

## SYLLABUS

**1. Course title:**

Energy Production

**2. Code:**

ESKE303

**3. Cycle of study:**

1

**4. ECTS credits:**

6

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

[ESKE003] Electromechanical Energy Conversion, [ESKE203] Electrical Machines II

**7. Class restrictions:**

Faculty of Electrical Engineering students, study program "Electrical Engineering and Computer Science" with fulfilled

**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:**

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 that students adopts basic theoretical, mathematical and practical knowledge from energy production area.

**16. Learning outcomes:**

After completing the course, the students will be able: to choose optimal energy source, to choose type and adequate location for electrical energy production buildings. Also, adopted knowledge will ensure, that students can participate in expert teams for analysis, repair, and limits determination for existing power plants for electrical energy production. Also, it will be aim to develop research interest at students, specially for renewable energy.

**17. Course content:**

Characteristics of power plants: types and classification, rated power and available energy production. Types of power plants (thermal, nuclear, hydro, wind and solar power plants). Main parts of power plants. Types of turbines. Thermodynamics schemes and cycle process diagrams. Parameter selection for main equipment in power plants. Start up and stoppage characteristics of power plants, options for power changing. Single phase scheme selection. Basic generator parameters selection. Statical and dynamical diagrams of generator. Generator synchronization. Analysis of different power plant operation types in respect to: operations in power system, independent operations and own power plant consumption. Own and general consumption. Backup power supply systems. Basic process measurement. Costs for power plant making and production price. Economically and energy value of power plant. Power plant working regimes and market price of produced energy. Influence of power plants on environment.

**18. Learning methods:**

Lectures, seminars and laboratory classes. One part of teaching process is with classical methods (frontally using board), and the other one is using multimedial content (presentation, video clips and computer animations). During semester, for better understanding of teoretical knowledge, students goes to visit some power plants.

**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 one test, which is combination of theoretical questions and tasks. Maximum number of points on test is 50. Test become organized in 10. week of semester. Research work is rated with maximum 30 points.

Maximum number of points on the final exam is 20.

Minimal number of points for succesfully passed exam is 54.

**20. Assessment components:**

Student can achieve maximal 100 points based on this scale:

Test	50
Research work	20
Total during semester	80
Final exam	20
Total	100

**21. Required reading list:**

H. Požar; Osnove energetike I, II i III, Školska knjiga; 1992  
M.M. El-Wakil; Powerplant Technology; McGraw Hill; 1984; ISBN: 0-07-019288-x  
J.S. Gulliver, R.E.A. Arndt; Hydropower Engineering Handbook; McGraw Hill; 2001

**22. Web sources:****23. Applicable starting from the academic year:**

2016/17

**24. Adopted in the Faculty/Academy session:**

04.04.2016