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|---|------------------------|--|---------------|---------------------------|
| <b>Óbudai University</b><br>Bánki Donát Faculty of Mechanical and Safety<br>Engineering                 |                        | <b>Institute of Materials and Manufacturing Sciences</b><br>Department of Materials Technology     |               |                           |
| <b>Name and code of subject: Basics of Materials Technology (e-learning), BAEAAE1BNE</b>                |                        |  |               |                           |
| <b>Credit points: 3</b>   |                        |  |               |                           |
| <i>Full-time course 2021/2022, 1. semester</i>  |                        |  |               |                           |
| MECHATRONIC ENGINEERING BACHELOR DEGREE – ENGLISH LANGUAGE COURSE                                       |                        |  |               |                           |
| Subject leader:   | <b>dr. Pinke Péter</b> |  | Instructors:  |                           |
| Prerequisite:   |                        |  |               |                           |
| Classes per week:2  | Lecture: 0             | Seminar: 0   | Laboratory: 0 | Consultancy: upon request |
| Evaluation:   | <b>Midterm mark</b>    |  |               |                           |
| <b>Course description</b>   |                        |  |               |                           |
| <b>Course aim:</b> Overview of metallic and non metallic materials production and shaping technologies. |                        |  |               |                           |
| Lecture program:  |                        |  |               |                           |
| 1   | 1 <sup>th</sup> week   | Outline of materials technologies. Metallurgy: methods and their processing steps.                 |               |                           |
| 2   | 2 <sup>nd</sup> week   | Production of aluminium, cooper, titanium and magnesium. Manufacture of pig iron.                  |               |                           |
| 3   | 3 <sup>th</sup> week   | Production of steel.   |               |                           |
| 4   | 4 <sup>th</sup> week   | Ladle metallurgy. Cast iron production.  |               |                           |
| 5   | 5 <sup>th</sup> week   | Casting technologies.  |               |                           |
| 6   | 6 <sup>th</sup> week   | Powder metallurgy.   |               |                           |
| 7   | 7 <sup>th</sup> week   | Plastic deformation of metals, principles, strain, rate of deformation.                            |               |                           |
| 8   | 8 <sup>th</sup> week   | Industrial deformation technologies: forging, rolling.   |               |                           |
| 9   | 9 <sup>th</sup> week   | Industrial deformation technologies: tube processing, extrusion.                                   |               |                           |
| 10  | 10 <sup>th</sup> week  | Industrial deformation technologies: cold rolling, drawing, tube reduction, combined technologies. |               |                           |
| 11  | 11 <sup>th</sup> week  | Ceramic materials, technology of ceramics. Plastics, processing of plastics.                       |               |                           |
| 12  | 12 <sup>th</sup> week  | Composite materials, technology of composite materials.  |               |                           |
| Dates of the written exams (tests):   |                        |  |               |                           |
| Written exam  |                        | 13th week of education   |               |                           |
| Re-exam   |                        | 14th week of education   |               |                           |

**Requirements for obtaining midterm mark** (task, written exam, essay, presentation etc.)

During the semester, two individual tasks and a written exam (test) must be successfully solved.

The midterm mark is the average of the marks obtained for the two individual tasks and the written exam, if none of the marks is unsatisfying. Otherwise, the midterm mark is unsatisfying. If the student completes all the requirements within the original deadline, the midterm mark is determined in accordance with the rounding rules. If the student hands in his or her job after the deadline or writes a supplementary exam, the rounding is adjusted downwards to determine the midterm mark.

During the semester one written exam (test) must be successfully solved. A supplementary written exam (re-exam) is made by the student if the written exam is unsatisfactory. In the case of an unsatisfactory supplementary exam, the student completes a signature supplement exam.

The "Blocked" index entry will be given to the student if he/she does not submit his/ her assignments within the given deadline or if he/she has failed to write exam or supplementary exam.

An unsatisfactory midterm mark is corrigible once during the first 10 working days of the exam period by a signature supplement exam.

Such a signature supplement exam can be made only if the student has previously written an exam or a supplementary exam. The final mark of the subject will be the signature supplement exam mark.

**Literature:**

- 1) MATERIAL TECHNOLOGIES, course bulletin, Typotex Publisher, Budapest, 2012
- 2) Kalpakjian, S., Schmid, S. R.: Manufacturing Engineering and Technology, Prentice Hall, 2009
- 2) Beddoes, J., Bibby, M. J.: Principles of Metal Manufacturing Processes, Elsevier, 2003
- 3) Groover, M. P: Fundamentals of Modern Manufacturing, John Willey & Sons Inc., 2010
- 4) Electronic materials in Moodle

**Quality assurance methods of the subject:**

The standard of theoretical and practical education is annually overviewed at an institution's conference based on the feedback of the teachers and students. They assess the success of the subject and make suggestions for necessary change in order to maintain the interaction between theory and practical training.

**Budapest, 4<sup>th</sup> of June 2021.**

**Dr. Pinke Péter**  
**subject leader**