SYLLABUS

1. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Electronics, Telecommunications, and Information Technology
1.3 Department	Communications
1.4 Field of study	Electronic Engineering, Telecommunications, and Information Technologies
1.5 Cycle of study	Master of Science
1.6 Program of study / Qualification	Telecommunications/ Master
1.7 Form of education	Full time
1.8 Subject code	TC-E19.00

2. Data about the subject

2.1 Subject name	Research activity / Practical Activity 3						
2.2 Subject area	Theoretical area Methodological area: transversal Area of analysis: interdisciplinary						
2.3 Course responsible	-						
2.4 Teacher in charge with seminar / laboratory / project	Teachers from departments that are involved in the program						
2.5 Year of study	2	2.6 Semester	3	2.7 Assessment	C	2.8 Subject category	DS/DI

3. Estimated total time

3.1 Number of hours per week	14	of which: 3.2 course	0	3.3 applications (Pr/Re)	14
3.4 To Total hours in the curriculum	196	of which: 3.5 course	0	3.6 applications (Pr/Re)	196
Distribution of time					hours
Manual, lecture material and notes, bibliography					20
Supplementary study in the library, online specialized platforms and in the field					12
Preparation for seminars / laboratories, homework, reports, portfolios, and essays					20
Tutoring					0
Exams and tests					2
Other activities:					0

3.7 Total hours of individual study	54
3.8 Total hours per semester	250
3.9 Number of credit points	10

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

4.1 curriculum	N. A.
4.2 competence	English language

5. Requirements (where appropriate)

5.1. for the course	-
5.2. for the seminars / laboratories / projects	Cluj-Napoca, computers connected to the Internet

6. Specific competences

Professional competences	C1. Use of the fundamental elements related to devices, circuits, systems, instrumentation and electronic technology 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. C2. Applying the basic methods for the acquisition and processing of signals C3. Application of the basic knowledge, concepts and methods regarding the architecture of computer systems, microprocessors, microcontrollers, languages and programming techniques C5. Selecting, installing, configuring and operating fixed or mobile telecommunications equipment. Equipping a site with usual telecommunications networks C6. Solving specific problems of the broadband communications networks: propagation in different environment, circuits and equipment for high frequencies (microwaves and optical) C7. Design, implementation and testing of systems and of various types of applications (signal processing, classification, regression, detection, natural language processing, shape recognition) based on machine learning or deep learning techniques
Cross competences	N/A

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

7.1 General objective	Development of skills in regarding the elaboration of a research paper (journal article, conference article, project research report).
7.2 Specific objectives	1. Skills to draw up a research and documentation plan by using indexed international databases (Web of Science, Scopus, IEEE Xplore, ACM, Science Direct, Elsevier, Springerlink, DBLP, EURASIP etc.) 2. Skills to develop a research paper

8. Contents

8.2 Applications	Teaching methods	Notes
1. Choice of theme	Discussion online/onsite	N/A
2. Preparation of the research plan and choice of bibliography		
3. State-of-the-art and objectives of the research		
4. Theoretical fundamentals		
5. Proposed solution		
6. Experimental results		

7. Research report/ journal article/ conference article. Optional presentation and publication in a journal or conference proceedings		
Bibliography It shall be determined by each supervisor. It is desirable that the research topic be correlated with the topic of the dissertation thesis.		

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

The discipline content and the acquired skills with the expectations of the professional competences acquired will be used in the following COR occupations (Electronics Engineer; Telecommunications Engineer; Electronics Design Engineer; System and Computer Design Engineer; Communications Design Engineer) or in the new occupations proposed to be included in COR (Sale Support Engineer; Multimedia Applications Developer; Network Engineer; Communications Systems Test Engineer; Project Manager; Traffic Engineer; Communications Systems Consultant).

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.5 Applications	Verification of skills and abilities acquired as a result of research and practical activities	Verification mark	Max. 10p 100%
10.6 Minimum standard of performance			

Qualitative point of view:

Minimal theoretical knowledge:

1. Development of skills regarding the elaboration of a research paper (journal article, conference article, project research report)..

Minimal practical competences:

- ✓ Skills to draw up a research and documentation plan by using indexed international databases (Web of Science, Scopus, IEEE Xplore, ACM, Science Direct, Elsevier, Springerlink, DBLP, EURASIP etc)
- ✓ Skills to develop a research paper

Quantitative point of view:

- ✓ Teaching research report/ journal article/ conference article submitted
- ✓ The mark at the verification must be at least 5

Date of filling in:	Responsible	Title First name SURNAME	Signature
20.06.2024	Applications	Advisor	

Date of approval in the Council of the Communications Department 10.07.2024	Head of Communications Department Prof. Virgil DOBROTA, Ph.D.
Date of approval in the Council of the Faculty of Electronics, Telecommunications and Information Technology 11.07.2024	Dean Prof. Ovidiu POP, Ph.D.