UNIVERSITY OF TUZLA UNIVERZITET U TUZLI

SYLLABUS

1. Course title:

ENERGY RESOURCES AND ENERGY

2. Code:

LRUDERE

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

Mandatory

6. Prerequisites:

No

7. Class restrictions:

No

8. Duration / semester(s):

1 | 1

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)
9.1. Lectures	3		Classes:	67,5
9.2. Seminars	3		Individual work:	82,83
9.3. Laboratory / Practice classes	0		In total:	150,33

10. Faculty:

Mining, Geology and Civil Engineering

11. Department/study program:

Mining Engineering

12. Lecturer:

PhD Edin Delić Full Professor

13. Course aims:

Introducing students to the basics of energy science, energy sources, methods of utilization, transformation, and energy management.

- Enhancing intellectual skills in applying acquired knowledge to solve various problems in energy management,

environmental protection in the energy sector, and sustainable development.
- Familiarizing students with energy policies in the field of sustainable development.
- Improving communication skills in both written and verbal forms.
- Enhancing skills related to individual and team/group work.
- Developing students' logical engineering thinking skills.

14. Learning outcomes:

At the end of the semester/course, successful students who have continuously fulfilled their obligations throughout the entire academic period will be able to:
- Utilize available literature to solve various problems in the field of energy and sustainable development.
- Solve problems of varying complexity, both individually and in teams, and present their solutions in written or verbal form.
- Understand the importance of this course in solving various issues related to mine ventilation planning, safety, and protection.
- Pass the final exam in the first exam sessions at the end of the semester.

15. Course content:

Meaning and Forms of Energy. Types of Energy. Fossil Fuel Energy and Mining. Natural Forms of Energy.
Combustion and Thermal Work. Energy Conversion and Transfer. Direct Conversion of Various Forms of Energy into Electrical Energy.
Energy Transformation Forms. Metric Units for Energy. Reserves of Natural Energy Forms. Energy Source Conversions.
- Non-renewable Sources – Fossil Fuels: Coal, Peat, and Oil.
- Non-renewable Sources – Fossil Fuels: Oil, Natural Gas, and Methane Hydrates.
- Non-renewable Sources – Fossil Fuels: Oil Shale and Bituminous Sand.
- Non-renewable Sources – Nuclear Energy.
- Renewable Sources: Geothermal Energy.
- Renewable Sources: Wind Energy.
- Solar Energy, Tidal Energy, and Ocean Thermal Energy.
- Renewable Sources: Biomass and Biogas.

Energy Efficiency and Sustainable Development. Transport and Transmission of Energy Forms.
Tariff Policy in Energy. Energy Balance and Energy Policy. Future Energy Consumption Planning.
Energy Policies in the Field of Sustainable Development.

16. Learning methods:

The primary learning methods include lectures, team/group projects (seminar papers), and short tests covering the core concepts of each subject area or teaching unit.
- Scenario-Based Learning (Case Studies)
- Continuous Participation: Active involvement in classes throughout the semester, participation in thematic discussions, initiative, and other activities contributing to the quality of teaching will be rewarded with additional points in the final grade. The course instructor will keep records of these activities.
- Individual and Team Projects: The completion of both individual and team projects is mandatory. During the semester, students will be required to participate in at least one team project.
- Tests and Mini-Exams: After completing specific course sections, the instructor will administer tests or mini-exams consisting of a set number of questions and tasks to assess students' acquired knowledge.
- Test Scheduling: The exact dates of the tests will be announced at least seven days in advance to allow students sufficient preparation time.
- Quick Tests: The questions in these tests will focus on the most recently covered topic or teaching unit.

17. Assessment methods:

The methods of knowledge assessment include both written and oral evaluations:
1. Attendance and Participation in Lectures
2. Written/Calculative Exam – Test
3. Written/Theoretical Exam – Test
4. Individual/Group Projects (Seminar Paper)
5. Final Paper

18. Assessment components:

Student Assessment Criteria
The student evaluation includes the following criteria:
- Attendance and Participation in Classes – up to 10 points
- Seminar Papers, Team Projects, Essays – up to 30 points
- Tests – up to 10 points

The total pre-exam obligations amount to 50 points.
The final exam is taken after completing the course during scheduled exam periods. The maximum number of points that

can be earned on the final exam is 50 points.
Final Grading Scale (ECTS Comparable)
The total student performance, after all knowledge assessments, is graded as follows:

- **10 (A) – Exceptional success with no or minimal errors, 95-100 points**
- **9 (B) – Above average, with some errors, 85-94 points**
- **8 (C) – Average, with noticeable mistakes, 75-84 points**
- **7 (D) – Generally good, but with significant shortcomings, 65-74 points**
- **6 (E) – Meets minimum criteria, 54-64 points**
- **5 (F, FX) – Does not meet minimum criteria, less than 54 points.**

19. Mandatory reading list:

1. Energy Management Handbook, Seventh Edition by Steve Doty and Wayne C. Turner Fairmont Press, 2009;
2. Barney L. Capehart, Encyclopedia of Energy Engineering and Technology, CRC Press Taylor & Francis Group, 2007;
3. Energy System Engineering – Evaluation and Implementation, Francis M. Vanek, Louis D. Albright, McGraw Hill Comp., 2008;
4. B. Udovičić: Osnove energetike (I i II dio), Školska knjiga Zagreb, 1991., 1992.
5. B. Udovičić, ENERGETIKA, Školska knjiga Zagreb, 1993.;
6. B. Udovičić: Energija, društvo i okolina I, II, IV, Građevinska knjiga Beograd, 1988;
7. V. Paar: Energetska kriza: gdje (ni)je izlaz, Građevinska knjiga Zagreb, 1984.
8. Danilo Feretić i dr., Nuklearne elektrane, Školska knjiga, Zagreb, 1995.;
9. H. Požar, OSNOVE ENERGETIKE 1, 2 i 3, Školska knjiga-Zagreb, 1976.;
10. Dr. Suad Halilčević, Upravljanje energijom, Univerzitet u Tuzli, 2000. godine
11. Materijali i prezentacije sa predavanja i vježbi

20. Additional reading list:

Falcone, P.M. Sustainable Energy Policies in Developing Countries: A Review of Challenges and Opportunities. Energies 2023, 16, 6682. https://doi.org/10.3390/ en16186682
https://www.undp.org/sites/g/files/zskgke326/files/publications/chapter12.pdf

21. Web sources:

http://www.energsustainsoc.com/
http://www.se4all.org/our-vision/our-objectives/renewable-energy/
https://en.wikipedia.org/wiki/Sustainable_energy
http://www.circlesofsustainability.org/
http://www.webpages.uidaho.edu/sustainability/
https://en.wikipedia.org/wiki/Sustainable_development

22. Applicable from the academic year:

2025/26

23. Adopted in the Faculty/Academy session: