SYLLABUS

1. Course title:

THERMODYNAMICS

2. Code:

(max. 20 characters)

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

(max. 110 characters)

7. Class restrictions:

(max. 150 characters)

8. Duration / semester:

1 3

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 2

9.3. Laboratory/Practice classes: 0

10. Faculty:

Faculty of Technology

11. Department/study program:

Environmental Protection Engineering

12. Lecturer:

Professor Muhamed Bijedić

13. Lecturer's e-mail:

muhamed.bijedic@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

to present a thorough treatment of thermodynamics,
to provide a sound basis for subsequent courses,
to prepare students to use thermodynamics in practice.

16. Learning outcomes:

retrieving property data of ideal gas and water vapor from tables (using linear interpolation if required),
locating principal states and sketching processes of ideal gas and water vapor in p-v, T-s, and h-s diagrams,
sketching Rankine power cycles (basic and modified) in p-v, T-s, and h-s diagrams,
discussing the effects of working parameters and cycle modifications on Rankine power cycle performance,
sketching Rankine refrigeration cycles (basic and modified) in p-v, T-s, and h-s diagrams,
discussing the effects of working parameters and cycle modifications on Rankine refrigeration cycle performance,
evaluating moist air properties (humidity, enthalpy, density, dew point temperature, wet bulb temperature),
using h-x chart for moist air.

17. Course content:

Ideal gases. First law. Ideal gas processes. Enthalpy. Second law. Maximum work, exergy, and anergy. Water vapor. Water vapor power systems. Refrigeration cycles. Moist air. Water evaporation.

18. Learning methods:

Lectures, seminars, consultations.

19. Assessment methods:

Test 1: Eight questions from theory taught during the first third of semester.
Assignment 1: Two exercises like those exercised during the first third of semester.
Test 2: Eight questions from theory taught during the second third of semester.
Assignment 2: Two exercises like those exercised during the second third of semester.
Test 3: Eight questions from theory taught during the last third of semester.
Assignment 3: Two exercises like those exercised during the last third of semester.
Final exam: Ten questions from theory taught during the semester and four exercises like those exercised during the semester.

20. Assessment components:

Tests: 24 points (3 tests by 8 points, where each correct answer to the question from theory carries 1 point)
Assignments: 24 points (3 assignments by 8 points, where each correctly solved exercise carries 4 points)
Lectures attendance: 1 point
Seminars attendance: 1 point
Final exam: 50 points (each correct answer to the question from theory carries 3 points, and each correctly solved exercise carries 5 points)

Final grade is based on total points earned during the semester, in any way.

Grading system: F (0-53 points), E (54-63 points), D (64-73 points), C (74-83 points), B (84-93 points), A (94-100 points)

21. Required reading list:

Moran, M.J., Shapiro, H.N., Fundamentals of Engineering Thermodynamics, John Wiley & Sons, 2006.
Bijedić, M., Delalić, S., Thermodynamics and Thermotechnics, Planjax, 2004.
Bijedić, M., Thermodynamics: A Collection of Exercises with Solutions, Planjax, 2004.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2015/16

24. Adopted in the Faculty/Academy session: