

# 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	Applied Engineering Sciences
1.5. Course of Study	License/ Bachelor
1.6. Study Programme	Industrial Informatics

## 2. Discipline Data

2.1. Discipline Name	Computer aided graphics II						
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	I	2.5. Semester	2	2.6. Evaluation Time	C	2.7. Discipline Regime	FD

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

3.1. Number of Hours per Week	4	from which: 3.2. Course	2	3.3. laboratory	2
3.4. Total Hours from the Curriculum Plan	56	from which: 3.5. Course	28	3.6. laboratory	28
Time Fund Distribution - hours					69
Study of Handbook, Course Materials, Bibliography & Notes					35
Additional Documentation in Library, on Special E-learning Platforms & in the Field					20
Preparation of seminars/laboratories/ projects, topics, reports, portfolios & essays					12
Mentoring					-
Examination					2
Other Activities .....					-
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	• -

## 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	• computer, internet access, specialized software (ProfiCAD, Electronics Workbench) / computer room
5.2.3. of Project Progress	• -

## 6. Acquired Specific Competences

Professional Competences	<ul style="list-style-type: none"> <li>Application and adequacy of specialized knowledge of mathematics, physics, informatics specific in the field of electrical engineering (PCI).</li> <li>Operating with specialized concepts in the field of computer technology and information technology.(PC2)</li> </ul>
Transversal Competences	<ul style="list-style-type: none"> <li>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)</li> <li>Identify roles and responsibilities in a multidisciplinary team and apply effective relationship and work techniques within the team. (TC 2)</li> <li>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)</li> </ul>

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

7.1. General Objective of Discipline	<ul style="list-style-type: none"> <li>• Development of analytical thinking;</li> <li>• Familiarization with the basics of creating electrical, electronic and digital diagrams;</li> <li>• Use of dedicated modeling and simulation software.</li> </ul>
7.2. Specific Objectives	<ul style="list-style-type: none"> <li>• Developing the student's ability to understand the notions of geometric model, scheme, drawing and the differences between them;</li> <li>• Awareness of the importance of gaining knowledge on how to use specialized software in order to solve various tasks, in the chosen field.</li> </ul>

## 8. Content

8.1. Course	Teaching methods	Observation
1. Presentation of the course topic. CAD tools. User interface. CAD modeling and visualization.	Exposure, problematization, conversations, explanations	2 hours
2. Graphic representations in the electrical field. Conventional signs. Symbols and notations.		2 hours
3. Realization of electrical diagrams. Drawing up and reading electrical diagrams.		2 hours
4. Presentation of the ProfiCAD modeling program. Workspace, conventional signs, symbols and notations.		2 hours
5. Realization of electrical diagrams in ProfiCAD. Cable design and algorithm for generating new electrical symbols.		2 hours
6. ProfiCAD tools. Generating graphic shapes. Defining worksheets. Working with objects.		2 hours
7. Properties, insertion and resizing of symbols in ProfiCAD. Parameters and attributes. Positioning and numbering of outlets.		2 hours
8. Text insertion, quota definition and scale drawing in ProfiCAD. Setting drawing boundaries.		2 hours
9. Using wiring diagrams in an MS document. Documents related to the wiring diagram. Generation and attributes of material lists.		2 hours
10. Presentation of the Electronics Workbench modeling and simulation program. How to design electrical, electronic and digital diagrams in Electronics Workbench.		2 hours
11. Symbols used in modeling electrical diagrams in the Electronics Workbench. Creating wiring diagrams in the Electronics Workbench.		2 hours
12. Symbols used in electronic schema modeling in the Electronics Workbench. Creating electronic schematics in the Electronics Workbench.		2 hours
13. Symbols used in modeling digital diagrams in the Electronics Workbench. Creating digital schemas in the Electronics Workbench.		2 hours
14. Applications of industrial graphics in engineering.		2 hours
Bibliography • Enescu F.M., Hoarca C.,” Computer aided graphics”, Publishing House Matrixrom, București, 2018 ; • Runceanu Adrian, ” Computer Aided Graphics - Theory and Applications”, Publishing House Academica Brâncuși,Târgu-Jiu, 2009; • Baci R. și Volovici D., „Graphic processing systems”, Publishing House Albastră, Cluj-Napoca 1999; • Mahalu G., ” Introduction to computer aided graphics”, Publishing House MatrixRom, Bucuresti, 2007; • Rusu C., „Introduction to ProfiCAD”, Bistrița, 2020; • Ana-Maria Budai – Course notes; • *** - Electronics Workbench. • *** - ProfiCAD e-mail: ana.budai@ubbcluj.ro		
8.2.1. Seminary	Teaching methods	Observation
1.-	-	-
8.2.2. Laboratory	Teaching methods	Observation
1. Specific problems of work safety technique. Presentation of laboratory topics.	Group work, problem solving and discovery, linking theoretical knowledge to practical applications	2 hours
2. Identification of the symbols used in drawing up the electrical, electronic and digital diagrams.		2 hours
3. Reading electrical, electronic and digital diagrams. Identify the types of schemes.		2 hours
4. Setting up the worksheet in ProfiCAD. Using the menus. Learning the steps to make a wiring diagram.		2 hours

5. Realization of a monofilament electrical scheme in ProfiCAD.	Group work, problem solving and discovery, linking theoretical knowledge to practical applications	2 hours
6. Realization of a wiring diagram of connections in ProfiCAD.		2 hours
7. Realization of a developed electrical diagram in ProfiCAD.		2 hours
8.Realization of a lighting installation with outlets for a multiple space in ProfiCAD		2 hours
9. Realization of electronic circuits with discrete components: variable speed drive, thyristor alarm, thermorelay, applicator, in ProfiCAD.		2 hours
10. Specific modules for wiring diagrams in Electronics Workbench. Creating wiring diagrams and simulating them in the Electronics Workbench.		2 hours
11. Specific modules for electronic schemes in the Electronics Workbench. Creating electronic diagrams and simulating them in the Electronics Workbench.		2 hours
12. Specific modules for digital schemes in the Electronics Workbench. Creating digital diagrams and simulating them in the Electronics Workbench.		2 hours
13. Creating and simulating mixed schemes with electrical, electronic and digital components in the Electronics Workbench.		2 hours
14. Evaluation of laboratory activity.		2 hours
Bibliography		
<ul style="list-style-type: none"><li>• I.Loga, M. Danaiața, M. Revencu, „Technical drawing for electrical engineering”, Publishing House Politehnică, Timișoara, 2002;</li><li>• Mahalu G., ” Introduction to computer aided graphics”, Publishing House MatrixRom, Bucuresti, 2007;</li><li>• Rusu C., „Introduction to ProfiCAD”, Bistrița, 2020;</li><li>• *** - Electronics Workbench</li><li>• *** - ProfiCAD</li></ul>		
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**

- 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	-	-
	Gained competence level in practice	-	30 %
10.5.3. Project	Readiness in phrasing the project stages	-	-
	Project quality	-	-
10.6. Performance Minimum Standard			
<ul style="list-style-type: none"> <li>• Completion of Applicative Activities (laboratory work accomplishment approval by the minimum grade of 5).</li> <li>• Completion of final exam by the minimum grade of 5.</li> </ul>			

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