

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Sonaravne energetske tehnologije in sistemi
Course title: Sustainable Energy Technologies and Systems

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Sonaravne tehnologije in sistemi v strojništvu - 3. stopnja	/	1./2.	zimski/letni
Sustainable technologies and systems in mechanical engineering - 3 rd cycle	/	first/second	winter/summer

Vrsta predmeta / Course type

izbirni/elective

Univerzitetna koda predmeta / University course code:

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Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Laboratorijske vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
10		30	10	/	250	10

Nosilec predmeta / Lecturer:

prof. dr. Peter Novak

**Jeziki /
Languages:**

**Predavanja /
Lectures:** slovenski/slovenian;
angleški/english

Vaje / Tutorial: slovenski/slovenian;
angleški/english

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

- Vpis v doktorski študijski program.
- Dodatnih pogojev ni.

Prerequisites:

Master degree

Vsebina:

- Obnovljivi viri energije (OVE)
 - Prihodnost obnovljivih virov energije
 - Izvor in tokovi OVE
 - Posamezni viri OVE
- Tehnologije za OVE
 - Procesi pretvarjanja energije
 - Prenos in shranjevanje energije
- Vplivi OVE: Sonaravno planiranje in preprečevanje klimatskih sprememb
 - Planiranje energetskega sistema
 - Socialne in ekonomske ocene
 - Celoviti pristopi

Content (Syllabus outline):

- Renewable Energy Resources
 - Perspectives on Energy Resources
 - Origin of Renewable Energy Flows
 - Individual Renewable energy Sources
- Renewable Energy Technologies
 - The Energy Conversion Processes
 - Energy Transmission and Storage
- Renewable Energy Impacts: Planning for sustainability and Climate Change Prevention
 - Energy system Planning
 - Socioeconomic Assessment
 - Integrated Approaches

Temeljni literatura in viri / Readings:

1. Renewable Energy/ Bent Sorensen - 4th ed.; AP- Elsevier, Oxford, 2011.
2. Renewable Energy Resources/ John Twidell and Tony Weir - 3th ed.; Routledge, T&F Group, London, N.Y. 2015.
3. Fundamentals of Renewable Energy Processes/ Aldo Vieira da Rosa - 3th ed.; AP-Elsevier, Oxford 2013.
4. Renewable Energy System/Henrik Lund - 2nd ed.; AP - Elsevier, Oxford, 2014.
5. Varstvo okolja in obnovljivi viri energije/Sašo Medved, Peter Novak -1.izd.; UL-FS, Ljubljana, 2000.
6. Okoljski pojavi in pojmi, Usklajeno in sonaravno -8, SVO -RS, A. Lah, Ljubljana, 2002.

Cilji in kompetence:**Cilji:**

- Spoznati možnosti uporabe OVE v praksi, njihov pomen.
- Pridobiti osnovno teoretično znanje za razvoj tehnologij za pretvarjanje OVE v praktično uporabne oblike energije.
- Spoznati socialne in ekonomske posledice prehoda na uporabo OVE

Kompetence:

- Usposobljen za raziskave na področju OVE
- Obvladovanje osnov planiranja rabe OVE
- Snovanje novih ali izboljšave obstoječih tehnologij za pretvarjanje OVE

Objectives and competences:**Objectives:**

- Understanding possibilities of practical application of RE and their impact
- To gain basic theoretical knowledge for RE transformation technologies development in applicable form of energy
- Recognition of socioeconomic impact of transition to RE

Competences:

- Qualified for research on the RE area
- Acquainted for a basic planning principles for RE application
- Development of new or optimization of existing technologies for RE transformation

Predvideni študijski rezultati:

<p>Znanje in razumevanje:</p> <p>Znanje:</p> <ul style="list-style-type: none"> • Poznavanje lastnosti virov OVE • Teoretične osnove za analizo njihovih lastnosti (termodinamika, aerodinamika, organska kemija) • Okoljske posledice rabe OVE <p>Razumevanje:</p> <ul style="list-style-type: none"> • Procesov in tehnologij za pretvarjanje OVE v uporabne oblike energije • Okoljskih vplivov pri rabi OVE
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Intended learning outcomes:

<p>Knowledge and understanding:</p> <p>Knowledge:</p> <ul style="list-style-type: none"> • Understanding the RE Flows • Theoretical Fundamentals for their Analysis (Thermodynamics, Aerodynamic, Organic Chemistry) • Environmental Impact of RE use <p>Understanding:</p> <ul style="list-style-type: none"> • Processes and Technologies for Transformation of RE in Useful Form of Energy • Environmental impact of RE use

Metode poučevanja in učenja:

<p>Predavanja</p> <p>Teoretične in laboratorijske vaje</p> <p>Seminarsko delo</p>

Learning and teaching methods:

<p>Lecture</p> <p>Theoretical and experimental exercise</p> <p>Seminar work</p>

Načini ocenjevanja:

<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt)</p> <p>Pisni izpit:</p> <p>Ustni izpit:</p>

Delež (v %) /

Weight (in %)

Assessment:

Type (examination, oral, coursework, project):

50%

50%