BM5411

Study program / course: Mechanical engineering

Type and level of study: Bachelor academic studies

Course: Machine Tools

Teachers: Bogdan Nedić, Slobodan Mitrović

Status of course: Obligatory for module M_1, V semester

Number of ECTS: 6

Precondition: none

The objective of course

- present and explain basic elements of tool machines,
- demonstrate some of the machine transmitters and point to important elements from aspect of proper definition of machine transmitter elements and their design,
- train students to use computer technologies during calculations and design of transmitters,
- learn about measuring equipment and systems for measuring exploitation characteristics of tool machines and following documentations

The outcome of course

Student will be qualified to:

- recognize and determine (calculate and measure) exploitation characteristics of tool machines,
- with knowledge of requirements of manufacture process properly define needed characteristics of machine transmitter,
- properly design elements of tool machine transmitters.

Syllabus

Theoretical study

Tool machines. Manufacturing system. Definitions. History of tool machines. Division and purpose of tool machines, conception alternatives. Examples of tool machines (lathes, drills, grinders, milling machines etc). CNC tool machines. Highly productive tool machines for serial production. Kinematics of tool machines. Exploitation and techno economical characteristics of tool machines. Investigation of tool machine characteristics. Kinematical systems for tool machines. Movement transformers. Transmitters of periodical actions. Hydraulic transmitters. Electromechanical transmitters. Drive of tool machines. Main shaft of tool machines. Wages for circular and straight movement. Joint ventures. Bearer system of the machine.

Practical classes: *Practice, other forms of lectures, research projects*

During laboratory practice students are becoming capable to identify kinematical system of tool machine and determine (calculate and measure) exploitation characteristics of tool machines, prepare proper documentation and design simple elements of tool machine transmitters

Recommended reading

1. Zahar, S., "Mašine alatke 1", Jugoslovensko društvo za tribologiju, Kragujevac, 1993
2. Zahar, S., "Mašine alatke 2", Jugoslovensko društvo za tribologiju, Kragujevac, 1997
3. Nedić, B., "Mašine alatke, Projektovanje prenosnika mašina alatki" (skripta), Mašinski fakultet, Kragujevac, 2007
4. Lazić, M., Nedić, B., Mitrović, S., "Tehnologija obrade rezanjem, izbor režima obrade", Mašinski fakultet, Kragujevac, 2002

The number of hours of active teaching:				Other classes:
Theory: 3	Practical classes: 1.6	Other forms of teaching: 0.4	Research study: 0	1

Methods of teaching

Evaluation of knowledge

Pre-final exam obligations	points	Final exam	points
Activities during the classes:	**10**		
Practical classes:	15+15=**30**	Oral exam	**30**
Colloquiums(s) :	15+15=**30**		
Seminar(s) :			