STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Polymers and polimer composites		**1010702221010702974**
Field of study	Profile of study (general academic, practical)	Year /Semester
Chemical Technology	**general academic**	**1 / 2**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Composites and Nanomaterials	**Polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
Second-cycle studies	**full-time**	
No. of hours		No. of credits
Lecture: **15** Classes: **-** Laboratory: **15** Project/seminars: **-**		**3**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
other	**university-wide**	
Education areas and fields of science and art		ECTS distribution (number and %)
technical sciences		**3 100%**
Technical sciences		**3 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of the basic principles of general, organic and physical chemistry. Knowlegr of subjects taught at ?Chemical technology ? polymeric materials? lecture.
2	**Skills**	Student knows and applies good practices of laboratory work, is able to operate the scientific equipment. He or she is able to search for information in scientific literature, databases and other properly chosen sources.
3	**Social competencies**	Student is consious of the effects of engineering activity.

Assumptions and objectives of the course:

To gain the knowledge about polymeric composites, their properties, materials for production, manufacturing methods and applications.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Student has a well established knowledge of synthesis, properties, aplication of polymeric composites. - [K_W02, K_W11]

Skills:

1. Student has the ability of analysing and interpreting of the results of experiments from the area of polymer chemistry and technology - [K_U01,K_U10]
2. Student has the ability of presenting the results of laboratory exercises in concise and proper manner - [K_U06]

Social competencies:

1. Student is conscious of limitations of science and technology in the area of polymer chemistry and technology, including environment protection - [K_K04, K_K02]
2. Student is conscious of limitation of his knowledge and understands the need of further continuous education in area of polymer chemistry and technology - [K_K01]
3. Students can work in a team and are aware of their responsibility for their work and responsibility for the results of the teamwork - [K_K04]

Assessment methods of study outcomes

Written exam in the subject from the field of composite materials, evaluation of laboratory exercises and reports.

Course description

Definition of composite material.
Properties of composites.
The ingredients of composites and their role.
Types of matrixes and reinforcing materials.
Polymeric matrixes of composites.
Fibre-reinforced composites. Types of fibres and reinforcing materials.
Polymeric and carbon fibres for composites reinforcement.
Industrial methods of production of composite materials with polymeric matrix.
Applications of polymeric composites.

Basic bibliography:

1. Comprehensive Composite Materials, Editors: A. Kelly, C. Zweben, Elsevier 2000.
2. Composites Manufacturing, S. K. Mazumdar, CRC Press 2002.

Additional bibliography:

1. Handbook of Composites, S. T. Peters, Chapman and Hall 1998
2. Fiber Reinforced Composites, P.K.Mallick, CRC Press Taylor Francis Group 2008.

Result of average student's workload

Activity	Time (working hours)
1. Lecture	15
2. Consultations to lecture	10
3. Laboratory	15
4. Consultations to laboratory	10
5. Preparation for laboratory	20
6. Preparation of reports	5

Student's workload

Source of workload	hours	ECTS
Total workload	75	3
Contact hours	50	0
Practical activities	15	0