



Subject card

| | | | | | | | |
|---|---|--|--|------------|--|---------|-----|
| Subject name and code | Material Removal Processes, PG_00040169 | | | | | | |
| Field of study | Mechanical Engineering | | | | | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | | | 2024/2025 | | |
| 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 | 1 | Language of instruction | | | English | | |
| Semester of study | 2 | ECTS credits | | | 4.0 | | |
| Learning profile | general academic profile | Assessment form | | | exam | | |
| 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 hab. inż. Daniel Chuchała dr inż. Aleksandra Suchta | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 15.0 | 0.0 | 0.0 | 45 |
| | E-learning hours included: 0.0 | | | | | | |
| 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 | 45 | 7.0 | | 48.0 | | 100 |
| Subject objectives | Giving basic knowledge concerning manufacturing technologies with special consideration to cutting processes and machine tools. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | K6_W03 | | Knows the basic types of tool materials and their application in machining processes | | [SW1] Assessment of factual knowledge | | |
| | K6_U04 | | Can select correct cutting process parameters using catalogues of cutting tools for a given set of workpiece material and cutting edge material. | | [SU2] Assessment of ability to analyse information | | |
| | K6_W08 | | Can select the correct machining process for the given type of element being manufactured | | [SW1] Assessment of factual knowledge | | |
| Subject contents | LECTURE: Geometric and kinematic parameters of cutting. Movements of tools and workpieces during machining. Geometry of a cutting tool analysed in tool-in-hand system and in tool-in-use system. Geometry of cut. A phenomenon of chip formation and kinds of chips. Heat and temperature in cutting area. Coolant and lubricant agents. Wear of cutting tools. Force and power during machining. Vibrations during cutting. Tool materials and rules of their selection. Basic ways of cutting: turning, milling, drilling, deepening, boring. Abrasive machining. LABORATORY: Parting-off materials and machine-tools for cutting-off. Machining on lathes. Machining on drilling machines. Machining on milling machines. Machining of toothed gear-wheels. Machining on grinding machines. Cutting on planing machines and vertical shapers. | | | | | | |

| | | | |
|--|--|---|-------------------------------|
| Prerequisites and co-requisites | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Written exam | 56.0% | 90.0% |
| | Laboratory | 100.0% | 10.0% |
| Recommended reading | Basic literature | <p>1. GRZESIK Wit. Advanced Machining Processes of Metallic Materials. Theory, Modelling, and Applications. 2nd Edition, ELSEVIER, Amsterdam 2017</p> <p>2. ASM Handbook, Volume 16, Machining. ASM International. Handbook Committee. 1989</p> <p>3. Childs, T., Maekawa, K., Obikawa, T., Yamane, Y.. Metal Machining. Theory and Applications. ARNOLD, London 2000</p> | |
| | Supplementary literature | 1. Kalpakjian Serope, Schmid Steven. Manufacturing Engineering & Technology (7th Edition), Published by Pearson, 2014. | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| Example issues/ example questions/ tasks being completed | Final test consists of many questions that are related to all subsubjects. | | |
| Work placement | Not applicable | | |