



Subject card

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|---|--|--|---|-------------------------------------|--|------------|-----|
| Subject name and code | Machining and processing of plastics, PG_00033428 | | | | | | |
| Field of study | Medical and Mechanical Engineering, Mechanical and Medical Engineering | | | | | | |
| Date of commencement of studies | October 2020 | | Academic year of realisation of subject | | 2021/2022 | | |
| Education level | first-cycle studies | | Subject group | | Obligatory subject group in the field of study Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | | Mode of delivery | | at the university | | |
| Year of study | 2 | | Language of instruction | | Polish | | |
| Semester of study | 3 | | ECTS credits | | 2.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | prof. dr hab. inż. Kazimierz Orłowski | | | | |
| | Teachers | | prof. dr hab. inż. Kazimierz Orłowski dr inż. Sławomir Szymański dr hab. inż. Daniel Chuchala | | | | |
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| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 15.0 | 0.0 | 0.0 | 30 |
| | E-learning hours included: 0.0 | | | | | | |
| | Adresy na platformie eNauczanie: Obróbka Skrawaniem i Przetwórstwo Tworzyw Sztucznych - W/L; IMM, I stopień, 3 semestr: (M:31401W0): Zima 2021 - Moodle ID: 16436 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16436 | | | | | | |
| | Additional information: lectures are conducted at webinars, own recordings, presentations, films, demonstrations, exercise files | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | | Participation in consultation hours | | Self-study | SUM |
| | Number of study hours | 30 | | 5.0 | | 15.0 | 50 |
| Subject objectives | Preparation for recognizing machining processes | | | | | | |
| | Acquiring knowledge in the field of polymer materials processing methods | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | K6_W10 | | The student has knowledge of the machining processes The student has knowledge of the methods of manufacturing polymer products | | [SW1] Assessment of factual knowledge | | |
| | K6_U07 | | The student is able to choose the machine tool and tools for a given case The student is able to select the technological process for typical plastic products | | [SU3] Assessment of ability to use knowledge gained from the subject | | |

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| Subject contents | <p>LECTURE Geometric and kinematic quantities of cutting. Tool and workpiece movements, blade geometry in the tool layout, cut layer geometry. Effect of the tool nose on workpiece material. Chip formation. Forces and cutting forces. Tool materials and general rules for themselection. Basic methods of machining: turning, drilling, countersinking, reaming, milling.Grinding, surface grinding. Plastics processing - Basic concepts -definitions. Molding of plastic products.Physico-chemical processing, methods (injection molding, block pressing, stamping, welding, welding). Chemical and physical processing polymers, methods (gluing, metallization).</p> <p>LABORATORY TRAINING On lathes. Machining on milling machines. Machining of gears. Machining on grinders. High-pressure moulding of plastics: moulding thermosetting plastics solid pressing method, moulding of thermoplastics by injection moulding and extrusion. (application, machine and tool construction, technology, parameters) Joining of plastic elements using the following methods: impulse welding, hot welding air, ultrasonic welding (application, equipment construction, technology, parameters) , bonding of plastics .</p> | | |
| Prerequisites and co-requisites | finished materials science | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | test | 60.0% | 70.0% |
| | reports | 100.0% | 30.0% |
| Recommended reading | Basic literature | 1. Olszak W.: Obróbka skrawaniem. WNT, 2008. | |
| | | 2. Grzesik W.:Podstawy skrawania materiałów metalowych. WNT.1998. | |
| | | 3. Jemielniak K.: Obróbka skrawaniem. Oficyna Wyd. Polit. Warsz. Warszawwa 1998. | |
| | | 4. Poradnik Inżyniera Mechanika : Obróbka skrawaniem. | |
| | | 5.Sikora R.: Przetwórstwo tworzyw wielkocząsteczkowych, PWNWarszawa, 1994. | |
| | Supplementary literature | 1. Poradnik obróbki skrawaniem, Sanndvik Coromant. 2010 | |
| | | 2. Cichosz P. Narzędzia skrawające, WNT 2006 | |
| | eResources addresses | Obróbka Skrawaniem i Przetwórstwo Tworzyw Sztucznych - W/L; IMM, I stopień, 3 semestr: (M:31401W0): Zima 2021 - Moodle ID: 16436 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16436 | |
| Example issues/ example questions/ tasks being completed | Methods of making axially symmetrical and prismatic parts. | | |
| | Tool materials | | |
| | Polymer processing methods | | |
| Work placement | Not applicable | | |