

SYLLABUS

Approved,
DEAN

Prof. univ. dr. ing. Gilbert-Rainer GILLICH

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	Bachelor
1.6. Study Programme	Electromecanics

2. Discipline Data

2.1. Discipline Name	Quality and reliability						
2.2. Course Coordinator	Prof.univ.dr.ing. Nicoleta GILLICH						
2.3.1. Seminary Coordinator	Prof.univ.dr.ing. Nicoleta GILLICH						
2.3.2. Laboratory Coordinator							
2.3.3. Project Coordinator							
2.4. Year of Study	IV	2.5. Semester	I	2.6. Evaluation Time	E	2.7. Discipline Regime	Cmp.

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

3.1. Number of Hours per Week	4	from which: 3.2. Course	5	3.3. seminary	2
3.4. Total Hours from the Curriculum Plan	56	from which: 3.5. Course	28	3.6. seminary	28
Time Fund Distribution - hours					69
Study of Handbook, Course Materials, Bibliography & Notes					28
Additional Documentation in Library, on Special E-learning Platforms & in the Field					11
Preparation of seminars/laboratories/ projects, topics, reports, portfolios & essays					26
Mentoring					2
Examination					2
Other Activities					0
3.7. Total Time of Individual Study	69				
3.8. Total Hours per Semester	125				
3.9. Number of Credits	5				

4. Pre-condition (where is the case)

4.1. of Curriculum	•
4.2. of Competences	• PC utilisation

5. Condition (where is the case)

5.1. of Course Progress	•
5.2.1. of Seminary Progress	•
5.2.2. of Laboratory Progress	•
5.2.3. of Project Progress	•

6. Acquired Specific Competences

Professional Competences	• CP1 – Application and adequacy of specific knowledge of mathematics, physics, informatics specific in the field of electrical engineering.
Transversal Competences	• CT3 - Identify roles and responsibilities in a multidisciplinary team and apply effective relationship and work techniques within the team

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

7.1. General Objective of Discipline	• Transmitting knowledge on the production, transmission and distribution of electricity..
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7.2. Specific Objectives	<ul style="list-style-type: none"> • Transmission of knowledge on the reliability of electrical installations. • Transmission of knowledge on modeling electrical systems and installations. • Transmission of knowledge on the determination of reliability indicators
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8. Content

8.1. Course	Teaching methods	Observation
1. Defining quality and reliability. Factors that determine the study of reliability. Reliability objectives. Types of reliability	Presentation; Discussion.	2 hours
2. Elements of probability calculation. Definitions of the notion of probability. Classical probabilistic schemes	- // -	6 hours
3. Discrete and continuous random variables.	- // -	2 hours
4. Distribution functions and probability density. Probabilistic functions in the reliability of the simple element.	- // -	4 hours
5. Characteristic of random variables. Distributions of random variable.	- // -	4 hours
6. Reliability of irreparable systems. Physical system in serial, parallel, mixed configuration.	- // -	2 hours
7. Reliability of complex systems. Markov random processes.	- // -	2 hours
8. Reliability of composite systems. Equivalent element method.	- // -	4 hours
9. Methods for increasing the reliability of systems. Factors influencing the reliability of systems.	- // -	2 hours
Bibliography 1. Sarchiz D., <i>Optimizarea fiabilității sistemelor electrice. Modele. Aplicații. Programe</i> , Editura MatrixRom, 2005. 2. Panaite V., Popescu M., <i>Calitatea produselor și fiabilitate</i> , Editura MatrixRom, București, pe suport electronic (CD) 3. Gillich N, Praisach, V.I., <i>Probabilități și fiabilitate, culegere de probleme</i> , Centrul de multiplicare UEM Reșița, 1995. 4. Felea I., <i>Ingineria fiabilității în electroenergetică</i> , Editura Didactică și Pedagogică, București, 1996. 5. Velicescu C., Oprea L., <i>Fiabilitatea sistemelor energetice</i> , Editura Politehnica, Timișoara, 1999.		
8.2.1. Seminary	Teaching methods	Observation
1. Elements of probability theory. Event operations	Explanation, Discussion	4 hours
2. Probability applications.	- // -	2 hours
3. Applications of classical probabilistic schemes.	- // -	2 hours
4. Operations with random variables	- // -	2 hours
5. Distribution function. Probability density function.	- // -	2 hours
6. Probabilistic functions. The reliability of the simple element.	- // -	2 hours
7. Characteristic sizes of discrete random variables.	- // -	2 hours
8. Study of the normal Gaussian distribution on a mechanical model.	- // -	2 hours
9. Physical systems in serial, parallel, mixed configuration	- // -	2 hours
10. Equivalent element method used in the calculation of reliability.	- // -	4 hours
11. Presentation and use of software.	- // -	4 hours
Bibliography 1. Gillich N., <i>Producerea, transportul și distribuția energiei electrice, Îndrumător de laborator</i> , CD, 2014. 2. Rucareanu C., <i>Linii electrice aeriene și subterane: Indreptar</i> , Editura Tehnică, București, 1989. 3. Video tutorials		

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		
	Acquired knowledge level	Exam (on paper)	70 %
10.5.1. Seminary	Activity / implication	Interventions	10 %
	Gained competence level	Interactive	20 %
10.5.2. Laboratory	Activity / implication		
	Gained competence level in practice		
10.5.3. Project	Readiness in phrasing the project stages		
	Project quality		
10.6. Performance Minimum Standard			

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| <ul style="list-style-type: none">• Completion of each exams subject by the minimum grade of 5. |
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Completion Date

19.04.2022

Course Coordinator's Signature

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Laboratory / Project Coordinator's Signature

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Department Endorsement Date

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Chief of Department Signature

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