STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Introduction to Programming in Matlab**		Code **1010802111010844069**
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: **2** Laboratory: **-** 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**	K1_W13, K1_W23
2	**Skills**	K1_U01, K1_U02, K1_U05
3	**Social competencies**	K1_K01, K1_K02

Assumptions and objectives of the course:

Learning the fundamentals of structured programming based on the examples in Matlab. Learning to organise numerical data in data structures, to control the flow of a program, and to express a solution in a form of a structured algorithm. Learning the fundamentals of computational optimizations.

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

Knowledge:

1. Knowing the rules of construction of computer programs. Knowing the syntax and programming practices of Matlab environment - [K1_W09]

Skills:

1. Can implement in software basic computational algorithms using Matlab programming language - [K1_U13]

Social competencies:

1. Knows the limits of own knowledge and skills, understands the need for ongoing education - [K1_K01]

Assessment methods of study outcomes

1. Individual reports from lab exercises
2. Written exam

Course description

Introduction to the Matlab environment. The principles of vectorised computations and linear algebra notation in Matlab. Data structures, vectors, matrices, sparse data, and their representations. Direct, indirect, relative and logical indexing. Advanced data manipulation. Basic statements, loops and conditional branches. Functional programming. Recursion. Implementation of basic 1D and 2D signal processing: filtering, transforms, quantization, basic pattern analysis.

Basic bibliography:

1. S.J. Chapman, MATLAB Programming for Engineers, Cengage Learning, 2007
2. H. Moore, MATLAB for Engineers (Esource/Introductory Engineering and Computing), Prentice Hall, 2011

Additional bibliography:

1. T. Dutoit, F. Marques, Applied Signal Processing: A MATLAB-based Proof of Concept, Springer 2009

Result of average student's workload

Activity	Time (working hours)
1. Lecturers and laboratories	60
2. Preparation for laboratories	25
3. Consultations	7
4. Preparation to the exam	30
5. Exam	3

Student's workload

Source of workload	hours	ECTS
Total workload	125	5
Contact hours	70	3
Practical activities	55	2