



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Management and Production Engineering

Course

Field of study

Year/Semester

Material Engineering

2/4

Area of study (specialization)

Profile of study

Production systems

general academic

Level of study

Course offered in

Second-cycle studies

polisch

Form of study

Requirements

part-time

elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

8

8

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

PhD Kinga Mencil

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Faculty of Mechanical Engineering

Piotrowo 3 60-965 Poznań

Prerequisites

The student should obtain knowledge of mechanical, chemical and processing properties and applications of the plastics and rubber

Course objective

Components and classification of polymer materials. Thermoplastic polymers: polyolefins, polyvinyl chloride, plastics styrene and acrylate, polyamides, polycarbonate, polyacetal, thermoplastic rubber. Thermosetting polymers: phenoplasts and aminoplasts. Chemosetting polymers: unsaturated polyester, epoxy resins, rubber.



Course-related learning outcomes

Knowledge

1. The student should characterize the basic types of polymeric materials - [K_W08, K_W10, K_W14]
2. The student should explain the influence of the structure of polymers on their properties - [K_W03, K_W08, K_W10, K_W14]

Skills

1. The student is able to select a polymer material for specific applications - [K_U01, K_U16, K_U21]
2. The student is able to determine the relationships between the structure and properties of polymers - [K_U01, K_U21]

Social competences

1. The student is able to work in a group - [K_K03]
2. The student is aware of the role of polymeric materials in the modern economy and everyday life - [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Test exam? 20 questions, each has three answers, one answer is correct, for a correct answer 1 point. Ratings: 20 points ? very good, 19? 18 points db +, 17? 16 points db, 15? 14 points dst +, 13? 12 points dst. 11 and less points ndst.

Laboratory: Credit based on a written answer concerning the content of each performed laboratory exercise, a report on each laboratory exercise prepared according to the instructor's instructions. To obtain credit for the exercises, all laboratories must be passed (positive grade from the answers and the report).

Programme content

Lecture:

1. Advantages and disadvantages of polymeric materials.
2. Chemical classification of polymers.
3. Rheological and technological classification of polymers: elastomers, plastomers, thermoplastics, thermosetting and chemosetting.
4. Properties and application of large-scale polymeric materials from the group of thermoplastics: polyolefins, poly (vinyl chloride), polystyrene and styrene copolymers, poly (methyl methacrylate), fluoropolymers, thermoplastic polyesters, aliphatic and aromatic polyamides, polycarbonates.

Lab:

1. Determination of the density of polymers



2. Determination of strength
3. Determination of impact strength
4. Determination of hardness
5. Identification of materials

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the blackboard.
2. Laboratory exercises: practical exercises, performing experiments, discussion, team work, case studies.

Bibliography

Basic

1. Kelar K., Ciesielska D.: Fizykochemia polimerów ? wybrane zagadnienia, Wyd. Politechnika Poznańska 1998
2. Żuchowska D., Polimery konstrukcyjne, WNT, W-wa, wyd. II, 2002
3. Pieluchowski J., Puszyński A.: Technologia tworzyw sztucznych, WNT, Warszawa, 1998

Additional

- . Rabek J. F., Współczesna wiedza o polimerach, Wydawnictwo Naukowe PWN, Warszawa 2008

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	30	1,0

¹ delete or add other activities as appropriate