



DISCIPLINE ACADEMIC SHEET
ACADEMIC YEAR 2025 – 2026

1. PROGRAMME DATA

1.1. Higher Education Institution	UNIVERSITY OF CRAIOVA
1.2. Faculty	Automation, Computers and Electronics
1.3. Department	Computers and Information Technology
1.4. Field of Study	Computers and Information Technology
1.5. Study level	L(License / Undergraduate)
1.6. Organizational form	IF
1.7. Study Program (name/code) /Qualification	Computers / L2060101010

2. DISCIPLINE DATA

2.1 Discipline Name				Radiocommunications			
2.2 Course Activities Holder				Conf. dr. ing. Mircea-Cătălin CONSTANTINESCU			
2.3. Practical Activities Holder				Conf. dr. ing. Mircea-Cătălin CONSTANTINESCU			
2.4. Study Year	3	2.5. Semester	2	2.6. Evaluation type	V	2.7. Discipline regime	DFA

3. ESTIMATED TOTAL TIME (hours per semester of teaching activities)

3.1. Number of hours per week	3	in which: 3.2 course	2	3.3. sem./lab./pr.	1
3.4. Total hours of curriculum	42	in which: 3.5 course	28	3.6. sem./lab./pr.	14
3.7. Time distribution - hours/week					hours
Study after manual, course support, bibliography and notes					15
Additional documentation in library, on specialized electronic platforms and field					8
Training seminars / labs, homework, portfolios and essays					8
Tutorial					-
Examinations					2
Other activities.....					-
Total hours per individual activities					33
3.8. Total hours per semester					75
3.9. Number of credits					3

4. PRECONDITIONS (where appropriate)

4.1. of curriculum	The student must possess specialized knowledge acquired in the following disciplines: Data Transmission, Computer Architecture, Signals and Systems, Microwaves.
4.2. of competence	Not necessary.

5. CONDITIONS (where appropriate)

5.1. of the course	The course is taught using the video projector. The board is used for some explanations and answers to questions from the audience. Course support in electronic format and access to up-to-date documentation are provided. The teaching process has the following structure:
5.2. of seminar/ laboratory/project	

6. COURSE OBJECTIVES – expected learning outcomes that are supported by completing and passing the course

Knowledge	The student/graduate describes, identifies and summarizes elementary concepts and methods for signal acquisition, analysis and processing, implemented in systems with general-purpose processors or signal processors, and the way they are applied to concrete problems.
Skills (Abilities)	The student/graduate uses specific methods and tools for characterizing signals in the time domain and in the frequency domain, performs the acquisition, analysis and digital processing of analog signals. The student/graduate designs, measures, evaluates the performances of, diagnoses and debugs functional blocks of small/medium complexity for signal analysis and digital processing, using dedicated simulation environments (Matlab, Python, etc.). The student/graduate designs functional blocks of small/medium complexity for signal analysis and digital processing and implements them on signal processors, microcontrollers or dedicated processors.
Responsibility and autonomy	The student/graduate shows a spirit of initiative and action for updating professional, economic and organizational culture knowledge.

7. CONTENT

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
1. RADIO COMMUNICATION SYSTEMS. GENERAL ELEMENTS • Introductory notions. Brief history • The frequency spectrum • Wave propagation mechanisms • Wave propagation media • Antennas • Selectivity • Analog modulation • Digital modulation		The course is taught using the video projector. • 70% theoretical presentation, based on the course support (slides); • 30% interactive activity (discussions with the students). The necessary materials are made available to students in electronic format.	8
2. ANALYSIS OF RADIO CONTROL			6

SYSTEMS • Implementation of a radio remote control for lifting and transport installations • Replacing a wired communication system with a radio data transmission system			
3. SDR (SOFTWARE DEFINED RADIO) - GENERAL NOTIONS • Explaining the SDR concept • Applying elements specific to communication networks in SDR technology • RF architectures for SDR • Processing architectures for SDR • Software environments for SDR • Time synchronization • Carrier synchronization • Frame synchronization and channel coding • SDR applications			14
Bibliography:			
1. . H. Sizun; Radio Wave Propagation for Telecommunication Application; Springer; 2005; ISBN 3-540-40758-8 2. Constantine A. Balanis; Antenna Theory. Analysis and Design - Fourth Edition; John Wiley & Sons; 2016; ISBN 978-1-118-642060-1 3. Clay Laster; The Beginner's Handbook of Amateur Radio - Fourth Edition; McGraw-Hill; 2001; 0-07-139550-4 4. Travis F. Collins, Robin Getz, Di Pu, Alexander M. Wiglinski; Software Defined Radio for Engineers; Artech House; 2018; ISBN-13 978-1-63081-457-1			
2.			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. 1. Presentation of the laboratory works, of the devices and equipment used, presentation of the way of assessing the knowledge acquired in the laboratory.			2

2. 2. Study of a radio remote control for overhead cranes.			4
3. 3. Using a spectrum analyzer.			2
4. 4. Using SDR equipment as a signal generator.			2
5. 5. Using SDR equipment as a radio receiver.			2
6. 6. Knowledge assessment.			2
Bibliography:			
1. . *** - Radiometrix; UHF Narrow Band FM Low Cost multi channel radio modules - http://radiometrix.com/files/additional/tlc2hrlc2h.pdf 2. *** - Radiometrix; NBFM Vibration Resistant Multi Channel Receiver - http://radiometrix.com/files/additional/hvr2.pdf 3. *** - Radiometrix; UHF Narrow Band FM Multi channel Transceiver - http://radiometrix.com/files/additional/smx2.pdf 4. *** - Microchip; AT89S8253 - 8-bit Microcontroller with 12 Kbyte Flash - http://ww1.microchip.com/downloads/en/devicedoc/doc3286.pdf 5. https://hackrf.readthedocs.io/en/latest/index.html			
2.			

8. Correlating the content of the discipline with the expectations of representatives from the epistemic community, professional associations and representative employers in the field related to the program

The discipline content was discussed with the representatives of: • SC CONTINENTAL AUTOMOTIVE SYSTEMS S.R.L.

9. EVALUATION

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course	- Understanding the theoretical fundamentals of radio communication systems. - The ability to make connections between the taught theoretical notions.	- Multiple-choice exam - 50% - Presentation and checking of assignments - 25%	75%
9.5. Seminar/laboratory/project	- The requirements of the application classes are presented and discussed within the group	- Ongoing assessment and checking of assignments	25%

9.6. Minimum standard of performance			
▪ Obtaining at least 50% of the score of the ongoing assessments and final exam; ▪ The final grade is calculated by rounding the final score to a whole grade.			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025	Conf. dr. ing. Mircea-Cătălin CONSTANTINESCU	Conf. dr. ing. Mircea-Cătălin CONSTANTINESCU

Date of Approval in the Department	Signature of the Department Director,
25.08.2025	Ș.l.dr.ing. Nicolae ENESCU

Date of Approval in the Faculty	Signature of the Dean,
	Prof.dr.ing. Dorin ȘENDRESCU