SYLLABUS

1. Course title:

ENERGY PLANTS AND THE ENVIRONMENTI

2. Code:

3. Cycle of study:

I

4. ECTS credits:

3

5. Type of course:

Elective

6. Prerequisites:

None

7. Class restrictions:

None

8. Duration / semester(s):

I VIII

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)	
	VIII	-			
9.1. Lectures	2	-		Classes:	33,75
9.2. Seminars	0	-		Individual work:	56
9.3. Laboratory / Practice classes	1	-		In total:	89,75

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Mechatronics

12. Lecturer:

Midhat Osmić, Associate Professor

13. Course aims:

Acquisition of theoretical knowledge in the field of energy plants and the principles of operation of energy plants, as well as the impact and methods of eliminating the negative effects of said plants on the environment. Acquiring knowledge that will enable students to participate in monitoring and evaluating the operation of individual plants, their design and

maintenance.

14. Learning outcomes:

At the end of the semester/course, successful students, who have continuously performed their duties during the entire teaching period, will be able to: Analyze the energy situation in the world and BiH, classify energy plants according to different criteria, participate to a certain extent in the design of the energy plant, analyze the impact of the energy plant on the environment and propose measures for improvement.

15. Course content:

Within the scope of the course, the following thematic units will be studied:

1.Energy sources and energy supply,
2.Non-renewable and renewable energy sources,
3,4,5.Basics about thermal power plants (thermal power plants, gas and nuclear power plants)
6,7. Basics about hydropower plants (characteristics of the system for collecting and supplying and draining water, characteristics of hydropower plants, characteristics of turbines, the condition of hydropower in Bosnia and Herzegovina),
8. Test
9.Effect of emissions from energy plants on the environment,
9.Solid and liquid waste from energy plants,
10.Technologies for reducing emissions from power plants,
11. Biomass as an energy source, characteristics, advantages and disadvantages,
12,13,14.Basics about wind energy plants (concept of wind formation, history of wind energy, situation at the world level, parts and types of wind turbines, rough estimates, installation locations, situation in Bosnia and Herzegovina).
15.Test

16. Learning methods:

Lectures are conducted in a classical way, using multimedia resources and techniques of active learning and student participation. Preparation and presentation of individual seminar papers and consultations.

17. Assessment methods:

During the semester, students continuously listen to lectures from the subject teaching units. Halfway through and at the end of the semester, students pass the material in the form of a written knowledge test. Evaluation is done by two tests that carry 40 points, of which the student must score at least 50% of the points per test. The tests consist of theoretical questions. In both cases, theoretical questions carry 20 points each. In addition to tests, during the semester, students prepare an individual or group seminar paper, the submission of which can earn the student 25 points. The student can also win part of the points based on the attendance at lectures and exercises in the amount of 5. The student must have a minimum of 3 points to get the teacher's signature after completing the course.
The final exam carries 30 points. In order to pass the course, the student must obtain a minimum of 54 cumulative points, of which 15 points in the final exam.

Grading system: (5) + (40) +(25)+ (30) = (100) points

Descriptive grades For the number of points achieved

Grade	Described	Letter grade	Points
5 (five)	Does not satisfy the minimum criteria	F, FX	<54
6 (six)	Sufficient minimum criteria	E	54-64
7 (seven)	Overall good, but with some significant flaws	D	65-74
8 (eight)	Average, with noticeable flaws	C	75-84
9 (nine)	Above average	B	85-94
10 (ten)	An exceptional success	A	95-100

18. Assessment components:

Grading will be based on the following activities

Pre-exam obligations:
- Active participation during class -5 points
- Tests - 40 points
-Seminar paper-25 points

Final exam:

- Written/oral exam -30 points

Total points 100

19. Mandatory reading list:

1. I.Buljubašić, M.Osmić, Elektrane i okolina, Tuzla, 2020.
2.Đonlagić M.: Energija i okolina, Tuzla, 2005.

20. Additional reading list:

1.Energija iz uglja, stanje i perspektive, Tuzla, 2023.

21. Web sources:

iea-wind.org/wp-content/uploads/2023/05/41_TEM-IntegrationWindHydroSystems_2003.pdf
research-hub.nrel.gov/en/publications/

22. Applicable from the academic year:

2025/2026

23. Adopted in the Faculty/Academy session: