Building Energetics II

Code: MK5EEN2L04M321-EN

ECTS Credit Points: 4

Evaluation: exam

Year, Semester: 1st year, 2nd semester

Number of teaching hours/week (lecture + practice): 1+3

Topics:

The relations between the energy, the economy, the society and the environment. The basic definitions of the energy management, the systems of the energy supply and the different kinds of converters. Heat transfer processes. Thermal balance of a building. Degree-day method. The nearly zero energy buildings. Renewable energy technologies for energy efficient buildings. The importance of the building energetics. Ventilation primer energy use calculation methods. Cooling primer energy use calculation methods. Renewable energy technologies for energy efficient buildings. Improving the energy efficiency of the building and possibilities of reducing the energy need and energy use of the building. Energy performance certification.

Literature:

Compulsory:

- Al-Shemmeri, T. Energy Audits, Willey-Blackwell, 2011.
- EPBD recast (http://eur-lex.europa.eu)
- Richarz, C. and Schulz, C. Energy efficiency refurbishments, FSC, 2013.

Recommended:

- Hodge, B. Alternative Energy Systems and Applications, Wiley, 2009.
- Kalmár, F. Energy conscious heating, Akadémia Kiadó, 2011.
- Moss, J. K. Energy Management in Buildings, Taylor & Francis, 2006.
- Moss, J. K. Heat and Mass Transfer in Buildings, 2nd edition, Taylor & Francis, 2007.
- Littler, J. and Thomas, R. Design with energy The conservation and use of energy in buildings, Cambridge University Press, 2003.
- J.K. Nayak , J.A. Prajapati, Handbook on energy conscious buildings, 2006

Schedule

1st week Registration week	
2nd week: **Lecture:** The relations between the energy, the economy, the society and the environment. The basic definitions of the energy management, the systems of the energy supply and the different kinds of converters. **Practice:** Basic examples of calculation.	**3rd week:** **Lecture:** Heat transfer processes. **Practice:** Basic heat transfer calculations.
4th week: **Lecture:** Thermal balance of a building. **Practice:** Basic heat transfer calculations.	**5th week:** **Lecture:** Degree-day method **Practice:** Basic examples of calculation
6th week: **Lecture:** The nearly zero energy buildings. **Practice:** Basic examples of calculation	**7th week:** **Lecture:** Renewable energy technologies for energy efficient buildings. **Practice:** Examples of calculation
8th week: 1st drawing week	
9th week: **Lecture:** The importance of the building energetics. **Practice:** Basic examples of calculation	**10th week:** **Lecture:** Ventilation primer energy use calculation methods. **Practice:** Basic examples of calculation
11th week: **Lecture:** Cooling primer energy use calculation methods. **Practice:** Basic examples of calculation	**12th week:** **Lecture:** Renewable energy technologies for energy efficient buildings. **Practice:** Basic examples of calculation
13th week: **Lecture:** Improving the energy efficiency of the building and possibilities of reducing the energy need and energy use of the building. **Practice:** Basic examples of calculation	**14th week:** **Lecture:** Energy performance certification. **Practice:** Basic examples of calculation

15th week: 2nd drawing week

Requirements

A, for a signature:

Participation at practice classes is compulsory. Students must attend practice classes and may not miss more than three practice classes during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Students can't take part in any practice class with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certification needs to be presented. Missed practice classes must be made up for at a later date, being discussed with the tutor.

B, for a grade:

During the semester there are two tests: the mid-term test is on the 7th week and the end-term test is on the 14th week. The minimum requirement of the mid-term and the end-term test is 51% separately. If the score for any of the tests is below 51 points, the student can take a retake test of the whole semesters material. Students must sit for the tests. The grade for each test is given according to the following: score/grade: 0-50 fail (1), 51-60 pass (2), 61-75 satisfactory (3), 76-89 good (4), 90-100 excellent (5). The average grade of the two tests represents the final grade.