

Course code C.9. Course item

1. INFORMATION ABOUT THE COURSE

A. Basic information

Course title	Simulation of Plastics Processing
Field of study	Computer Aided Engineering
Cycle	Second
Study profile	Academic
Study mode	Full-time
Specialisation	Not relevant
Unit responsible for the field of study	Faculty of Mechanical Engineering
Lecturer	Dr inż. Dariusz Sykutera, Dr inż. Karol Pepliński, Mgr inż. Piotr Czyżewski
Introductory courses	Not relevant
Prerequisites	Basic knowledge of polymer processing

B. Semester/ weekly timetable

Semester	Lectures	Classes	Laboratories	Project classes	Seminars	Field experience	ECTS credits
III	15	-	30	-	-	-	2

LEARNING OUTCOMES (acc. to National Qualifications Framework)

No.	Description of learning outcomes	Reference to learning outcomes for the field of study	Reference to learning outcomes for the area of study
KNOWLEDGE			
K1	student has knowledge of the software to simulate the plastics processing objects	CAE_W04	T2A_W04, T2A_W05
SKILLS			
S1	able to plan and carry out computer simulations of plastics processing, interpret the results and draw conclusions	CAE_U12	T2A_U08
S2	can be used to formulate and solve simple engineering tasks and research problems, methods of simulation	CAE_U13	T2A_U09
SOCIAL COMPETENCES			
SC1	able to properly define priorities for implementation specified by you or other tasks	CAE_K04	T2A_K04

2. TEACHING METHODS

multimedia lecture, laboratory classes

2. METHODS OF EXAMINATION

colloquium, written report (end of semester)

3. COURSE CONTENT

Specify the content separately for each type of classes in accordance with point I.B.	<p>LECTURE</p> <p>General knowledge about plastics material, plastics facts and polymer processing: extrusion, injection moulding, thermoforming, blow moulding. CADMOULD: Simulation of injection moulding process. Application of FEM in simulation program for injection moulding process. Modular structure of CADMOULD. Practical use of simulation program.</p> <p>Ansys Polyflow: Processes that involve membrane stretching: Blowing, Thermoforming. Simulation of blowing and thermoforming process.</p> <p>LABORATORY</p> <p>Simulation in CADMOULD: Import and working with simulated model, Injection point, runners, cooling channels (structure and optimization), Library of simulated materials, Selection of process parameters, Results of analysis, Optimization of parameters, Practical examples.</p>
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4. VALIDATION OF LEARNING OUTCOMES

(Each learning outcome from the list requires validation methods to ensure that it was achieved by a student.)

Learning outcome	Form of assessment (for example:)					
	Oral examination	Written examination	Colloquium	Project	Report
K1			x			
S1					x	
S2					x	
SC1					x	

5. LITERATURE

Basic literature	Tim A. Osswald, Juan P. Hernández-Ortiz: Polymer Processing - Modeling and Simulation, Hanser Publishers, Munich 2006 Didactic materials available by Simcon company.
Supplementary literature	Cadmould documentation: User's guide, tutorial guide, www.ansys.com .

6. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS

Student's activity	Student workload– number of hours
Participation in classes indicated in point 2.2	45
Preparation for classes	5
Reading assignments	5
Other (preparation for exams, tests, carrying out a project etc)	5
Total student workload	60
Number of ECTS credits allocated by the lecturer	2
Final number of ECTS credits (determined by the Programme Council for the Field of Study)	2