SYLLABUS

1. Course title:

Data Structures

2. Code:

RI301

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[RI202] Object Oriented Programming

7. Class restrictions:

8. Duration / semester:

1 4

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	1
9.3. Laboratory/Practice classes:	1

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

Ph.D. Edin Pjanić, assistant prof.

13. Lecturer's e-mail:

edin.pjanic@untz.ba

14. Web site:

15. Course aims:

The main goal of the course is to teach fundamental data structures and different configurations in which data can be stored for fast retrieval and computer processing. Besides that, students should get familiar with methodologies used to analyze performance of different data configurations and with methodologies used to manipulate this data.

16. Learning outcomes:

Upon completion of the course students should:
- identify the basic concepts of abstract data type and fundamental data structures
- analyze complexity and performance of different configurations in which data can be stored
- identify optimal data structure for a real problem

17. Course content:

Basic data types. Simple and complex data types. Static and dynamic data structures. Abstract data type (ADT). Array ADT, list ADT and their implementations. Possible operations on data type and their asymptotic complexity. Linked lists: singly, doubly and circular. Stacks, Unions. Queue, priority queue. Recursive data structures and algorithms. Trees: binary and balanced. Binary search tree. Heap. Graphs.

18. Learning methods:

Lectures are accompanied by presentations and other materials which are uploaded on the course web site. Discussions with teaching assistant, laboratory excersizes, homeworks and a small group project.

19. Assessment methods:

Continuous assessments are performed during the semester (homeworks, quizzes, a project), one or two midterm tests and a final exam. The final exam includes the questions related to the entire content of the course, focusing on the areas that are not covered by the midterm tests.

20. Assessment components:

Grading scale:
Homeworks, quizes: 40%
Midterm tests: 40%
Final exam: 20%
The final grade is based on the continuous assessments that are performed during the semester (homeworks, quizzes) and the final exam.

21. Required reading list:

R.Sedgewick, "Algorithms in C++, Parts 1-4: Fundamentals, Data Structure, Sorting, Searching", Third Edition, Addison-Wesley, 1998
M.A.Weiss, "Data Structures and Algorithm Analysis in C", Addison-Wesley, 1997
D.S. Malik, "Data Structures Using C++", Second Edition, Course Technology, 2010

22. Web sources:

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016