| Program | Level | Schort cycle |
|---|---|---|
| | Name of the program | Infomation Technologies |

| COURSE | | | | |
|---|---|---|---|---|
| Course title | **Programming I** | | | |
| Course code | Semester | Course status | ECTS | Contact hours (L+AE+LE) |
| IT 110 | I | Mandatory course | 8 | 2+2+2 |
| Lecturer | | | | |
| Course Goals | 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.<br>Special focus is placed on improving computer problem-solving skills, program design and testing, and program implementation using the Integrated Development Environment (IDE). | | | |
| Learning Outcomes | Upon completion of this course, students will be able to:<br>1. design, compile and execute programs that solve basic computer problems;<br>2. describe the concept of a variable;<br>3. describe and use control structures;<br>4. use strings and lists;<br>5. describe and use functions, parameters and return values;<br>6. write to a file and read the data from a file;<br>7. understand and use recursion;<br>8. understand the basic concepts of object-oriented programming;<br>9. implement basic data structures. | | | |

**COURSE CONTENT**

- Programming basics
- Data types
- Control structures
- Arrays/lists
- Functions
- Working with files
- Recursion
- OOP basics
- Data structures basics

**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.


**STUDENT WORKLOAD (hours in a semester)**

| Lectures | 30 | Tutorial | 60 | Individual work | 85 | T o t a l | 175 |
|---|---|---|---|---|---|---|---|

| GRADING | | | REMARKS |
|---|---|---|---|
| Criterion | Maximum points | Minimum points | |
| Midterm exams | 30 | | |
| Laboratory assignments | 30 | | |
| Final exam | 40 | | |
| T o t a l | 100 | 55 | |