

SYLLABUS

1. Program information

1.1 Higher education institution	Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Electronics, Telecommunications and Information Technology
1.3 Department	Bases of Electronics
1.4 Field of study	Electronic engineering, telecommunications and information technologies
1.5 Cycle of study	Bachelor of Science
1.6 Study program / Qualification	Electronic engineering, telecommunications and information technologies/ Engineer
1.7 Form of education	IF – full-time education

2. Course information

2.1 Course title	Applied Informatics	Course code	6.00
2.2 Course coordinator	Lect. Adelina Ioana ILIEȘ, Ph.D. – Adelina.Ilies@ael.utcluj.ro		
2.3 Seminar/ laboratory/ project/ practical activity coordinator	Lect. Adelina Ioana ILIEȘ, Ph.D. – Adelina.Ilies@ael.utcluj.ro Lect. Rajmond JÁNÓ, Ph.D. – Rajmond.Jano@ael.utcluj.ro		
2.4 Year of study	I	2.5 Semester	1
2.6 Type of assessment	V		
2.7 Course status	Formative category		DF
	Optionality		DOB

3. Estimated total time

3.1 Hours per week	4	of which:	3.2 Lecture	2	3.3 Seminar	0	3.3 Laboratory	2	3.3 Project	0	3.3 Practical training	0
3.4 Hours per semester	56	of which:	3.5 Lecture	28	3.6 Seminar	0	3.6 Laboratory	28	3.6 Project	0	3.3 Practical training	0
3.7 Time distribution (hours per semester) for individual study and assessment:												
(a) Assessment											6	
(b) Study using textbook, course materials, bibliography, and notes											25	
(c) Additional documentation in the library, on specialized electronic platforms, and in the field											20	
(d) Preparation for seminars/laboratories, assignments, reports, portfolios and essays											13	
(e) Tutoring											5	
(f) Other activities												
3.8 Total hours of individual study and assessment (sum of (3.7(a))...3.7(f))									69			
3.9 Total hours per semester (3.4+3.8)									125			
3.10 Number of credits									5.0			

4. Prerequisites (where applicable)

4.1 curriculum	-
4.2 competencies	- Basic principles of computer operation - Basic principles of text editing in dedicated applications

5. Requirements (where applicable)

5.1. for the development of the lecture	Lecture room/amphitheatre equipped with a video projector, projection screen at the TUCN
5.2. for the development of the seminar/ laboratory/ project	Laboratory equipped with computers, internet access, projector/screen, and required software at the TUCN

6. Specific competencies acquired

Professional competencies	C4. Design, implementation and operation of data, voice, video and multimedia services. This is based on the understanding and the application of fundamental concepts in telecommunications and transmission of information C4.1 Identification of the fundamental concepts regarding the transmission of information and analog and digital communications C4.2 Solving practical problems using general knowledge of multimedia techniques C4.3 Explanation and interpretation of the main requirements and specific approach techniques for data, voice, video, multimedia transmissions C4.3 Solving practical problems using general knowledge of multimedia techniques C4.4 Use of the main specific parameters in evaluations based on the concept of quality of service in communications C4.5 Development of simple communications services C6. Solving specific problems of the broadband communications networks: propagation in different environment, circuits and equipment for high frequencies (microwaves and optical). C6.1 Identification/ definition/ presentation of the electromagnetic field laws addressing specific propagation and transmission issues, as well as of the specific circuits C6.2 Explaining the specific methods for implementation of the communications techniques C6.4 Use of the main quality parameters and measurement techniques specific to the propagation and transmission media C6.5 Development of low/ medium complexity projects regarding the transmission and receiving equipment
Transversal competence	

