

## Algorithms and Data Structures Course

<i>Name of the subject:</i> <b>Algorithms and Data Structures- BSc</b>	<i>SUBJECT code:</i>	<i>Weekly hours:</i> 2 lectures + 2 practical work	<i>Credit:</i> 6
<i>Subject leader:</i> Darko Brodic (Branislav Ivanov)	<i>Academi Degree:</i> <i>Associate Professor</i> <i>Assistant</i>	<i>Prerequisites:</i> Courses: Informatics I and II	

**Purpose :** It is taught in order to acquire general knowledge and acquire specific skills in the field of algorithmic problem solving and programming.

**Outcome:** Acquiring knowledge and skills necessary for the application of modern programming languages and programming techniques in the field of algorithmic problem solving.

### Course description:

Basic philosophy of the algorithmic way of expressing data processing procedures. Procedural and declarative way of expressing algorithms. Algorithmic structures. Classification and declaration of data structure. Algorithms over the structure of data in the operational memory. Algorithms over linear structures and tree-type structures. Search algorithms. Algorithms for editing the data structure. Recursive algorithms. Algorithms over persistent data structures. Organization of files. Complexity and efficiency of the algorithm. Algorithms in the selected programming language (Java).

### Schedule

Weeks	Topics
1.	Basic philosophy of the algorithmic way of expressing data processing procedures
2.	Procedural and declarative way of expressing algorithms
3.	Algorithmic structures
4.	Classification and declaration of data structure
5.	Algorithms over the structure of data in the operational memory
6.	Algorithms over linear structures and tree-type structures
7.	Search algorithms
8.	Colloquium
9.	Algorithms for editing the data structure
10.	Recursive algorithms
11.	Algorithms over persistent data structures
12.	Organization of files
13.	Complexity and efficiency of the algorithm.
14.	Algorithms in the selected programming language (Java).
15.	Definition and preparation for seminar project

**Final grade:** 20pt – Class attendance: 10pt lectures and 10pt exercises attendance; 20pt – Seminar project; 20pt – Colloquium; 40pt – Final exam: 20pt written and 20pt oral exam.

0-50 – Mark 5

51-60 – Mark 6

61-70 – Mark 7

71-80 – Mark 8

81-90 – Mark 9

91-100 – Mark 10

**Compulsory literature:**

1. Brodić D., Algoritmi i strukture podataka, TF Bor, Skripta 2013.

**Supplemental literature:**

1. Grupa autora, Priručnik za izabrani programski jezik (Java) , Beograd 2005.