



Subject card

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|---|--|---|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Materials Technology , PG_00040040 | | | | | | |
| Field of study | Mechanical Engineering | | | | | | |
| Date of commencement of studies | October 2021 | 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 | Part-time studies | Mode of delivery | | | at the university | | |
| Year of study | 1 | Language of instruction | | | Polish | | |
| Semester of study | 2 | ECTS credits | | | 3.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Michał Landowski | | | | | |
| | Teachers | dr inż. Michał Landowski | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 8.0 | 0.0 | 0.0 | 23 |
| | E-learning hours included: 0.0 | | | | | | |
| | Adresy na platformie eNauzanie: Technologia materiałów, W/L, MiBM NST, sem. 02, lato 21/22, PG_00040040 - Moodle ID: 23193 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=23193 | | | | | | |
| 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 | 23 | 7.0 | 45.0 | 75 | | |
| Subject objectives | Student gains the knowledge of basic technologies of getting metal alloys, creating casts and components worked plastically. Produces casting forms. Carries out practically rolling, pressing, cutting and drawing. Gets know how to examine metal features. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials | Learns methods of testing the properties of metal materials. The student learns the methods of shaping elements by casting and forming. | | | [SW1] Assessment of factual knowledge | | |
| | [K6_U10] is able to formulate the principles of selecting a material for a construction, ensuring the correct operation of a device | The student knows the basic groups of engineering materials. Is able to determine the influence of manufacturing techniques on the properties of materials. | | | [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information | | |

| Subject contents | <p>Metallurgy of metals and its alloys. Metallurgy of pig iron. Steelmaking. Smelting of the steel in the electric furnaces. Metallurgy of the cast iron. Methods of casting. Manual and machine-made sand casting. Moulding materials. Automatization and mechanization of forming and creating the core. Special methods of making forms of the core. Special methods of casting. Bases of the plastic working. Plastic strain of metals. The influence of the plastic strain in the metal features. Classification of plastic working processes. Rolling of metals. Construction and classification of the rolling mills. Rolling stock. Heating of the stock. Rolling of the billets and blooms. Rolling of the sections. Rolling of the tubes. Forging and pressing. Machines for forging and pressing. Flat die forging. Die/drop forging. Classifications of the forgings. Drawing and extrusion. Characteristic of the drawing and extrusion processes. Drawbenches. Extruding press. Bar, Wire and tube drawing technology. Extrusion processes technology. Stamping of coats and classification of its processes. Shearing of metals. Bending of metals. Progressive pressing and compound die. Casting and plastic working processes and its influence on the natural environment. LABORATORY PRACTICAL TRAINING. Preparing of casting processes. Execution of forms by using sectional and not-sectional models. Machines for plastic working. The influence of the plastic strain in the metal features. Rolling. Plastic bending of profiles and tubes. Stamping of coats.</p> | | | | | | | | | | | |
|--|--|--|--|--------------------------|-------------------|-------------------------------|--|-------|-------|--|-------|-------|
| Prerequisites and co-requisites | Not required | | | | | | | | | | | |
| Assessment methods and criteria | <table border="1"> <thead> <tr> <th data-bbox="453 725 794 763">Subject passing criteria</th> <th data-bbox="799 725 1141 763">Passing threshold</th> <th data-bbox="1145 725 1482 763">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 770 794 797"></td> <td data-bbox="799 770 1141 797">50.0%</td> <td data-bbox="1145 770 1482 797">50.0%</td> </tr> <tr> <td data-bbox="453 804 794 831"></td> <td data-bbox="799 804 1141 831">50.0%</td> <td data-bbox="1145 804 1482 831">50.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | | 50.0% | 50.0% | | 50.0% | 50.0% |
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| | 50.0% | 50.0% | | | | | | | | | | |
| | 50.0% | 50.0% | | | | | | | | | | |
| Recommended reading | Basic literature | <ol style="list-style-type: none"> 1. Poradnik inżyniera: Odlewnictwo. WNT. Warszawa 1974 2. Murza - Mucha K.: Techniki wytwarzania. Odlewnictwo. PWN Warszawa 1978 3. Dobrucki W.: Zarys obróbki plastycznej metali. Śląsk 1992 4. Skoblik R., Wilczewski L.: Technologia Metali. Laboratorium. 2006r. www.wbss.pg.gda.pl | | | | | | | | | | |
| | Supplementary literature | <ol style="list-style-type: none"> 1. Erbel S., Kuczyński K., Marciniak Z.: Obróbka plastyczna. Warszawa. PWN 1986 2. Romanowski W.P.: Poradnik obróbki plastycznej na zimno. Warszawa: WNT 1976 3. Szwecyca M., Nadolska D.: Metalurgia i odlewnictwo. Poznań: Wyd. Polité. Pozn. 2002 | | | | | | | | | | |
| | eResources addresses | Technologia materiałów, W/L, MiBM NST, sem. 02, lato 21/22, PG_00040040 - Moodle ID: 23193 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=23193 | | | | | | | | | | |
| Example issues/ example questions/ tasks being completed | <p>Metallurgy of metals and its alloys. Manual and machine-made sand casting. Bases of the plastic working. Plastic strain of metals. The influence of the plastic strain in the metal features.</p> | | | | | | | | | | | |
| Work placement | Not applicable | | | | | | | | | | | |