



<b>PLANPROGRAMI MËSIMOR - SYLLABUS</b>						
Level of study	Bachelor	Department	Emergency Management	Academic year	2020-21	
Title of subject	<b>ENERGY SOURCES</b>					
Year	I	Status of subject	Obligatory	ECTS value	6	
Semester	I					
Teaching weeks	15			Number of hours per week	Lectures	Exercises
					3	1
The teaching method	Lectures, exercises, papers, consultations, tests, case studies, assignments, exercises, etc.					
Consultations	Two hours after the lectures					
Teacher of the subject	<b>Dr. Sc. Xhevat Berisha</b>			Tel/mob	+383 44 192 949	
				e-mail	xhevat.berisha@uni-pr.edu	
Assistant of the subject				Tel/mob		
				e-mail		
Study purpose and course content				Student benefits		
The purpose of this course is to provide students with basic knowledge about the possibilities of using alternative energy sources for the production of electricity and thermal energy.				<b>Knowledge:</b> <ul style="list-style-type: none"> <li>- To understand the basic concepts of alternative energy sources.</li> <li>- To submit the design of engineering problems related to energy sources.</li> <li>- To analyze basic concepts for emergency management during the electricity and thermal generation process.</li> </ul> <b>Skills:</b> <ul style="list-style-type: none"> <li>- Communication and presentation skills,</li> <li>- Teamwork skills,</li> <li>- To be trained in the development of independent engineering studies in the field of energy resources.</li> </ul>		
<b>METHODOLOGY FOR REALIZING TEACHING THEME</b>						
Introducing PowerPoint teaching topic, large-scale exercises. Repetition of the preliminary topic by the assigned group of students, analysis, research and individual and team exercises. Case study or assignment (for exercises) related to the lectured topic.						
<b>CONDITIONS FOR REALIZING THE TEACHING THEME</b>						
The teaching room is equipped with a computer and projector, tables for lectures and exercises on energy conversion tasks.						
Method of student evaluation (in %):						
- Presentation and group work: 0-4%				Rating in%	Rating in%	

<ul style="list-style-type: none"> <li>- Individual Presentation: 0-3%</li> <li>- Activity: 0-3%</li> <li>- Workshop: 0-10%</li> <li>- Test I: 0-15%</li> <li>- Test II: 0-15%</li> <li>- Final exam: 0-50%</li> </ul>	91-100	10 (ten)		
	81-90	9 (nine)		
	71-80	8 (eight)		
	61-70	7 (seven)		
	51-60	6 (six)		
<b>STUDENT OBLIGATIONS</b>				
<b>Lectures</b>	<b>Exercises</b>			
<ul style="list-style-type: none"> <li>- Attending lectures,</li> <li>- Active participation,</li> <li>- Seminar papers, projects,</li> <li>- Participation in tests and exercises,</li> <li>- Final exam.</li> </ul>	<ul style="list-style-type: none"> <li>- Participation in exercises,</li> <li>- Individual and group work in case studies,</li> <li>- Participation discussions.</li> </ul>			
<b>CONTRIBUTION IN THE LOAD OF STUDENT</b>				
<b>Activity</b>	<b>Hours</b>	<b>Days</b>	<b>Weeks</b>	
Lectures	3	15	45	
Exercises Theoretical /Laboratory	1	15	15	
Practical work	6	2	12	
Contacts with teacher/consultations	1	12	12	
Practice in field	-	-	-	
Testing's, seminars	5	2	10	
Homework	1	15	15	
Time of self-study of student	1	15	15	
Final preparation for exam	10	1	10	
Time spent in evaluation (tests, questionnaire, final exam)	4	2	8	
Projects proposals	4	2	8	
Note: 1 ECTS credit = 25 hours commitment, e.g. if the course has 6 ECTS credits the student must have a commitment of 150 hours per semester		<b>Total:</b>	<b>150</b>	
<b>Week</b>	<b>Lectures</b>		<b>Exercises</b>	
	Themes	Hours	Themes	Hours
1	<b>Week one:</b> Introduction. Basic understandings of energy conversion. Forms and classification of energy. <b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 15 - 22.	3	Exercises - Repeating the content of the main topics from the introductory lecture.	1
2	<b>Week Two:</b> Types of energy sources. Conventional energy sources. Fossil fuels and their reserves. Water resources energy. Nuclear energy. <b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 23 - 30.	3	Exercises - Types of energy sources. Conventional energy sources.	1
3	<b>Week Three:</b> Chapter - Solar Energy. Introduction. Solar energy as a source of energy. Sun energy source. History of solar energy usage. Solar radiation. <b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 31 - 45.	3	Exercises - Solar energy as a source of energy. Sun energy source. History of solar energy usage. Task: Methods for Determining Solar Radiation.	1

