

ÓBUDA UNIVERSITY						
Light Industry and Environmental Engineering		<i>Faculty</i>	Environmental Engineering and Science		<i>Institute</i>	
<i>Course name:</i>	Basics of Energetics			<i>Neptun-code:</i>	RKWEG1EBNE	
<i>Course name in Hungarian:</i>	Energetikai alapismeretek			<i>Credit:</i>	4	
<i>Type (compulsory/optional:)</i>	Compulsory	<i>Programme:</i>	Full time	<i>Semester:</i>	5.	
<i>Majors, where course is held:</i>	Environmental Engineer					
<i>Course coordinator:</i>	Konrád Lájér, Dr.		<i>Lecturer:</i>	Norbert Berecz		
<i>Required preliminary knowledge:</i>	RKXEL1EBNE					
<i>Weekly lectures:</i>	<i>lecture:</i>	2 (online)	<i>Classroom work:</i>	1	<i>Laboratory:</i>	-
<i>Exam type:</i>	tm	<i>Course language:</i>	English	<i>Course in the major's curriculum:</i>	Differentiated professional knowledge	
CURRICULUM						
<i>Aim:</i>						
<p>The aim of the course is to give a brief insight inside the field of electrical power engineering. Within this, the course gives a general knowledge about the building blocks of electrical power engineering, raw materials of electrical power engineering, processing of these materials, transportation of electrical energy, and use of electrical energy.</p> <p>Discusses and demonstrates the individual structural elements, operation of electrical generators and gives ideas about basic energy solutions about connection with renewable energy systems and temporary energy storing.</p>						
<i>Detailed description of the course, schedule:</i>						
<i>Lecture topics:</i>						
Week	Topic (E-Learning)					
1.	Revision of Electrotechnics Introduction to Electrical Power Engineering					
2.	Energy sources					
3.	Basics of electrical power conversion systems					
4.	Electrical energy production					
5.	Electrical networks					
6.	Substations/Transformer stations					
7.	Mid-term test I.					
8.	Electrical conductors and cables					
9.	Electrical energy consumers, overcurrent protection, electrical safety					
10.	Solar power systems					
11.	Solar power systems					
12.	Solutions for implementation of renewable energy systems					
13.	Temporary storage of energy					
14.	Mid-term test II.					

Classroom work:

Week	Topic (Every two weeks 2 * 45mins)
1. 2.	Revision of Electrotechnics
3. 4.	Calculations of electrical power conversion systems
5. 6.	Calculations of electrical networks Announcement of Homework nr. 1.
7. 8.	Calculation of wire sizing Deadline of Homework nr. 1.
9. 10.	Design and calculation of solar power systems
11. 12.	Design and calculation of solar power systems Announcement of Homework nr. 2.
13. 14.	Revision Deadline of Homework nr. 2.

Mid-term requirements**Participation in classes:**

Viewing online lectures, self-processing of the curriculum is mandatory, check in the form of test questions.
In the framework of the practical lessons, the students get acquainted with the metering and calculation of different energy systems.
Doing homework on deadline.

Method of obtaining the signature / mid-term grade:

The basis of the mid-year grade:

- participation in the classroom work or absence may be allowed according to the Study and Examination Regulations of Óbuda University, both in terms of the lecture and the classroom work,
- mid-term tests from the semester curriculum (min. requirement 40%), mid-term test prerequisite: tests made from the curriculum of online lectures min. completion at the 40% level (i.e., at least 4 of the 7 tests are successful)
- active participation in classroom work,
- 2 accomplished homework assignments.

The mid-year grade will be evaluated on the basis of these criteria, considering of the following scores:

- 1. Mid-term tests from the semester curriculum: 60 points. (30-30 each mid-term test.)**
- 2. Homework: 40 points (20-20 each).**

The grades based on the **maximum of 100 points:**

0-40 points: insufficient (1)

41-55 points: sufficient (2)

56-70 points: average (3)

71-85 points: good (4)

86-100 points: excellent (5)

If the mid - term grade is insufficient, replacement is possible in accordance with the provisions of Section 17 (6) of the Study and Examination Regulations of Óbuda University.

A reduced study schedule on the subject can be requested ONLY if the conditions specified in § 29 of the Study and Examination Regulations of Óbuda University are met.

LITERATURE

<i>Compulsory:</i>	Vaclav Smil: Energy in Nature and Society: General Energetics of Complex Systems (MIT Press) First Edition (1st printing) Edition, ISBN-13: 978-0262693561; ISBN-10: 0262693569
<i>Recommended:</i>	1. Gyorgy Elmer, Dr. – Electrical Power Engineering I. – University of Pécs, Faculty of Electrical Engineering

Course quality assurance methods:

The subject has an annual teacher review, which considers the effectiveness of knowledge transfer and the information obtained from the evaluation of the opinions given by students and graduates. Based on the evaluation, development actions related to the subject can be launched, the areas of which

- knowledge transfer methodology,
- the content of the curriculum,
- the interdependence of lectures and exercises.

We make an annual evaluation of the changes and their results, make a note of this and make the proven elements part of the subject program with a schedule organized by the supervisor.