

## SYLLABUS

**1. Course title:**

HYDRO AND WIND POWER PLANTS

**2. Code:**

(max. 20 characters)

**3. Cycle of study:**

1

**4. ECTS credits:**

6

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

None

**7. Class restrictions:**

None

**8. Duration / semester:**

1

8

**9. Weekly contact hours:**

9.1. Lectures:

3

9.2. Seminars:

1

9.3. Laboratory/Practice classes:

1

**10. Faculty:**

Faculty of Mechanical Engineering

**11. Department/study program:**

Energy Engineering

**12. Lecturer:**

Indira Buljubašić, Associate Professor

**13. Lecturer's e-mail:**

indira.buljubasic@untz.ba

**14. Web site:**

www.mf.untz.ba

**15. Course aims:**

Acquisition of theoretical knowledge and practical skills in the field of hydro and wind power plants.

**16. Learning outcomes:**

At the end of the semester / course successful students, who continuously performed their duties, will be able to:

- analyze the energy situation in Bosnia and Herzegovina related to hydropower and wind energy;
- classify hydro and wind power plants using different criteria:
- project and design hydro and wind power plants, depending on the choice of location, energy budget, type and number of generators, economic budget utilization of energy resources and local environmental impact;
- propose measures for the rehabilitation of existing plants.

**17. Course content:**

- Introduction to hydroelectric power plants;
- Energy of water and its utilization;
- Water energy calculations;
- Hydropower plant performance within electric power system.
- Types of turbines, choosing the number of turbines;
- Non stationary operation of hydroelectric power plants;
- Description and operation of small hydroelectric power plants;
- Use and maintenance of hydroelectric power plants.
- Electrical equipment in power plants for power generation.
- Other elements of hydropower plant-design and operation;
- Economic parameters of hydropower plants.
- Potentials of wind energy.
- Theory of wind power plants operation;
- Design of wind turbines.
- Management and control of wind power plants.

**18. Learning methods:**

- Teaching units of this course will be presented to students through classical lectures with video presentations.
- Calculations within the analysis or design of new and existing hydropower and wind power plants will be presented during auditory exercises,
- while in the course of laboratory exercises students will be shown operation of individual elements in hydro and wind power plants, at laboratories or possibly on the actual plants.

**19. Assessment methods:**

During the semester, students continually attend lectures. Two tests are organized during semester, each with max. 20 points. The student must achieve at least 50% of points per test. As part of the pre-exam students are required to make individual or group seminar paper that will address specific topics, with max. 15 points, and presented in written and oral form. Student can also get points on the basis of presence at lectures and exercises, max. 5 points. The final exam is oral (and written for those who have not passed the tests with tasks) and carries 40 points. In order for a student to pass the course, minimum of 54 cumulative points must be achieved.

**20. Assessment components:**

Overall on the subject examinations I based on the following scale:

- Presence at lectures - 2.5 points
- Presence at exercises- 2.5 points
- Paper- 15 points
- Test - 2x20 = 40 points
- Final exam- 40 points

**21. Required reading list:**

1. Pilić Rabadan LJ. i dr: Hidroenergetska i aeroenergetska postrojenja, Zagreb, 1996.
2. Požar H.: Osnove energetike I i II, Zagreb, 1978.
3. Bilić Ž.: Hidroenergetska postrojenja-skripta, Mašinski fakultet Sarajevo, 1998.

**22. Web sources:**

(max. 687 characters)

**23. Applicable starting from the academic year:**

2015/16

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

01.06.2015