Tools and Fixtures (ECTS credits: 6)

Language: the course is offered in Serbian and Hungarian

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**Course description:**

The course contains the following topics: Classification of the tools. Overview of the materials the tools are made of. Presentation of the structures of the most commonly used tools. Analysis of the tool geometry of the different cutting tools. Basics of the cutting tool design. Basics of the sheet metal shaping and plastic forming tools design. Advantages of the use of standard tools and tool elements. Classification of the fixtures. Overviewing the elements used for positioning a workpiece, and analyzing the precision of the positioning. Clamping elements. Determination of the magnitude of the clamping force at different clamping methods. Discussion of the basic principles, and the usage of modular fixtures.

1. Classification of the tools
2. Tool materials
3. Tool geometry of different cutting tools
4. Design of cutting tools
5. Design of sheet metal part shaping tools
6. Design of plastic parts forming tools
7. Classification of the fixtures
8. Locating elements, precision of the locating
9. Fixtures with wedges
10. Articulated fixtures
11. Screwed fixtures
12. Eccentric fixtures
13. Jigs
14. Fixture design
15. Fundamentals of automated fixture design

**Aims:**

Introduction of the tools and fixtures used in manufacturing.

To learn the basics of tool and fixture design.

To develop sense for practical usage of the tools and fixtures.

**Learning outcomes:**

The student should be able to

* Design fixture
* Design tools for sheet metal parts
* Design tools for forming plastic parts