

Title of the course: The source of renewable energies III. (Geothermal, water energy)	NEPTUN-code: RKWMF3ABNE	Weekly teaching hours: $l+cw+lb$ 2+1+0	Credit: 4 Exam type: e
Course leader: Lóránt Szabó, Dr.	Position: senior lecturer	Required preliminary knowledge: -	
Curriculum:			
<p>The alternative energy sector is one of the most dynamically developing industries around the world. Since people are worried about the climate change, they are turning to alternative energy sources.</p> <p>We are familiarizing our students with the various forms of environmentally friendly energy sources that can replace the coal, oil and gas energy sources we used so far, so that we can maintain our standard of living, but we can save our environment.</p> <p>We have several alternative source of energy in the nature, e.g. geothermal energy. Another possibility is to utilize the high tide - tidal natural phenomenon for energy production.</p> <p>We describe the main principle of hydrogen cells and the attempts of car manufacturers how they intend to replace the former gasoline powered and fuel oil powered cars.</p>			
Professional competencies:			
<p>Knowledge of general and specific mathematical, natural and social scientific principles, rules, relations, and procedures as required to pursue activities in the special field of environment protection.</p> <p>Knowledge of the learning, knowledge acquisition, and data collection methods of the special fields of environment protection, their ethical limitations and problem solving techniques.</p> <p>Comprehensive knowledge of the basic features and interrelations of environmental elements and systems, as well as of the environmentally harmful substances affecting them.</p> <p>Knowledge of the concepts and tools of economics and environmental economics, project and environment management in environment protection.</p> <p>Knowledge of the basics of energy management, options for energy production, their advantages and disadvantages, as well as the concept and feasibility options of sustainable development.</p> <p>Able to participate in project and proposal implementation and audit tasks based on their knowledge.</p> <p>Able to participate creatively in engineering work based on their multidisciplinary skills, as well as to adapt to continuously changing circumstances.</p> <p>Able to take part in environment expertise, advisory, and decision preparation work.</p> <p>Efforts to improve knowledge by on-going self-education and continuously update their knowledge of the world.</p> <p>Monitoring regulatory, technical, technological, and administrative changes related to the special field and enforcing them in their professional work.</p>			
Literature:			
1. Ludmilla Deines: Renewable Energies. Geothermal Energy, GRIN Verlag, 2008. 28. of May. pp.30			
2. Elizabeth Raum: Water and Geothermal Energy, Heinemann-Raintree, 2008. pp. 32.			
3. Edited by Detlef Stolten: Hydrogen and Fuel Cells: Fundamentals, Technologies and Applications, 2010. Wiley VCN, ISBN: 978-3-527-32711-9			