



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Energetika in okolje
Course title:	Energetic and environment

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Izobraževalna tehnika		2	poletni
Educational Design		2	Summer

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
15	15				60	3

Nosilec predmeta / Lecturer:

Boris Aberšek

Jeziki /

Languages:

Predavanja /

Lectures:

Slovenski; Slovene

Vaje / Tutorial:

Slovenski; Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Osnovno znanja o energijah in energetiki

Prerequisites:

Basic knowledge of energy and energy production

Vsebina:

Content (Syllabus outline):

Predavanja:

- Energetika in njeni vplivi na okolje
- Konvencionalne in nekonvencionalne oblike pridobivanja energije;
- Energetika in okolje;
- usklajevanje želja, potreb in možnosti v energetskega sektorja;
- Energetika v prihodnosti - scenariji;
- Energetika in transport;
- Energetika in planet Zemlja.

Seminar:

Seminar aplikativno dopolnjuje vsebino predavanj z reševanjem praktičnih izzivov in problemov.

Lectures:

- Energetic and their influence on the environment
- Traditional and alternative way of energy production;
- Energy and surrounding;
- reconciliation of wish and possibilities at the energetic sector;
- Energy in future - scenarios;
- Energy and the transport;
- Energy and the planet Earth.

Seminar:

Seminar work supplements the lectures with the solutions of the practical problems

Temeljni literatura in viri / Readings:

- Aberšek, B., Energije in energetika, Pedagoška fakulteta, Maribor, 1999
- Dodatna literatura
- Berinstein, P., Alternative Energy: facts, Statistics, and Issues, Oryx Press, 2007
 - Boyle, G., Renewable Energy, Oxford University Press, 2004

Cilji in kompetence:

- podati znanja in informacij o sodobnih obnovljivih virih energije v tehnični praksi ter sodobnih tehnologijah, ki se danes vse pogosteje uporabljajo za pridobivanje in pretvarjanje in shranjevanje energij;
- prikazati praktično uporabo predhodno pridobljenih teoretičnih znanj na praktičnih primerih s posebnim poudarkom na varovanju okolja varnem in varčnem koriščenju energije;
- spodbujanje študentov k kreativnemu in samostojnemu razmišljanju in razvijanju sposobnosti za kreativno reševanje inženirskih problemov s področja energetike in ekologije.

Objectives and competences:

- To present knowledge and information about new renewable energy sources used in technical practices as modern technologies, used for production, transformation and accumulation of energies;
- to demonstrate practical use of previously accumulated theoretical knowledge on the practical examples with specially stress on the ecology and safe and economical use of energy;
- to encourage the students to creative and independent thinking for developing and solving different problems from power supplied and ecology.

Predvideni študijski rezultati:**Intended learning outcomes:**

Znanje in razumevanje: • poznavanje splošnih napotkov in pravil za izbiro energentov in ustreznih energetskega pretvornikov; • poznavanje načinov za učinkovito načrtovanje energetskega procesa; • poznavanje soodvisnosti med proizvodnjo energije in varovanjem okolja; • razumevanje sovisnosti različnih znanj in postopkov ter pomena uporabe strokovne literature in računalniških sistemov za učinkovito reševanje praktičnih problemov. Prenesljive/ključne spretnosti in drugi atributi: • uporaba informacijske tehnologije: uporaba orodij za izdelavo predstavitev energetskih načrtov; • reševanje problemov: ocenjevanje obstoječih in lastnih tehnoloških rešitev; • kombinirana uporaba različnih znanj za reševanje praktičnih problemov; • načrtovanje tehnologije za pridobivanje energij z uporabo sodobnih metod.	Knowledge and understanding: • knowledge of general instructions and rules for selecting energy sources and suitable power technologies; • knowledges for effective planning of power supplied technologies; • knowledge about connection between energy production and environment prevention; • understanding of relationships between different skills and procedures and importance of professional literature and computer systems for efficient solutions of practical problems. Transferable/Key Skills and other attributes: • use of information technology: use of tools for creating and designing technological power process; • problem solving: evaluation of existing and proper program solutions; • combined use of different skills for solution of practical problems; • design of technology for production of energy using advanced approaches.
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Metode poučevanja in učenja:

• frontalna predavanja, • skupinsko delo; • izdelava seminarske naloge,

Learning and teaching methods:

• frontal lectures, • work in small groups; • seminar work,

Delež (v %) /

Weight (in %) **Assessment:**

Načini ocenjevanja: • seminarske naloge, • pisni izpit, • ustni izpit.	20 % 50 % 30 %	• seminar paper, • written exam, • oral exam.
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Reference nosilca / Lecturer's references:

Aberšek, B., & Flogie, A. (2022). *Human awareness, energy and environmental attitudes* (str. XVIII, 241). Springer. doi:10.1007/978-3-031-05871-4

Kordigel Aberšek, M., & Aberšek, B. (2022). New digital competence for science technology and engineering education. *Journal of Baltic science education*, 21(1), 108–120.

<https://dk.um.si/IzpisGradiva.php?id=84912>

Ambrož Jurgec, A., & Aberšek, B. (2024). Distance education of student-athletes at the Secondary construction school and Gymnasium Maribor. *International journal of management in education*, 18(2), 91–110. doi:10.1504/IJMIE.2024.10059953