

FUNDAMENTALS OF COMPUTER PROGRAMMING

1. Discipline/module data

Faculty	Computers, Informatics, and Microelectronics				
Department	Informatics and Systems Engineering				
Academic degree	Undergraduate studies, Cycle I				
Study-programme	0413.1 Business and Administration				
Year of study	Semester	Type of evaluation	Formative category	Category of optionality	Credits ECTS
I (Full-time); I (Part-time)	2 2	E	G – General Competency Development Course	O - Mandatory Course	3

2. Total estimated time

Total hours in the curriculum	Including:				
	Contact hours		Individual work		
	Course	Practical lessons	Year project	Study of theoretical material	Preparing applications
90 (Full time)	30	15	-	30	15
90 (Part time)	10/12*	8/6*	-	40	32

3. Prerequisites to access the discipline/module

No prerequisites are required for this course.

4. Conditions for carrying out the educational process

Course	A projector and computer are required for presenting the theoretical material in the classroom. Student tardiness and phone conversations during lectures will not be tolerated.
Practical lessons	Students will complete the laboratory work according to the conditions set by the methodological instructions. The deadline for submitting laboratory work is one week after its completion. Late submissions will be penalized by 1 point per week of delay.

5. Specific competences acquired

Professional competences	- Identifying the specific concepts of the programming process and the specific mechanisms of a language, the difference between semantic and syntactic aspects in the programming language; - Developing programs in Python, using the simple mathematical concepts necessary for algorithm development; - Creating various applications for use in the professional field; - Interpreting developed programs: architecture, components, and implementation methods, using the basic knowledge acquired during the course; - Testing developed programs based on the verification strategy; - Developing documentation for the developed programs.
Transversal competences	TC1. Applying, within the context of respecting the legislation, the rights of intellectual property (including technology transfer), the methodology of product

	certification, the principles, norms, and values of the professional ethics code within the framework of one's own rigorous, efficient, and responsible work strategy. TC2. Identifying roles and responsibilities within a team and applying techniques for efficient communication and work within the team. TC3. Identifying opportunities for continuous training and efficiently leveraging resources and learning techniques for personal development.
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6. Subject/module objectives

General objective	Understanding the basic concepts of programming using the Python programming language.
Specific objectives	- Understanding the basic concepts of programming; - Using basic tools for program development; - Studying the components of the Python language and the development tools for programming, execution, and debugging programs.

7. Content of the subject/module

Topics of teaching activities	Number of hours	
	full-time study	part-time study
Lecture topics		
T 1. Introduction to Python. Python vs pseudocode. Python development environment.	2	1
T 2. Variables, expressions, assignments, data types. Strings, string processing. Data type conversion. Predefined functions.	4	1
T 3. Conditional control structures. Repetitive structures. Modules - math, random, datetime, time.	4	1
T 4. Data collections: lists, tuples, sets, dictionaries.	6	1
T 5. Files, file processing.	2	2
T 6. Functions. Simple functions without parameters. Functions with parameters. Parameter passing. Syntax errors. Exceptions.	4	2
T 7. Modules and packages. Import and usage procedures. Defining your own module.	6	1/2
T 8. Object-oriented programming in Python. Classes and objects.	1	1/2
Total course	30	10/12

Topics of teaching activities	Number of hours	
	full-time study	part-time study
Topics of practical lessons		
PL 1. Installing the Python environment. Creating and running a Python program. Data types. Character strings. Basic operations.	4	2
PL 2. Lists and dictionaries, functions with arguments, built-in functions. Files.	4	2
PL 3. Developing an application in Python with reference to the field of specialization.	7	4/2
Total practical lessons	15	8/6

8. References:

Mains (Mandatory)	- Tudor Vlad. Curs de programare în Python 3 – Fundamentele pentru începători. L&S Soft, 2020. 262 p., ISBN: 978-606-94898-1-9 - Charls R. Severance. Python for Everybody. Explorind Data Using Python 3. CreateSpace, 2016, 249 p. ISBN 978-1-530-05112-0
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	3. Harry Percival, Test-Driven Development with Python, O'Reilly Media, 2017. 622 p. ISBN 978-1-491-95870-4 4. Kenneth Reitz & Tanya Schlusser, The Hitchhiker's Guide to Python: Best Practices for Development, 2016. ISBN 978-1-491-93317-6 5. Mircea Prodan. Cum să programezi în Python (Manual în limba română). 2014
Additional (optional)	6. https://www.w3schools.com/python/default.asp 7. https://www.python.org/ 8. https://pythonbooks.org/ 9. https://inventwithpython.com/ 10. https://learnpythonthehardway.org/ 11. https://www.onlineprogrammingbooks.com/free-python-books/

9. Evaluation

Education form	Periodic evaluations		Current evaluation	Individual study	Exam
	PE 1	PE 2			
full-time study	15%	15%	15%	15%	40%
part time study	25%			25%	50%
Minimum performance standard					
Attendance and involvement (activity) at lectures and practical lessons.					
Written work – a test assessing theoretical knowledge and acquired practical skills.					
Minimum requirements for grade 5: Knowledge of fundamental theoretical elements. Obtaining a minimum grade of "5" in each assessment and laboratory work.					