



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Elective lecture I (Special plastics processing techniques)

### Course

Field of study

Chemical and process engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Arkadiusz Kloziński

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Wydział Technologii Chemicznej

ul. Berdychowo 4, 61-131 Poznań

Responsible for the course/lecturer:

### Prerequisites

The student has knowledge of the basic issues of general chemistry, organic chemistry. The student knows and applies good working techniques in the chemical laboratory, is able to operate research equipment. Is able to obtain information from literature, databases and other properly selected sources.

### Course objective

Transfer of knowledge in the field of plastics processing. Developing the skills to acquire technological knowledge in the field of plastics processing and to become familiar with the principles of functioning of modern processing plants.

### Course-related learning outcomes

Knowledge



1. Student has general knowledge in the field of chemical technology as a related field directly related to chemical and process engineering. [K\_W04]
2. The student has the knowledge to understand the phenomena and physical processes related to plastics processing. [K\_W02]
3. The student has ordered general knowledge in the field of chemical engineering, machine science and apparatus of the chemical industry, within the processing of plastics. [K\_W13]

#### Skills

1. Student is able to analyze and evaluate the functioning of the basic apparatus of the plastic processing industry. [K\_U15]
2. The student is able to analyze and evaluate the functioning of basic processes and unit operations of plastic processing. [K\_U16]
3. Student is able to identify basic processes and unit operations in plastics processing and formulate their specifications. [K\_U17]

#### Social competences

1. The student understands the need for further training and improving their professional and personal competence in the field of plastics processing. [K\_K01]
2. The student is aware of the importance and understanding of non-technical aspects and effects of engineering activities (especially in the field of plastics processing), including its impact on the environment and the associated responsibility for decisions. [K\_K02]

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Stationary: test (20-30 questions). Online: final test using the test module on the eKursy platform (20-30 questions).

#### Programme content

Course contents include the following topics:

- 1) What is plastic processing and what is its importance in the economy of the country and the world
- 2) Modern polymer materials and their impact on the development of processing techniques.
- 3) Special extrusion techniques, with particular regard to multilayer extrusion and free blowing extrusion.
- 4) Special injection techniques, with particular emphasis on precision injection, water assisted injection molding, gas assisted injection molding.
- 5) Modern techniques of laminate production.



6) Rotational molding in the production of large-size products.

7) Special thermoforming techniques.

### Teaching methods

Lecture: multimedia presentation.

### Bibliography

#### Basic

1. J. Ferguson, Z. Kembłowski: „Reologia stosowana płynów”, Łódź 1995.
2. K. Wilczyński: „Reologia w Przetwórstwie Tworzyw Sztucznych”, WNT W-wa 2001.
3. R. Sikora: „Przetwórstwo tworzyw wielkocząsteczkowych”, PWN W-wa 1987.
4. R. Sikora: „Podstawy przetwórstwa tworzyw polimerowych”, WPL Lublin 1992.
5. K. Wilczyński: „Przetwórstwo tworzyw sztucznych”, WPW W-wa 2000.
6. A. Smorawiński: „Technologia wtrysku”, WNT W-wa 1984.

#### Additional

1. H. Saechtling: „Tworzywa sztuczne. Poradnik”, WNT Warszawa 2000.
2. W. Szlezyngier, „Podstawy reologii polimerów”, PRz. Rzeszów 1994.
3. R. Sikora i in., „Przetwórstwo tworzyw polimerowych. Podstawy logiczne, formalne i terminologiczne”, WPL Lublin 2006.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,7
Student's own work (literature studies, preparation for exam) <sup>1</sup>	10	0,3

<sup>1</sup> delete or add other activities as appropriate