Course name: Zero Energy Building Design
Course code: YAVZEBDMNF
Hours per week: 2 lecture / 0 practice / 0 laboratory; F: Final mark / 6 credits
Department of Construction Technology and Management
In charge: Dr. Attila Talamon
For students of MSc in Architecture (Elective course)
Pre-requirements for Erasmus students: none

OBJECTIVE OF THE COURSE:

Zero energy building definitions. Technologies and best practises. Environmentally friendly building materials and building structures. Possibilities of using renewable energy sources in construction. Structures and energy systems of low energy buildings (software). Presentation and analysis of realized examples.

14 WEEKS SCHEDULE:

1. Week: Introduction. Causes and effects of global climate change. Environmental indicators. The concept and main trends of energy- and environment-conscious architecture. Environmental factors determining the energy balance of buildings. Zero energy building definitions. / Scheduling the semester requirements, semester project.
2. Week: Characteristics and types of environment-friendly building materials and building structures. Use of natural and recycled building materials in energy conscious structural systems / Presentation and analysis of best practises.
3. Week: Hungarian building energy regulation/building codes (Decree 7/2006 (V.24) TNM.)-I. Energy certificate. /Presentation and analysis of best practises.
4. Week: Calculation of the energy characteristics of the building (Building services, renewable energy sources) / Presentation and analysis of best practises.
5. Week: Architectural utilization of solar energy. Passive heating and cooling, shading. (Software) / Presentation and analysis of best practises.
6. Week: Design principles, basic structural systems and development directions of facade glass walls./Presentation and analysis of best practises
7. Week: Active solar systems. Solar collectors. Photovoltaic recovery. / Presentation and analysis of best practises.
8. Week: Types of heat pump systems, technical conditions of their application. / Presentation and analysis of best practises.
9. Week: Use of biomass for energy purposes. Environmentally friendly wastewater treatment methods. / Presentation and analysis of best practises.
10. Week: Methods and possibilities of complex architectural and building engineering design of zero energy buildings I. / Presentation and analysis of best practises.
11. Week: Methods and possibilities of complex architectural and building engineering design of zero energy buildings II. / Presentation and analysis of best practises.
12. week: Written examination / Submission of the semester project

13. week: Late written examination / Late submission of the semester project

Assessment: End-of-semester dissertation, presentation