SYLLABUS

1. Course title:

Electric Power Plants

2. Code:

EEMS202

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[EEMS106] Power System Substations

7. Class restrictions:

8. Duration / semester:

1 7

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. Suad Halilčević, full prof.

13. Lecturer's e-mail:

suad.halilcevic@untz.ba

14. Web site:

15. Course aims:

To qualify the students for the world-wide labour market on the power plants issues: planning, designing, building, management, and maintenance of the power plants.

16. Learning outcomes:

At the end of the semester/course, successful students who continuously fulfilled their duties throughout the teaching period, will be able to participate in planning, designing, building, management, and maintenance of the power plants.

17. Course content:

Thermodynamic systems. Thermodynamic Laws. Heat State Equation. Interior Energy. Volume Operation. Enthalpy. Technical Operation. Entropy and Enthalpy. Caloric State Equations and Ideal Gas Transformation. Water and Water Steam. Steam Tables and State Diagrams. Thermodynamics Cycle: Carnot and Clausius-Rankine. Ideal Process in a Gas Turbine. Ideal Process in Otto and Diesel Motors.
Combustion Processes. Upper and Low Heat Value. Theoretical and Working Combustion Temperature. Heat Transmission. Heat Transmission by Convection and Radiation. Heat exchanger. Steam Boilers. Design and Using of Boilers. Gas cleaning. Dust-removers. Feeding water. Coal combustion in a fluid paste. Steam Turbine. Impulse and Reaction turbines. Turbine with the constant pressure. Overpressure Turbine. Losses and Efficiency of Turbine.Cross-flow turbine. The Regulated Steam Separation Turbine. Steam Turbine for Conventional Thermo-Plants. Curtis turbine combined with the de Laval and Parsons turbine. Steam turbine for Nuclear Plants. Regulation of Steam Turbine. Steam Thermal Power Plants. Equipment of Steam Thermal Power Plants. Nominal Power. Thermal Efficiency. The Combined Generation of Electricity and Heat. Electrical Scheme of a Thermal Power Plant. Own Consumption. Building Costs and Price of Produced Electricity. Thermal Power Plant with Gas Turbine. Efficiency Rate. Improving of Efficiency. Special Design. Using of Gas Equipment for Power Production. IGCC power plants. Nuclear Power Plants.

18. Learning methods:

Observation and reflection, creation of abstract concepts and active experimentation, concrete experience.
The most important learning methods are:
- Lectures with the use of multimedia resources, active learning techniques and with active participation and discussion of students;
- Auditive exercisers;
- Preparation and presentation of group and individual seminar papers.
Styles of learning: visual style, auditive, verbal, kinesthetic, logical-mathematical, social and independent.

19. Assessment methods:

Continuous assessment during the semester is performed through two periodical tests and final verbal exam.

20. Assessment components:

Arithmetic mean of assessment methods grades.

21. Required reading list:

S.Halilčević, Upravljanje energijom, Univerzitet u Tuzli, 2000.
T.C.Elliot, Standard Handbook of Power Plant Engineering, Marcel Dekker, 2001.
K.W.Li, A.P.Priddy, Power Plant System Design, IEEE Press, 2002.
Layman's Guidebook, European Communities, Directorate-General for Energy by
European Small Hydropower Association (ESHA), 2008

22. Web sources:

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016