

SYLLABUS

Approved,
DEAN

1. Program Data

1.1. Institution of Higher Education	Babeş-Bolyai University
1.2. Faculty	Faculty of Engineering
1.3. Department	Department of Engineering Science
1.4. Field of Study	Electrical Engineering
1.5. Course of Study	License/ Bachelor
1.6. Study Programme	Electromechanics

2. Discipline Data

2.1. Discipline Name	Machine tools						
2.2. Course Coordinator	Lecturer phd.eng. Ana-Maria BUDAI						
2.3.1. Seminary Coordinator	-						
2.3.2. Laboratory Coordinator	Lecturer phd.eng. Ana-Maria BUDAI						
2.3.3. Project Coordinator	-						
2.4. Year of Study	II	2.5. Semester	III	2.6. Evaluation Time	C	2.7. Discipline Regime	SD

3. Estimated Total Time (hours per semester of teaching activities)

3.1. Number of Hours per Week	3	from which: 3.2. Course	2	3.3. laboratory	1
3.4. Total Hours from the Curriculum Plan	42	from which: 3.5. Course	28	3.6. laboratory	14
Time Fund Distribution - hours					58
Study of Handbook, Course Materials, Bibliography & Notes					33
Additional Documentation in Library, on Special E-learning Platforms & in the Field					15
Preparation of seminars/laboratories/ projects, topics, reports, portfolios & essays					8
Mentoring					-
Examination					2
Other Activities					-
3.7. Total Time of Individual Study	58				
3.8. Total Hours per Semester	100				
3.9. Number of Credits	4				

4. Pre-condition (where is the case)

4.1. of Curriculum	• Mechanics, technical drawing and general notions of machine parts
4.2. of Competences	• Use of measuring devices and interpretation of measured data

5. Condition (where is the case)

5.1. of Course Progress	• computer, internet access / classroom, video projector
5.2.1. of Seminary Progress	• -
5.2.2. of Laboratory Progress	• knowledge of laboratory work and related equipment
5.2.3. of Project Progress	• -

6. Acquired Specific Competences

Professional Competences	<ul style="list-style-type: none"> • Application and adequacy of specialized knowledge of mathematics, physics, informatics specific in the field of electrical engineering (PC1). • Operating with specialized concepts in the field of computer technology and information technology.(PC2) • Modeling and identification of automatic system elements in the control structures of electromechanical installations. (PC3)
Transversal Competences	<ul style="list-style-type: none"> • Identifying the objectives to be achieved, the available resources, the conditions for their completion, the work stages, the related deadlines and the related risks. (TC 1) • Identify roles and responsibilities in a multidisciplinary team and apply effective relationship and work techniques within the team. (TC 2) • Efficient use of information resources and of assisted communication and training resources (internet portals, specialized software applications, databases, online courses, etc.) both in Romanian and in a language of international circulation. (TC 3)

7. Discipline Objectives (coming out from the Checklist of Acquired Specific Competences)

7.1. General Objective of Discipline	<ul style="list-style-type: none"> • Development of analytical thinking; • Familiarization of the future specialist with the basic notions of machine tool, aggregate, machining center; • Acquiring the necessary knowledge regarding the structure and kinematics of a machine tool.
7.2. Specific Objectives	<ul style="list-style-type: none"> • Acquiring the constructive solutions regarding the specific organs and components, the main and advance drives, the mechanisms for transforming the trajectory of the movements, the control and auxiliary systems of the machine tools specific to the field of machine constructions; • Practical example of machine tool-specific subassemblies; • Training the skills and abilities needed in the knowledge and recognition of machine tools, and the symbols used in the kinematic scheme; • Awareness of the importance of training during the semester to obtain good and sustainable results, the importance of individual study and verification of theoretical hypotheses issued by practical tests in the laboratory.

