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| **Óbuda University**<br>Bánki Donát Mechanical Safety Engineering Faculty | **Institute of Materials and Manufacturing Science**<br>Department of Materials Technology |
| *Name of the subject:*<br>**Materials Technology** | *NEPTUN-code:*<br>BAXACE2BNF |
| **Course type:** Full-time | **Credits:** 4 |
| **Exam/ course assignment:** Exam | **Language:** English |
| **Lecturer:**<br>Dr. Tünde KOVÁCS associate professor | **Practice**:<br>Peter VARGA assistant professor |

***Course description:***

Overview of basic materials processing methods, like casting, rolling, forging, bulk and sheet metal forming, polymer processing, powder metallurgy, etc. Joining of metals, soldering, brazing, welding. Surface coating. Materials and forming technology. Engineering materials and forming processes. Functions, loads, materials and shapes of parts.

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| Lessons per Week: | Lectures: 2 | Labs: 0 | Practice: 1 | Consultation by request |
| Evaluation: | practice mark | | | |

**1. Lecture program**

| Week | Subject |
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| 1 | Introduction of the materials technology |
| 2 | Rolling and Forming technologies, Open die forging, Forging machines, Closed die forging |
| 3 | Shearing of sheet and plate |
| 4 | Blanking and piercing operations and dies. |
| 5 | Bending of sheets. Bending tools. |
| 6 | Test 1 |
| 7 | Deep drawing operations. Deep drawing tools |
| 8 | Fusion welding, solid state welding |
| 9 | Special welding technologies, Brazing, soldering |
| 10 | Heat treating, Surface treating and surface coatings |
| 11 | Test 2 |
| 12 | Vacation |
| 13 | Other joining technologies |
| 14 | Repeated Test 1, and Test 2 |

**2. References**

S. Kalpakjian: Manufacturing Processes for Engineering Materials, Addison-Wesley Publishing Company

J. A. Schey: Introduction to Manufacturing Processes, McGraw-Hill Book Company

P. Rácz: Metal Forming Processes, Óbuda University, (electronic textbook).

| 3. Requirements | |
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| **a) Taking part on lessons:**<br>Taking part on practical lessons is obligatory, visiting lectures is recommended. | |
| **b) Tests and other tasks** | |
| **Week** | **Tests** |
| 6 | Test #1 |
| 11 | Test #2 |
| 14 | Repeated tests |
| **c) Terms of signature and practice mark**<br>Students who accomplish semester requirements get signature and practice marks. | |
| **d) Evaluation of practice mark**<br>Practice mark is the mean value of two test results (or repeater tests) if the mark of is at least 2. If the mark of any of them after repeater tests is 1 then the practice mark is 1 as well. | |
| **e) Repeater tests**<br>Failed tests can be rewritten on the last week of the lesson period of the semester. | |
| **f) Repeater test in the examination period of the semester**<br>Failed practice marks can be improved in the first two weeks (10 working days) of the examination period. The date of it is given by the reader before the end of the lesson period. | |

Budapest, 2024.02.01.

**Dr. Tünde KOVÁCS**
**associate professor**

**Schedule for practical lessons**

**Participation in the lessons is obligatory.**

**Schedule**

| | **Course 01** | **Course 02** | **Topic** | **Lab** |
|---|---|---|---|---|
| Week<br>Date | 1<br>14. February | 2<br>21. February. | Basics of plastic deformation | Fszt. 16. |
| | 3<br>28. February | 4<br>06. March | Examples and calculations of basic plastic forming technologies<br>Formability of sheet metals | Fszt. 16. |
| | 5<br>13. March | 6<br>20. march | Hardenability of steels<br>Jominy end-quench test | P 22A |
| | 7<br>27. March | 8<br>03. April | Quenching and tempering of steels | P 22A |
| | 9<br>10. April | 10<br>17. April | Welding practice | P 31<br>P 33 |
| | 11<br>24. April | 12<br>01. May | No practice | - |
| | 13<br>08. May | 14<br>15. May | Welding practice | P 31<br>P 33 |

Scheduled timeframe of courses:

Wednesday 8:00-9:40