COURSE DESCRIPTION CARD - SYLLABUS

Course name
Material processing technologies [S2IMat1-MMiTS>TPM]

Course

Field of study	Year/Semester
Materials Engineering	2/3
Area of study (specialization)	Profile of study
Metal and Plastics Materials	general academic
Level of study	Course offered in
second-cycle	Polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other
15	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

2,00

Coordinators	Lecturers
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Prerequisites

Student has basic knowledge of physics and materials science (including heat transfer, flows, stresses, materials science, crystallization, phase transformations), CAD geometry systems and the basics of manufacturing engineering. Has also skills in Acquiring information from literature survey and internet, is able to use the acquired knowledge to choose a technology selection strategy and understand the necessity to learn, taking new knowledge and collaboration in a workgroup.

Course objective

Learning about selected non-waste manufacturing technologies used in material technologies

Course-related learning outcomes

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

Written exam at the end of the semester (credit if at least 50.1% of correct answers are obtained). Up to 50.0% - ndst, from 50.1% to 60.0% - dst, from 60.1% to 70.0% - dst +, from 70.1 to 80.0 - db, from 80.1% up to 90.0% - db +, from 90.1% to 100% - bdb.
Laboratories:
Participation in laboratory classes. Providing an oral or written answer to the teacher, graded on a scale from 2 to 5. Final grade on a grade scale from 2 to 5, the average of the obtained laboratory grades (all must be positively assessed, above 2)

Programme content

Application of the Rapid Prototyping method in foundry. Place of computer support in the design of casting technology. Modeling and simulation methods of complex foundry processes. Computer simulation of the casting process. Thermophysical databases in simulation systems. Characteristics of selected special casting manufacturing methods Application examples. Modern molding methods and production lines. Manufacture of precision castings from models made by Rapid Prototyping. Pouring molds under the action of centrifugal force or vacuum. Computer simulation of the casting process in Magmasoft. Optimization of the casting supply conditions using the simulation of the casting process.

Course topics

Selected chipfree manufacturing technologies used in material technologies

Teaching methods

Lecture: multimedia presentation illustrated with examples given on the blackboard, solving problems.
Laboratory exercises: performing experiments, solving problems, discussion, working in a team.

Bibliography

1. M. Perzyk i inni, Odlewnictwo. WNT, Warszawa 2004
2. Inżynieria produkcji, Karpiński T., WNT, Warszawa, 2004
3. Poradnik Odlewnika, Sobczak J., Wyd. Stowarzyszenia Technicznego Odlewników Polskich, Tom 1, Kraków 2013.
4. Poradnik Odlewnika, Sobczak J., Wyd. Stowarzyszenia Technicznego Odlewników Polskich, Tom 1, Kraków 2013.
5. D.M. Stefanescu, Science and Enginnering of Casting Solidification. Springer Verlag.2009

Breakdown of average student's workload

	Hours	ECTS
Total workload	0	0,00
Classes requiring direct contact with the teacher	0	0,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	0	0,00