STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Simulation of Telecommunication Systems in C++**		Code **1010802111010843122**
Field of study **Electronics and Telecommunications**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 1**
Elective path/specialty **Information and Communication**	Subject offered in: **English**	Course (compulsory, elective) **elective**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **2** Classes: **-** Laboratory: **2** Project/seminars: **-**		No. of credits **5**
Status of the course in the study program (Basic, major, other) **major**	(university-wide, from another field) **from field**	
Education areas and fields of science and art **technical sciences** **Technical sciences**		ECTS distribution (number and %) **5 100%** **5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	He has ordered , mathematical underpinnings knowledge of the acquisition of signals.
2	**Skills**	He can freely communicate in English, able to speak in English for professional purposes , can benefit from understanding the literature in English
3	**Social competencies**	1 He knows the limitations of their knowledge and skills , understands the need for ongoing education . [K1_K01] 2 He can pursue collaborative projects . [K1_K02]

Assumptions and objectives of the course:

It aims to introduce students to the breadth of the discipline of practical programming of systems. Furthermore, it presents the methodologies and techniques of computer programming using C++,providing a fairly complete introduction to the language. Explaining the basic problems of simulation software in telecommunication.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. 1Has in-depth knowledge of construction and operation of communication systems used to proHe has ordered, mathematical underpinnings knowledge of the acquisition, human perception, quality assessment, processing, digital representation, compression and transmission of video signals, speech and audio for use in multimedia systemsvide multimedia services. - [K1_W11]

Skills:

1. He understands the technical conditions for the transmission, storage and presentation of multimedia data and can make appropriate basic requirements for technical systems carrying multimedia services. Understand the basic provisions of the relevant international standards. Can define the basic requirements for the system that performs tasks related to multimedia. - [K1_U14]

Social competencies:

1. He knows the limitations of their knowledge and skills, understands the need for ongoing education - [K1_K01]

2. Has awareness of the need for a professional approach to problem solving technical and take responsibility for their proposed technical solutions He can pursue collaborative projects - [K1_K02]

Assessment methods of study outcomes

Individual projects, written exam.

Course description

Lectures: Introduction to C++. C++ programming through object-oriented design, basic ideas of data types, internal data representation, operations, expressions, arrays, control structures for selection and repetition, reusability using functions, function parameters, function templates. Algorithms. Simulation problems. Errors and Objective metrics. Basic problems of linear and nonlinear system theory programming. Implementation of the basic algorithm of neural networks and a chaos simulation system.

Basic bibliography:

1. 1. D.E. Knuth - The Art of Computer Programming, Addison - Wesley Publishing Company, Re ading, MA, 1968, 1973.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures and practical classes	60
2. Preparation for the classes and writing a final report	15
3. Literature studies	15
4. Work on laboratory project	15
5. Preparation for exam	15
6. consultations related to lectures and laboratory project	3
7. Exam	2

Student's workload

Source of workload	hours	ECTS
Total workload	125	5
Contact hours	65	3
Practical activities	60	2