

## SYLLABUS

### 1. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Electronics, Telecommunications and Information Technology
1.3 Department	Applied Electronics
1.4 Field of study	Electronics Engineering, Telecommunications and Information Technology
1.5 Cycle of study	Bachelor of Science
1.6 Program of study/Qualification	Applied Electronics
1.7 Form of education	IF-Full time
1.8 Subject code	50.00

### 2. Data about the subject

2.1 Subject name	Power Supplies - Project						
2.2 Subject area	Theoretical area Methodological area Analysis area						
2.3 Course responsible							
2.4 Teachers in charge of applications	Prof. dr. ing. Petreus Dorin - <a href="mailto:dorin.petreus@ael.utcluj.ro">dorin.petreus@ael.utcluj.ro</a>						
2.5 Year of study	IV	2.6 Semester	1	2.7 Assessment	C	2.8 Subject category	DS DI

### 3. Estimated total time

3.1 Number of hours per week	1	of which, 3.2 course	0	3.3 applications	1
3.4 Total hours in the curriculum	14	of which, 3.5 course	28	3.6 applications	14
Individual study					Hours
Manual, lecture material and notes, bibliography					3
Supplementary study in the library, online and in the field					2
Preparation for seminars/laboratory works, homework, reports, portfolios, essays					4
Tutoring					-
Exams and tests					2
Other activities.....					
3.7 Total hours of individual study	11				
3.8 Total hours per semester	25				
3.9 Number of credit points	1				

### 4. Pre-requisites (where appropriate)

4.1 Curriculum	
4.2 Competence	Knowledge of electronics, system control and magnetic theory

### 5. Requirements (where appropriate)

5.1. For the course	
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5.2. For the applications	Laboratory, Cluj-Napoca
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## 6. Specific competences

Professional skills	<p><b>C5 Application of the basic knowledge, concepts and methods from: power electronics, automatic systems, electricity management, electromagnetic compatibility</b></p> <p>C5.1 Defining the specific elements that individualize the electronic devices and circuits in the fields of: power electronics, automated systems, electricity management, medical electronics, automotive electronics, consumer goods</p> <p>C5.2 Qualitative and quantitative interpretation of the functioning of circuits in the fields of: power electronics, automatic systems, electricity management, medical electronics, automotive electronics, consumer goods; operation regarding electromagnetic compatibility</p> <p>C5.5 Designing, using established principles and methods of subsystems of reduced complexity, from the fields of applied electronics: power electronics, automated systems, electricity management, medical electronics, auto electronics, consumer goods</p>
Cross competences	

## 7. Discipline objectives (as results from the key competences gained)

7.1 General objectives	Development of professional skills in the field of design, simulation and testing of electronic power circuits.
7.2 Specific objectives	<ol style="list-style-type: none"> <li>1. The assimilation of theoretical knowledge regarding design and simulation of electronic circuits using advanced simulation programs;</li> <li>2. Obtaining the skills and abilities necessary for implementation and testing of the performance of power electronic circuits.</li> <li>3. Obtaining the skills to use specific equipment for electronic power converters</li> </ol>

## 8. Contents

8.1 Lecture (syllabus)	Teaching methods	Notes

References		
8.2 Applications	Teaching methods	Notes
1. Design specifications	Didactic and experimental proof, didactic exercise, team work	Use of laboratory instrumentation, experimental boards, computers, white/magnetic board
2. Schematic block diagram		
3. Component choice		
4. Complete schematic		
5. PCB		
6. Evaluation		
References		
Bibliografie		
1. D. Petreuş, Ş.Lungu - Surse în comutație – îndrumător de laborator, Ed. Mediamira, Cluj-Napoca, 1999.		
2. Dorin Petreuş, Toma Patarau, Radu Etz - Power supplies – A practical approach, Mediamira, Cluj-Napoca, 2016, ISBN: 978-973-713-333-5		

### 9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

The skills acquired will be required for employees in the following possible occupations according to the COR: electronics engineer, design engineer, research engineer in applied electronics, engineer of research in microelectronics, engineers in electrotechnology, manager of information technology and communications, systems and computer systems engineer, communications engineer, specialists in information technology.

### 10. Evaluations

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	The level of knowledge obtained		
10.5 Applications	Verification of skills and abilities acquired as a result of project activities	Oral examination during the semester + Final evaluation	100%
10.6 Minimum standard of performance			
<b>Qualitative level:</b>			

**Minimal knowledge:**

- ✓ Knowledge of the basic operation of the circuits studied
- ✓ Knowledge of the basic operation of studied power converters

**Minimal competences:**

- ✓ To be able to describe the functionality of the main power converters
- ✓ To be able to choose the proper power converters in specific applications

**Quantitative level:**

- ✓ Participation to all applications and laboratories
- ✓ The final evaluation and project grades to be higher than 5
- ✓ The final grade is calculated as follows:  $0.5 \cdot \text{Final evaluation} + 0.5 \cdot \text{Evaluation during semester}$

Date of filling in	Responsible	Title, Name Surname	Signature
23.06.2023	Course	Prof. Dr. Ing. Dorin Petreuş	
	Applications	S.L. Dr. Ing. Pătărău Toma	
		Asist. Drd. Mirela Olteanu	

Date of approval in the Department of Applied Electronics	Head of Department
30.06.2023	Prof. Dorin PETREUS, PhD Eng.
Date of approval in the Council of Faculty of Electronics, Telecommunications and Information Technology	Dean
12.07.2023	Prof. Ovidiu Aurel POP, PhD Eng.