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| <b>Study program / course:</b> Mechanical engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |                              |                      |                     |
| <b>Type and level of study:</b> Master academic studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                           |                              |                      |                     |
| <b>Course: Technology of plastic mass processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |                              |                      |                     |
| <b>Teachers:</b> Bogdan Nedić                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |                              |                      |                     |
| <b>Status of course:</b> Elective for module M <sub>1</sub> , III semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                              |                      |                     |
| <b>Number of ECTS:</b> 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              |                      |                     |
| <b>Precondition:</b> none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           |                              |                      |                     |
| <b>The objective of course</b><br>Present and explain basic technologies of plastic mass processing. Demonstrate some processing methods and point to the important elements from aspects of right choice of technological parameters. Train students to apply these technologies during manufacture of different plastic products. Enable students for construction of simple tools for manufacture by injection spraying                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                              |                      |                     |
| <b>The outcome of course</b><br>During this course students gain necessary knowledge about plastic masses, their characteristics, characteristics of final products, technology for manufacture of plastic elements, and basic characteristics of tools used for manufacture of plastic elements. Students will be enabled to construct simple tools and prepare project documentation of advanced tools for manufacture by spraying                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |                              |                      |                     |
| <b>Syllabus</b><br><i>Theoretical study</i><br>Course consists of several subsections: <ul style="list-style-type: none"><li>- plastic masses: sorts, classification, characteristics, technological behaviour, investigations;</li><li>- projecting of plastic elements;</li><li>- technological methods for plastic manufacture; KALANDROVANJE, pressing (regular, indirect, injection), spraying, extruding (production of foils, tubes, bottles, stripes, plates and sheets), thermal shaping, welding, cutting etc;</li><li>- equipment, machines and tools for manufacture of plastic elements;</li><li>- conception alternatives and tool structure for manufacture of plastic elements;</li><li>- standard tool elements, tool materials;</li><li>- modern methods for tool design;</li><li>- design of tools for injection spraying of plastic masses and tools for other methods;</li><li>- plastic recycling</li></ul><br><i>Practical classes: Practice, other forms of lectures, research projects</i><br>During laboratory practice students are becoming capable to choose and define technologies of plastic elements manufacture, know about machines and other equipment with goal to buy and service them. During visits of companies students will learn about modern machines for manufacture of tool elements for plastic mass processing and about available technologies for manufacture of plastic elements. During research projects students will be enabled to conduct basic research in the area of the course. |                           |                              |                      |                     |
| <b>Recommended reading</b> <ul style="list-style-type: none"><li>1. Nedić, B., Đukić, V.: Plastične mase, skripta, Mašinski fakultet, Kragujevac, 2004.</li><li>2. Nedić, B.: Tehnologije prerade plastičnih masa, skripta, Mašinski fakultet, Kragujevac, 2007.</li><li>3. Nađ, M.: Polimerni materijali, autorovo izdanje i Multigraf, Zagreb, 1991.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                           |                              |                      |                     |
| The number of hours of active teaching:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                           |                              |                      | Other classes:<br>1 |
| Theory:<br>3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Practical classes:<br>1.4 | Other forms of teaching: 0.6 | Research study:<br>0 |                     |
| <b>Methods of teaching</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                              |                      |                     |
| <b>Evaluation of knowledge</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                           |                              |                      |                     |
| <b>Pre-final exam obligations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>points</b>             | <b>Final exam</b>            |                      | <b>points</b>       |
| Activities during the classes:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10                        |                              |                      |                     |
| Practical classes:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10+20=30                  | Oral exam                    |                      | 30                  |
| Colloquiums(s) :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15+15=30                  |                              |                      |                     |
| Seminar(s) :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                           |                              |                      |                     |