Study programmes: Bachelor studies - Informatics

Course name: P101 - Programming 2

Lecturers: Predrag Janičić and other lecturers of the Department for Computer Science

Status: Compulsory

ECTS: 8

Attendance prerequisites: P100

Course aims: Acquiring general and specific knowledge about some advanced programming techniques, some complex data structures and algorithms, and about some advanced concepts of computer science.

Course outcome: After the course, the student is able to correctly and on his/her own, in the programming language C, implement complex programs that use more advanced programming techniques (e.g., recursion, pointers, dynamically allocated memory, more complex data structures). The student understands the concepts like computational complexity and computability.

Course content:

Advanced notions of C:
- types, conversions, operators
- pointer types, relationship with arrays, multidimensional arrays, arrays of pointers, and pointers to functions
- dynamic allocation of memory
- organization of executable programs

Overview of standard library (including input and output)
Program correctness
Efficiency and computational complexity
Some more advanced algorithms and data structures
Life cycle of programs
Principles of writing programs
Programming languages and paradigms
Computability

Literature:

1. Filip Marić, Predrag Janičić: Programiranje 2 - Osnove programiranja kroz programski jezik C, Matematički fakultet, electronic lecture notes, 2015.
2. Gordana Pavlović-Lažetić: Programiranje 2, electronic lecture notes, Matematički fakultet, 2013.
3. Brian Kernighan, Dennis Ritchie: The C Programming Language, Prentice Hall, 1988.
4. Mike Banahan, Declan Brady and Mark Doran: The C book, Addison Wesley, 1991.
5. Brian Kernighan, Rob Pike: The Practice of Programming, Addison Wesley, 1999.

(the lecturer can choose another appropriate literature)

Number of hours: 6	**Lectures: 3**	**Tutorials: 3**	**Laboratory: -**	**Research: -**

Teaching and learning methods: Frontal/Lectures/Exercises

Assessment (maximal 100 points)

Course assignments	**points**	**Final exam**	**points**
Lectures	25	Written exam	-
Exercises / Tutorials	25	Oral exam	-
Colloquia	-	Written-oral exam	50
Essay / Project	-		