8. Content

8.1. Course	Teaching methods	Observation
1. Introductory notion. Defining, classifying and symbolizing machine tools.	Exposure, problematization, heuristic conversation, explanation, challenging students to dialogue	2 hours
2. General and technical indicators specific to machine tools. Work cycles. Machine tool control.		2 hours
3. Load-bearing parts.		2 hours
4. Guidance systems.		2 hours
5. Main shafts. Main shaft heads. Main shaft bearings.		2 hours
6. Defining kinematic chains for main movements, work advance, intermittent advance.		2 hours
7. Construction and kinematics of turning machine tools.		2 hours
8. Construction and kinematics of drilling machine tools.		2 hours
9. Construction and kinematics of milling machine tools.		2 hours
10. Construction and kinematics of machine tools for broaching, planning, mortising.		2 hours
11. Construction and kinematics of grinding machine tools.		2 hours
12. Industrial aggregates. Typology. Indexing elements and manufacturing directions.		2 hours
13. Construction and kinematics of aggregates.		2 hours
14. Production systems		2 hours
Bibliography <ul style="list-style-type: none">• Lungu, I. – Numerical control machine tools and flexible machining systems. Publishing House MODUS, Reșița, 1997.• Lungu, I. – Machine tools and aggregates, vol. 1 and 2. Publishing House EftimieMurgu, Reșița, 1998• Gh. Boiangiu, E. Dodon ,A. Albu, Gh. Boncoi, M. Cretu – Mașini – unelte si agregate , Publishing House DP Buc. 1979.• A. Oprean - Machine tool hydraulics, Publishing House DP Buc. 1979.• Course notes (electronic format)– Ana-Maria Budai, 2020• e-mail: ana.budai@ubbcluj.ro		
8.2.1. Seminary	Teaching methods	Observation
1.-	-	-
8.2.2. Laboratory	Teaching methods	Observation
1. Labor protection rules. Laboratory presentation.	Group work, problem solving and discovery, linking theoretical knowledge to practical applications	2 hours
2. Identification of load-bearing parts of machine tools		2 hours
3. Determining the geometric accuracy of machine tools. Rectilinearity checks.		2 hours
4. Determining the geometric accuracy of machine tools. Main shaft check.		2 hours
5.Determining the geometric accuracy of machine tools. Checks on the reciprocal positions between the main shaft and guide systems or base surfaces.		2 hours
6.Recognition of symbols used in pneumatic, hydraulic and mechanical mechanisms in the kinematic diagrams of machine tools.		2 hours
7. Evaluation of laboratory activity.		2 hours
Bibliography <ul style="list-style-type: none">• Lungu, I. – Numerical control machine tools and flexible machining systems. Publishing House MODUS, Reșița,		

1997. <ul style="list-style-type: none"> • Lungu, I. – Machine tools and aggregates, vol. 1 and 2. Publishing House Eftimie Murgu, Reșița, 1998 • Gh. Boianu, E. Dodon, A. Albu, Gh. Boncoi, M. Cretu – Machine tools and aggregates, Publishing House DP București, 1979. • A. Oprean - Machine tool hydraulics, Publishing House DP Buc. 1979. • Course notes (electronic format) – Ana-Maria Budai, 2020 • Lungu, I.; Pastor, A; Marinescu, C. – Laboratory supervisor at MUCN and SPF. Publishing House Univ. E. Murgu, Reșița, 2001 • e-mail: ana.budai@ubbcluj.ro 		
8.2.3. Project	Teaching methods	Observation
1. -	-	-
Bibliography		

9. Corroborating Discipline's Contents with the Expectation of the Epistemic Community Representatives, the Professional Associations and the Employers' Representatives from the Programme Corresponding Field

<ul style="list-style-type: none"> • They have been established with the main employers by previous discussions at the study programme substantiation.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Weight from the final grade
10.4. Course	Debates participation	Number of interventions	10 %
	Acquired knowledge level	Exam (oral)	60 %
10.5.1. Seminary	Activity / implication	-	-
	Gained competence level	-	-
10.5.2. Laboratory	Activity / implication	Number of interventions	10 %
	Gained competence level in practice	Interactive	20 %
10.5.3. Project	Readiness in phrasing the project stages	-	-
	Project quality	-	-
10.6. Performance Minimum Standard			
<ul style="list-style-type: none"> • Completion of Applicative Activities (laboratory work accomplishment approval by the minimum grade of 5). • Completion of final exam by the minimum grade of 5. 			

Completion Date

03.05.2022

Course Coordinator's Signature

Lecturer phd.eng. Ana-Maria BUDAI

Laboratory / Project Coordinator's Signature

Lecturer phd.eng. Ana-Maria BUDAI

Department Endorsement Date

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Chief of Department Signature

Lecturer phd.fiz. Cornel Hațiegan