

TUTORIAL COURSE FORM

2025-2026 ACADEMIC YEAR

Name of the tutorial course (incoming Erasmus/exchange students)	Applying Python to Business Algorithms
Name of the professor	Sabina-Cristiana Necula
Email of the professor	sabina.necula@uaic.ro
Office of the professor Consultation hours	B301/ Tuesday (9-11 AM)
Semester(s) in which the tutorial course is available	1
No. of ECTS credits	5
Level of study (bachelor/master/PhD)	bachelor
Short description/Contents	<p>Course Description: This course aims to equip students with the ability to understand, design, and implement algorithms to solve business problems using Python. The course will cover fundamental algorithmic concepts, data structures, and how these can be used to make business decisions.</p> <p>1: Introduction Course overview Introduction to Python for business Setting up the Python environment 2: Python Basics Variables, data types, and operators Control structures: loops and conditionals Functions and modules 3: Data Structures Lists, tuples, and dictionaries Sets and frozensets Understanding time and space complexity 4: Algorithms Basics Introduction to algorithms Algorithm design techniques: brute force, divide and conquer, greedy algorithms Recursion and iterative solutions 5: Searching and Sorting Algorithms Linear and binary search Sorting algorithms: bubble sort, selection sort, insertion sort, quick sort, merge sort</p>

	6: Advanced Data Structures Stacks and queues Trees and graphs 7: Graph Algorithms Depth-first search and breadth-first search Shortest path algorithms: Dijkstra's algorithm 8: Dynamic Programming Understanding dynamic programming Implementing dynamic programming solutions 9: Final Project Students will work on a final project where they will apply the concepts learned in the course to solve a real-world business problem.
Assessment/Evaluation	coding assignments: 50% Midterm exam: 20% Written test (exam): 30%
Bibliography	"Data Structures and Algorithms in Python" by Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser Data Structures and Algorithms in Python.pdf (google.com) Software Required: Python 3.x Jupyter Notebook Libraries: NumPy, pandas, matplotlib
Observations	