

Study program	Level of studies		First cycle	
	Study program name		Physics and Informatics Education	
Course name	PROGRAMMING I			
Course ID	Semester	Course status	ECTS credits	L+E
CS110	I	MANDATORY	7	2+4
Lecturer				
Aims and intended learning outcomes	<p>The course considers the process of computer program development using "high-level" programming language. It is assumed that students have no previous programming experience. Topics to be covered include basic data types and their operators, input-output processing, control structures (decision and repetition structures), functions, arrays/lists, basics of object-oriented programming, as well as basics of data structures. Special focus is placed on improving computer problem-solving skills, program design and testing, and program implementation using the Integrated Development Environment (IDE).</p> <p>Upon completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. design, compile and execute programs that solve basic computer problems; 2. describe the concept of a variable; 3. describe and use control structures; 4. use strings and lists; 5. describe and use functions, parameters and return values; 6. write to a file and read the data from a file; 7. understand and use recursion; 8. understand the basic concepts of object-oriented programming; 9. implement basic data structures. 			
Course content				
<ul style="list-style-type: none"> - Programming basics - Data types - Control structures - Arrays/lists - Functions - Working with files - Recursion - OOP basics - Data structures basics 				
Student workload (hours)		Grading		
Lectures and Exercises	90	Assessment method	Points	
Exam preparation	85	Midterm exam	30	
		Laboratory assignments	25	
		Project	10	
Consultation	175	Final exam	35	
Total		Total	100	
Literature				
<ol style="list-style-type: none"> 1. R. Sedgewick, K. Wayne, R. Dondero: „Introduction to Programming in Python: An Interdisciplinary Approach“, 2015. 3. C. Dierbach: „Introduction to Computer Science Using Python“, 2012. 4. E. Matthes: „Python Crash Course“, No Starch Press, 2015. 5. W. Savitch: „Problem Solving with C++“, 9th Edition, Pearson, 2014. 6. B. Stroustrup: „Programming: Principles and Practice Using C++“, 2nd Edition, 2014 7. A. Spraul: „Think Like a Programmer“, No Starch Press, 2012. 				
Remarks				