

SYLLABUS

1. Course title:

Logic Systems Design

2. Code:

AR105

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course: Mandatory Elective**6. Prerequisites:**

[RI101] Introduction to Programming

7. Class restrictions:

Students of Faculty of Electrical Engineering, Study program "Electrical Engineering and Computer Science"

8. Duration / semester:

1

4

9. Weekly contact hours:

9.1. Lectures:

3

9.2. Seminars:

0

9.3. Laboratory/Practice classes:

2

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

Ph.D. Lejla Banjanović-Mehmedović, Assoc. Prof.

13. Lecturer's e-mail:

lejla.mehmedovic@untz.ba

14. Web site:

www.lejla-bm.com

15. Course aims:

The goal is to introduce students to basic principles of analysis and synthesis of digital circuits, providing the knowledge about integrated digital circuits, implementation technology of logical systems and modern design of digital systems.

16. Learning outcomes:

At the end of the semester/course, successful students will be able to analyze the problems and design the combinational and sequential digital circuits using CAD and Verilog hardware programming language.

17. Course content:

Introduction in integrated digital circuits. Boolean algebra and logic circuits. Implementation Technology. TTL, MOSFET based logical circuits. Programmable digital circuits (PLA, PAL, SPLD, CPLD, FPGA). Synthesis and optimization implementation of logical functions. Introduction in hardware description languages (VHDL and Verilog). Verilog and CAD design of logical circuits. Arithmetic circuits. Combinational circuits. Encoders and decoders. Multiplexers and demultiplexers. Sequential Circuits. Flip-flops. Registers and counters. Synchronous Sequential Circuits. Finite state machine. Asynchronous Sequential Circuits. Digital System Design. Design of simple processor.

18. Learning methods:

Lectures, seminar/practice classes, homeworks.

19. Assessment methods:

An exam is based on the continuous assessments, which are performed throughout the semester with the midterm tests and the final exam, which includes the questions related to the entire content of the course, focusing on the areas that are not covered by the midterm test.

20. Assessment components:

The final grade is based on the total sum of points from assignments, written midterm and final exam.

Presence to lectures and practice classes: 5

Midterms tests: 45

Final exam: 50

Summary: 100

21. Required reading list:

Ronald J. Tocci, Neal S. Widmer, Gregory L. Moss: Digital Systems Principles and Applications, Pearson Education, Prentice Hall, 2007.

S. Brown, Z. Vranesic, "Fundamentals of Digital Logic with Verilog Design", 2007.

M. Morris Mano, Michael D. Ciletti: "Digital Design With an Introduction to the Verilog HDL", 2013.

J. P. Hoffbeck, "Using Practical Examples in Teaching Digital Logic Design", 2014.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016.