

Method of conducting classes	Lecture	Classes	Laboratory	Project	Other
Per semester	15				

C. TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Module target	The aim of the module is to learn current trends concerning the development of technology in various spheres of life. Students ought to learn not only the rules of work as regards mechanical devices but also electronic ones (including the devices applied in medicine, on a modern battlefield). Students should also correctly use the terminology connected with the discussed issues.
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Effect symbol	Teaching results	Teaching methods (l/c/lab/p/other)	Reference to subject effects	Reference to effects of a field of study
W_01	A student has knowledge as regards the most interesting inventions published in scientific papers.	I	K_W02 K_W06 K_W07	T1A_W01 T1A_W02 T1A_W06
W_02	A student ought to describe the most modern achievements in motorisation, the methods of controlling petrol and diesel engines, know the newest trends in suspension systems, etc.	I	K_W02 K_W07 K_W09	T1A_W01 T1A_W02 T1A_W06
W_03	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.).	I	K_W02 K_W06 K_W07	T1A_W01 T1A_W02 T1A_W04 T1A_W06
W_04	A student can describe particular computer elements. A student is able to explain the main field of activity concerning mili- and microrobotics.	I	K_W02 K_W11	T1A_W01 T1A_W02 T1A_W03
W_05	A student has knowledge as regards obtaining electric energy from traditional, nuclear, thermonuclear power plants as well as from renewable resources.	I	K_W02 K_W07 K_W18	T1A_W01 T1A_W02 T1A_W06
U_01	A student is able to assess the usefulness of new inventions and the possibilities of their application.	I	K_U01 K_U04	TA1_U01 TA1_U04
U_02	A student is able to discuss the principles of operations as regards CCD and CMOS matrices; a student knows their applications and is able to adopt selected elements in innovative devices.	I	K_U01 K_U04	TA1_U01 TA1_U04
U_03	A student can choose the most convenient variant of medical research and is able to prepare for it.	I	K_U01 K_U04	TA1_U01 TA1_U04
U_04	A student can adjust computer parameters to the needs and indicate elements which can be crucial in purchasing a new PC. A student can also present the applications of mili- and microrobots.	I	K_U01 K_U04	TA1_U01 TA1_U04
U_05	A student can design and make a small power plant which runs on renewable energy.	I	K_U01 K_U04	TA1_U01 TA1_U04
K_01	A student understands the necessity of continuous improvement of his/her knowledge as regards innovative solutions.	I	K_K01 K_K02	T1A_K01 T1A_K02
K_02	A student understands the necessity of continuous improvement of his/her knowledge as regards photography and motorisation.	I	K_K01 K_K02	T1A_K01 T1A_K02
K_03	A student understands the necessity of continuous improvement of his/her knowledge as regards medicine.	I	K_K01 K_K02	T1A_K01 T1A_K02
K_04	A student understands the necessity of continuous improvement of his/her knowledge as regards IT and the structure of PC.	I	K_K01 K_K02	T1A_K01 T1A_K02
	A student understands the necessity of continuous		K_K01	T1A_K01

K_05	improvement of his/her knowledge as regards energetics.		KK_K02	T1A_K02
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Teaching contents:

1. Teaching contents as regards lectures

Lecture number	Teaching contents	Reference to teaching results for a module
1*	The definitions of innovations, the role of innovations, licences and patenting new inventions. The inventions at the turn of the 21 st century.	W_01 U_01 K_01
2*	Photography. The construction of modern professional cameras. Motorisation. Technological thought in designing and car construction.	W_02 U_02 K_02
3*	Medicine.	W_03 U_03 K_03
4*	Innovations in IT – development directions. Robotics – the application of micro- and milirobots.	W_04 U_04 K_04
5*	Innovative sources of obtaining electric energy.	W_05 U_05 K_05
6	Students prepare subjects concerning technological novelties individually; next, they present them to obtain a grade.	U_01 K_01 U_02 K_02 U_03 K_03 U_04 K_04 U_05 K_05
7	Students prepare subjects concerning technological novelties individually; next, they present them to obtain a grade.	U_01 K_01 U_02 K_02 U_03 K_03 U_04 K_04 U_05 K_05
8	Students prepare subjects concerning technological novelties individually; next, they present them to obtain a grade.	U_01 K_01 U_02 K_02 U_03 K_03 U_04 K_04 U_05 K_05

*- The contents which are passed to students are selected and prepared as they arise depending on the knowledge, science, and technology on the day of the lecture.

2. Teaching contents as regards classes

Class number	Teaching contents	Reference to teaching results for a module

3. Teaching contents as regards laboratory classes

Laboratory class number	Teaching contents	Reference to teaching results for a module

4. The characteristics of project assignments

The methods of assessing teaching results

Effect symbol	Methods of assessing teaching results <i>(assessment method, including skills – reference to a particular project, laboratory assignments, etc.)</i>
W_01	Comments and a discussion during the lectures.
W_02	Comments and a discussion during the lectures.
W_03	Comments and a discussion during the lectures.
W_04	Comments and a discussion during the lectures.
W_05	Comments and a discussion during the lectures.
U_01	Comments and a discussion during the lectures.
U_02	Comments and a discussion during the lectures.
U_03	Comments and a discussion during the lectures.
U_04	Comments and a discussion during the lectures.
U_05	Comments and a discussion during the lectures.
K_01	Comments and a discussion during the lectures.
K_02	Comments and a discussion during the lectures.
K_03	Comments and a discussion during the lectures.
K_04	Comments and a discussion during the lectures.
K_05	Comments and a discussion during the lectures.

D. STUDENT'S INPUT

ECTS credit points		
	Type of student's activity	Student's workload
1	Participation in lectures	15
2	Participation in classes	
3	Participation in laboratories	
4	Participation in tutorials (2-3 times per semester)	
5	Participation in project classes	
6	Project tutorials	
7	Participation in an examination	
8		
9	Number of hours requiring a lecturer's assistance	15 <i>(sum)</i>
10	Number of ECTS credit points which are allocated for assisted work <i>(1 ECTS point=25-30 hours)</i>	0.5
11	Unassisted study of lecture subjects	10
12	Unassisted preparation for classes	
13	Unassisted preparation for tests	
14	Unassisted preparation for laboratories	
15	Preparing reports	5
15	Preparing for a final laboratory test	
17	Preparing a project or documentation	5
18	Preparing for an examination	
19		
20	Number of hours of a student's unassisted work	20 <i>(sum)</i>
21	Number of ECTS credit points which a student receives for unassisted work <i>(1 ECTS point=25-30 hours)</i>	0.5
22	Total number of hours of a student's work	35
23	ECTS points per module <i>1 ECTS point=25-30 hours</i>	1
24	Work input connected with practical classes <i>Total number of hours connected with practical classes</i>	20
25	Number of ECTS credit points which a student receives for practical classes <i>(1 ECTS point=25-30 hours)</i>	0.57

E. LITERATURE

Literature list	<ol style="list-style-type: none"> 1. Przegląd techniczny, Dwutygodnik Federacji SNT NOT 2. PM Przegląd Mechaniczny, miesięcznik naukowo-techniczny 3. Projektowanie Konstrukcje inżynierskie 4. Mechatronics, miesięcznik 5. Samochody specjalne 6. Silniki spalinowe 7. Systems science, kwartalnik 8. Świat nauki, miesięcznik 9. Transport Technika motoryzacyjna 10. Auto Moto Serwis
Module website	http://www.tu.kielce.pl/~wzimk_mat

