

SYLLABUS¹

THIS COURSE UNIT IS TAUGHT IN ROMANIAN LANGUAGE

1. Information about the program

1.1 Higher education institution	UNIVERSITY POLITEHNICA TIMIȘOARA
1.2 Faculty ² / Department ³	ELECTRICAL AND POWER ENGINEERING / ELECTRICAL ENGINEERING
1.3 Chair	—
1.4 Field of study (name/code ⁴)	ELECTRICAL ENGINEERING / 90
1.5 Study cycle	BACHELOR
1.6 Study program (name/code/qualification)	ELECTROTECHNICS / 30

2. Information about the discipline

2.1 Name of discipline/ formative category ⁵	ELECTRICAL MACHINES 1						
2.2 Coordinator (holder) of course activities	Prof. Dr. Eng. TUTELEA LUCIAN NICOLAE						
2.3 Coordinator (holder) of applied activities ⁶	Assist. Prof. Drd. Eng. MARTIN ADRIAN						
2.4 Year of study ⁷	3	2.5 Semester	5	2.6 Type of evaluation	E	2.7 Type of discipline ⁸	DS

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted)⁹

3.1 Number of fully assisted hours / week	5.5 of which:	3.2 course	2.5	3.3 seminar / laboratory / project	3
3.1* Total number of fully assisted hours / semester	77 of which:	3.2* course	35	3.3* seminar / laboratory / project	42
3.4 Number of hours partially assisted / week	of which:	3.5 training		3.6 hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	3.5* training		3.6* hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	5 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			1
		hours of individual study after manual, course support, bibliography and notes			2.5
		training seminars / laboratories, homework and papers, portfolios and essays			1.5
3.7* Number of hours of unassisted activities / semester	70 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			14
		hours of individual study after manual, course support, bibliography and notes			35
		training seminars / laboratories, homework and papers, portfolios and essays			21
3.8 Total hours / week ¹⁰	10.5				
3.8* Total hours /semester	147				
3.9 Number of credits	5				

4. Prerequisites (where applicable)

¹ The form corresponds to the Discipline File promoted by OMECTS 5703 / 18.12.2011 and to the requirements of the ARACIS Specific Standards valid from 01.10.2017.

² The name of the faculty which manages the educational curriculum to which the discipline belongs

³ The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.

⁴ The code provided in HG no.140 / 16.03.2017 or similar HGs updated annually shall be entered.

⁵ Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).

⁶ Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁷ Year of studies in which the discipline is provided in the curriculum.

⁸ Discipline may have one of the following regimes: imposed discipline (DI), optional discipline (DO) or optional discipline (Df).

⁹ The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.

¹⁰ The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

4.1 Curriculum	Electrical and magnetic circuits, magnetic fields
4.2 Competencies	Operations with complex numbers, ac electrical circuits

5. Conditions (where applicable)

5.1 of the course	video projector room
5.2 to conduct practical activities	Electric machine laboratory

6. Specific competencies acquired through this discipline

Specific competencies	
Professional competencies ascribed to the specific competencies	- CP1: The adequate application of basic knowledge of mathematics, physics, and chemistry in the electrical engineering domain; - CP2: Performing basic knowledge of computer science and information technology; - CP3: Operating with fundamental concepts of electrotechnics; - CP4: The analysis, modeling and simulation of electrical machines; - CP5: The use of measuring techniques of electrical and non-electrical quantities and of data acquisition systems in electrical machines - CP6: The design of automatic control systems.
Transversal competencies ascribed to the specific competencies	- CT1: The identification of goals, available resources, necessary conditions of the achieved objectives, working stages and timing, deadlines and respective risks; - CT2: Pluridisciplinary team tasks and responsibilities highlighting. Relating and efficient work techniques team application; - CT3: Information sources, communication resources and computer aided professional education (web portals, domain specific software's, data-bases, on-line courses, etc) both in Romanian and in foreign language.

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	Operation with fundamental concepts in electrical engineering - Use of electric machines in electrical drives and installations
7.2 Specific objectives	Design and use electrical machines

8. Content¹¹

8.1 Course	Number of hours	Teaching methods ¹²
1. Introduction in electrical machines 1.1. Non linear magnetic circuit. 1.2. Energy conversion – efficiency of motor and generators. 1.3. Materials used in electrical machines.	3	Use the video projector for teaching and the board for examples and numeric applications. Teaching is done interactively, by challenging students to debate the subjects taught
2. Magnetic circuits and transformers 2.1. Single phase and three phase electrical transformer – constructive aspects. 2.2. The circuit equations, and equivalent scheme in loading, no load and short circuit 2.3. Three phase transformer winding connections and its influence on nonsymmetric load.	9	

¹¹ It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".

¹² Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- Using electrical machines in all industrial branch, in transportation and residential applications.
- Design and manufacture electrical machines

10. Evaluation

Type of activity	10.1 Evaluation criteria ¹⁶	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	correct answers	written exam: 3-5 subjects, of which 2-3 theoretical and 1-2 numerical applications	60 %
10.5 Applied activities	S: correct answers	Seminar test and homework	20
	L: correctness of responses and abilities	laboratory reports and test to verify knowledge and practical skills	20 %
	P¹⁷:		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified ¹⁸)			
• resolution of at least 50% of the content of exam matters			

Date of completion

7.12. 2020

**Head of Department
(signature)**

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**Course coordinator
(signature)**

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**Date of approval in the Faculty
Council ¹⁹**

**Coordinator of applied activities
(signature)**

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**Dean
(signature)**

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¹⁶ Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)

¹⁷ In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

¹⁸ It will not explain how the promotion mark is awarded.

¹⁹ The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.