7. Expected learning outcomes

Knowledge	- The student/graduate identifies and describes basic concepts, principles and methods in mathematics, physics, chemistry, technical drawing, economics and computer science. - The student/graduate describes, identifies and summarizes elementary concepts and methods related to electronic devices, circuits and instrumentation, as well as their application in concrete problems.
Skills	- The student/graduate operates with basic concepts, principles and methods in mathematics, physics, chemistry, technical drawing, economics and computer science. - The student/graduate performs engineering and economic calculations of medium complexity and associates them with graphical/alphanumeric representations or with representations specific to computer-aided design. - The student/graduate describes physico-chemical and economic phenomena and processes - The student/graduate carries out low/medium-complexity projects that involve the simultaneous use of hardware components (microprocessors or microcontrollers) and software components (the related programs).
Responsibility and autonomy	- The student/graduate applies the values of ethics and professional deontology specific to the engineering profession. - The student/graduate applies logical reasoning, evaluation and self-assessment in decision-making. - The student/graduate communicates effectively about engineering activities with a wide range of audiences. - The student/graduate is engaged in lifelong learning in order to acquire and implement knowledge, as needed, using appropriate learning strategies. - The student/graduate promotes dialogue, cooperation, respect for others and interculturality. - The student/graduate works effectively as a team member or as a team leader. - The student/graduate fluently uses at least one international language in technical communication - The student/graduate behaves honorably, responsibly and ethically, in the spirit of the law, in order to ensure the reputation of the profession.

8. Course objectives (based on the grid of specific competencies acquired)

8.1 General objective of the course	Developing skills in the use of computers as productivity tools in engineering
8.2 Specific objectives	Assimilation of theoretical knowledge on the operation and troubleshooting of computer systems

9. Contents

9.1 Lecture	No. of hours	Teaching methods	Remarks
Introduction to information technology: fundamentals and applications	2		

9.1 Lecture	No. of hours	Teaching methods	Remarks
Hardware concepts. Components and operation of a computer system. Component assembly and compatibility. Designing a computer system. Maintaining and troubleshooting computers.	2	Exposition, discussions	Video projector/ projection screen
Software concepts. Structure and operation of an operating system. Disk partitioning. Operating system selection and installation. Initial configurations. Troubleshooting installation problems.	2		
Introduction to Microsoft Word 2016. Formatting characters. Formatting paragraphs. Sections. Headers and footers.	2		
Advanced formatting techniques in Microsoft Word 2016. Styles. Multi-level lists. Tables. Inserting pictures. References and bibliography.	2		
Advanced productivity techniques in Microsoft Word. Working with Office Clipboard. Editing equations. Table of contents. Proofreading and final formatting.	2		
Advanced data processing techniques in Microsoft Excel. Data entry and autocomplete. Formatting cells. Using formulas. Tables, sorting and filtering. Data validation.	2		
Advanced data representation techniques in Microsoft Excel 2016. Conditional formatting. Graphing.	2		
Advanced data analysis in Microsoft Excel. Pivot Tables and Pivot Charts. Introduction to macros and automation of repetitive tasks.	2		
Information presentation techniques using Microsoft PowerPoint 2016. Guide for oral presentations. Animations. Templates and slide master.	2		
Other Microsoft Office suite utilities. Microsoft Visio, Outlook, OneNote.	2		
Online resources. Cloud data storage. Online applications Microsoft Office WebApps and Google Docs.	2		
Collecting and processing opinions. Creating opinion surveys. Using Google Forms.	2		
Networking concepts. Types of networks. Common equipment for creating and managing computer networks. Setting up and configuring a local area network.	2		
Data transmission. Security concepts in computer networks.	2		
Bibliography 1. S. M. Freund, M. Z. Last, P. J. Pratt, et al, „Discovering Computers & Microsoft Office 365 Office 2016 – A Fundamental Combined Approach”, ~2017, Cengage Learning, ISBN 978-1-305-87180-9. 2. J. Walkenbach, „Microsoft Excel 2016 Bible”, 2016, Wiley, ISBN 978-1-119-06751-1. 3. R. Tidrow, J. Boyce, J. Shapiro, „Windows 10 Anniversary Update Bible”, 2017, Wiley, ISBN 978-1-119-35633-2.			