4	<p><b>Week four:</b> Solar energy utilization equipment. Reasons for using solar energy. Solar water heat collectors. Efficiency of flat collectors. Collector types.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 46 - 63.</p>	3	<p>Exercises - Solar energy utilization equipment. Reasons for using solar energy.</p> <p>Task: Flat collector efficiency. Collector types.</p>	1
5	<p><b>Week five:</b> Solar water heating systems and their dimensioning. Dimensioning of solar water heating systems. Manner of placement of solar collectors.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 64 - 70.</p>	3	<p>Exercises - Solar water heating systems.</p> <p>Task: Sizing solar systems. Manner of placement of collectors.</p>	1
6	<p><b>Week Six:</b> Utilizing Solar Thermal Energy in Industry. Characteristics of the thermal energy in industry. Utilization of solar thermal energy in agriculture.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 71 - 78.</p>	3	<p>Exercises - Utilizing solar thermal energy in industry. Characteristics of the thermal energy industry.</p> <p>Task: Utilizing solar thermal energy in agriculture.</p>	1
7	<p><b>The first test</b></p> <p><b>Week Seven:</b> Chapter - Photovoltaic Energy. Introduction. Historical development of photovoltaics. Construction of photovoltaic cells.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 79 - 89.</p>	3	<p>Exercises and Tasks: Photovoltaic Energy. Introduction. Historical development of photovoltaics. Construction of photovoltaic cells.</p>	1
8	<p><b>Eighth Week:</b> Photovoltaic systems. Generally on photovoltaic systems. Types of the photovoltaic systems.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 90 - 100.</p>	3	<p>Exercises and tasks: Photovoltaic systems. Generally on photovoltaic systems. Types of photovoltaic systems.</p>	1
9	<p><b>Week Nine:</b> Utilization of photovoltaic systems in agriculture. Maintenance of thermal and photovoltaic systems. The advantages and disadvantages of using photovoltaic systems.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 101 - 119.</p>	3	<p>Exercises: Utilizing photovoltaic systems in agriculture. Maintenance of thermal and photovoltaic systems</p> <p>Task: The advantages and disadvantages of using photovoltaic systems</p>	1
10	<p><b>Week ten:</b> Chapter - Wind energy. Introduction. Characteristic wind energy sizes.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 121 - 134.</p>	3	<p>Exercises: Wind energy. Introduction. Characteristic wind energy sizes.</p>	1
11	<p><b>Eleventh Week:</b> Wind turbines. Working principle of wind turbines. Types of wind turbines and their main parts. Environmental effects.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 135 - 150.</p>	3	<p>Exercises and Tasks: Wind Turbines. Working principle of wind turbines. Types of wind turbines and their main parts. Environmental effects.</p>	1
12	<p><b>Twelfth Week:</b> Chapter - Water Resources Energy. Introduction. Plants for the use of water energy.</p> <p><b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 153 - 165.</p>	3	<p>Exercises and Tasks: Water Resources Energy. Introduction. Plants for the use of water energy.</p>	1

13	<b>Thirteenth Week:</b> Chapter - Biomass energy. Introduction. Biomass formation process. Types and classification of biomass. <b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 193 - 208.	3	Exercises: Biomass energy. Introduction. Biomass formation process. Types and classification of biomass.	1
14	<b>The second test</b> <b>Fourteenth Week:</b> Primary biomass processing technologies. Liquid and gaseous biofuels. <b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 209 - 220.	3	Exercises: Primary biomass processing technologies. Liquid and gaseous biofuels.	1
15	<b>Fifteenth Week:</b> Pollutant emissions during the burning of woody biomass. The advantages and disadvantages of biomass energy. <b>“Energy Sources”</b> (“Burimet e Energjisë”): Xhevat Berisha, 2017, pp 221 - 236.	3	Exercises and tasks: Pollutant emissions during wood biomass burning. The advantages and disadvantages of biomass energy.	1

### LITERATURE

#### Basic literature:

1. Xhevat Berisha: “Burimet e Energjisë” ( “Energy Sources”), BIZNESI College Prishtina, Prishtina, 2017.
2. Naser Sahiti, Maliq Pireci, Besim Veselaj: “Doracaku për Burimet e Ripërtëritshme të Energjisë” (*“Handbook on Renewable Energy Sources”*), UNDP, Prishtina, 2013.
3. Alfred Paloka: “Burimet e Ripërtëritshme të Energjisë” (*“Renewable Energy Sources”*), ILAR, Tirane, 2011.

#### Additional literature:

1. A. Frashëri, A. Londo, A. Shtjefni: “Sistemet gjeotermale të ngrohjes dhe freskimit të godinave” (*“Geothermal heating and cooling systems of buildings”*), Tirane, 2008.
2. Thodhorjani, B.Cela, J.Hanxhari, V.Jorgji: “Burimet e Energjisë” (*“Energy Sources”*), SHLBU, Tirana, 2008.
3. Hysen Agolli: “General Thermodynamics “ (*“Termodinamika e Përgjithshme”*), University of Tirana, Tirana, 1987.

### REMARK

For each subject, students will be provided with literature and materials needed in Albanian. At the end of each class, certain groups of students will be engaged in a task or case study on the subject taught. *The results achieved by that task, the student groups should present and discuss in the class.*

### STUDENT REMARKS

- First of all, the student must be aware of and respect the institution and the school rules;
- Must respect the schedule of lectures, exercises, and seminars, be attentive to the classroom;
- Possession and presentation of the identification document in tests and exams;
- When designing seminar papers, the student must adhere to the instructions given by the teacher for conducting research and technical work;
- Tests and exams are assessed individually for each student. Therefore, students should focus only on personal knowledge.
- Eventual violation of these ethical principles (rules) is punished in accordance with the norms provided by law.

Course Professor:

Prof. Dr. Xhevat Berisha