Study program na					
Study program name		Physics and Informatics Education			
PROGRAMMING I					
Semester	Cours	e status	ECTS of	redits	L+E
I	MAND	DATORY	7		2+4
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). Upon completion of this course, students will be able to: 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; 0. implement the basic concepts of object-oriented programming; 0. implement basic data eterutation					
Course content					
 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 m	ethod		Points
85		Midterm exam			30
		Laboratory ass	signments		25
		Project			10
175	5	, Final exam			35
		Total			100
Literature					
 R. Sedgewick, K. Wayne, R. Dondero: "Introduction to Programming in Python: An Interdisciplinary Approach", 2015. C. Dierbach: "Introduction to Computer Science Using Python", 2012. E. Matthes: "Python Crash Course", No Starch Press, 2015. W. Savitch: "Problem Solving with C++", 9th Edition, Pearson, 2014. B. Stroustrup: "Programming: Principles and Practice Using C++", 2nd Edition, 2014 A. Spraul: "Think Like a Programmer", No Starch Press, 2012. 					
	Semester I The course consilevel" programming exports, input-structures), functions basics of date problem-solving susing the Integrate Upon completion 1. design, compile 2. describe and ut 4. use strings and 5. describe and ut 6. write to a file a 7. understand an 8. understand the 9. implement base basics basics grade basics ures files wick, K. Wayne, R. Experiment for the construction of the const	Semester Course I MANE The course considers the prodest of the programming language programming experience. Top operators, input-output process structures), functions, arrays/as basics of data structuress problem-solving skills, progratusing the Integrated Develop Upon completion of this course 1. design, compile and execute 2. describe the concept of a voltable of the concept of the conce	PROGRAMM Semester Course status I MANDATORY The course considers the process of compute level" programming language. It is assum programming experience. Topics to be cover operators, input-output processing, control structures), functions, arrays/lists, basics of as basics of data structures. Special focus problem-solving skills, program design and tusing the Integrated Development Environm Upon completion of this course, students wil 1. design, compile and execute programs the 2. describe the concept of a variable; 3. describe and use control structures; 4. use strings and lists; 5. describe and use functions, parameters a 6. write to a file and read the data from a file 7. understand and use recursion; 8. understand the basic concepts of object-ce 9. implement basic data structures. Course content basics ures files 90 Assessment m 85 Midterm exam 175 Final exam 175	PROGRAMMING I Semester Course status ECTS of I I MANDATORY 7 The course considers the process of computer program level" programming language. It is assumed that stu programming experience. Topics to be covered include I operators, input-output processing, control structures structures), functions, arrays/lists, basics of object-orien as basics of data structures. Special focus is placed problem-solving skills, program design and testing, and using the Integrated Development Environment (IDE). Upon completion of this course, students will be able to 1. design, compile and execute programs that solve bas 2. describe and use control structures; 4. use strings and lists; 5. describe and use functions, parameters and return va 6. write to a file and read the data from a file; 7. understand and use recursion; 8. understand and use recursion; 8. understand and use recursion; 9. implement basic data structures. Course content basics ures files 28 90 Assessment method 85 Midterm exam Laboratory assignments Project 175 175 Final exam 1 Total Literature vick, K. Wayne, R. Donderc: "Introduction to Programming in P , 2015. .:problem Solving with C++*, 9th Edition, Pearson, 2014. :problem Solving with C++*, 9th Edition, Pearson, 2014. :problem Solving with	PROGRAMMING I Semester Course status ECTS credits I MANDATORY 7 The course considers the process of computer program developme level" programming anguage. It is assumed that students hav programming experience. Topics to be covered include basic data operators, input-output processing, control structures (decision structures), functions, arrays/lists, basics of object-oriented progra as basics of data structures. Special focus is placed on improproblem-solving skills, program design and testing, and program i using the Integrated Development Environment (IDE). Upon completion of this course, students will be able to: 1. design, compile and execute programs that solve basic compute 2. 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 the basic concepts of object-oriented programming 9. implement basic data structures. Course content basics ures files 35 se basics 90 Assessment method I 90 Assessment method 175 Final exam 126 Project 175 Final exam 175 Final exam 1,0156 No