9.1 Lecture	No. of hours	Teaching methods	Remarks
4. Rajmond JÁNÓ, Adelina Ioana ILIEȘ – Applied Informatics, U.T.PRESS, Cluj - Napoca, 2024, ISBN 978-606-737 -734-7.			

9.2 Seminar /laboratory /project /practical training	No. of hours	Teaching methods	Remarks
Introduction to laboratory equipment. Using computer systems. Writing formal e-mails.	2	Exposition, simulations, applications	PC, Microsoft Office 365 pack, browser
Disassembling, maintaining, troubleshooting and reassembling a computer system. Applying thermal paste to the processor.	2		
Installing the Microsoft Windows 10/11 operating system. Partitioning the hard disk. Initial configuration of the operating system. Questions and exercises. Knowledge assessment.	2		
Advanced formatting techniques in Microsoft Word. Formatting at character level. Formatting at paragraph level.	2		
Advanced formatting techniques in Microsoft Word. Formatting at document level. Tables and images.	2		
Advanced formatting techniques in Microsoft Word. Defining and modifying styles. Working with headers and footers. Generating bibliography and table of contents.	2		
Questions and exercises. Knowledge assessment.	2		
Advanced techniques for collecting, processing and representing data in Microsoft Excel 2016. Data entry. Formulas and graphs.	2		
Advanced data collection, processing and representation techniques in Microsoft Excel. Conditional formatting.	2		
Advanced data analysis in Microsoft Excel. Pivot Tables and Pivot Charts. Introduction to macros and automation of repetitive tasks.	2		
Questions and exercises. Knowledge assessment.	2		
Creating a presentation using Microsoft PowerPoint.	2		
Using Google Forms for creating an online survey, collecting, interpreting, and representation of the obtained results.	2		
Setting up and configuring a local computer network and configuring the necessary equipment: switch, router, modem.	2		
Bibliography			
Bibliography			
1. S. M. Freund, M. Z. Last, P. J. Pratt, et al, „Discovering Computers & Microsoft Office 365 Office 2016 – A Fundamental Combined Approach”, ~2017, Cengage Learning, ISBN 978-1-305-87180-9.			
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10. Alignment of the course contents with the expectations of the epistemic community, professional associations, and representative employers in the field related to the program

The course content and the teaching-learning-assessment methods are aligned with the current requirements of the Electronics, Telecommunications, and Information Technology Engineering field, considering the expectations of the academic and professional community, representative employers, as well as the national quality assurance standards in higher education. The course helps prepare students in line with employer expectations and the quality requirements set for engineering study programs.

11. Assessment

Activity type	11.1 Assessment criteria	11.2 Assessment methods (and type of assessment: continuous/ summative)	11.3 Weight in final grade
11.4 Lecture	Evaluation of theoretical knowledge based on grid tests	Assessment during the semester	20%
11.5 Seminar/ Laboratory/ Project /Practical activity	Assessment of practical knowledge based on practical tests	Assessment during the semester	60%
	Evaluation of laboratory activity		20%
11.6 Minimum performance standard - Completion of all laboratory work - Grade 5 in each of the assessment criteria			

Completion date:	Course coordinators	teaching rank, title First name LAST NAME	Signature
23.06.2026	Lecture	Lect. Adelina Ioana ILIEȘ, Ph.D.	
	Applications	Lect. Adelina Ioana ILIEȘ, Ph.D.	
		Lect. Rajmond JÁNÓ, Ph.D.	

Approval of the Head of the Department coordinating the course, only if this differs from the department organizing the study program

Head of the Applied Electronics
Department
Prof. Dorin PETREUȘ, Ph.D.

Date of approval by the Council of the Department of
Bases of Electronics

26.06.2026

Head of the Bases of Electronics
Department
Prof. Sorin HINTEA, Ph.D.

Date of approval by the Council of the Faculty of Electronics,
Telecommunications and Information Technology

30.06.2026

Dean,
Prof. Ovidiu-Aurel POP, Ph.D.