SYLLABUS

1. Course title:

Power and control electronics

2. Code:

3. Cycle of study:

1

4. ECTS credits:

4

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

Electrotechnics and electronics (second year of study)

7. Class restrictions:

Without restrictions

8. Duration / semester:

1 5

9. Weekly contact hours:

9.1. Lectures:	2
9.2. Seminars:	1
9.3. Laboratory/Practice classes:	0

10. Faculty:

Faculty of mechanical engineering

11. Department/study program:

Mechatronics

12. Lecturer:

PhD Mensur Kasumović, assistant professor

13. Lecturer's e-mail:

mensur.kasumovic@untz.ba

14. Web site:

www.fet.ba

15. Course aims:

Course aim is to educate students from power and control electronics scientific area. Important aim is to motivate students for future research in power and control electronics area. Also, to develop research desire among students for new technologies in electric motor drives control.

16. Learning outcomes:

After completing the course, the students will be able: to analyse power and control elelctronics parts of devices, to test their functionality and to calculate basic parameters which are important for equipment dimensioning. Also, adopted knowledge on course will be adequate for power electronics selection for different types of electric motors in electric motor drives.

17. Course content:

Power semiconductor elements: Diode, Bipolar transistor, Thyristor. Control systems. Linking of semiconductor power components. Rectifiers: Single phase, half wave and full wave. Three phase controled rectifiers. Control and load charasteristic of rectifiers. Inverters: Inverters with network connectivity; Autonomous voltage and current inverters. Converters for alternate current. Voltage and frequency converters. Direct current converters. Indirect converters. Direct converters (Pulse width method and Pulse frequency method). Usage of power electronics devices for electric motor drives control. Control of direct current motors. Control of induction motors.

18. Learning methods:

It is planned these activities for successful teaching: specific experience, observation and thinking. Like teaching styles, it is prefered: visual style, auditive, verbal, logical, mathematical, social and individual style. Methods for teaching process are: lectures with computer presentation usage, active learning technique and seminars.

19. Assessment methods:

The final grade is based on the continuous assessments, which are performed throughout the semester and the final exam.
Continous assesment throughout the semester consists two tests, which are combination of theoretical questions and tasks. Maximum number of points on every test is 25. Test become organized in 8. and 15. week of semester.
During semester students gain points (maximum 10 points) throughout lessons presence and activity on laboratory classes. Maximum number of points on the final exam is 40.
Minimal number of points for succesfully passed exam is 54.

20. Assessment components:

Student can achieve maximal 100 points based on this scale:

Test I	25
Test II	25
Lessons presence	3
Laboratory activities	7
Total during semester	60
Final exam	40
Total	100

21. Required reading list:

1. A. Hodžić: Upravljanje i regulacija elektromotornih pogona, NIK GRAFIT, Lukavac, 2012.
2. M. H. Rashid: Power Electronics Handbook, Academic Press, 2001.
3. T. Brodić : Energetska elektronika – zbirka zadataka, Svjetlost, Sarajevo,2000.

22. Web sources:

23. Applicable starting from the academic year:

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015