



RTU Course "Energy efficiency of buildings"

11509 Vides aizsardzības un siltuma sistēmu katedra

General data

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| Code | EAS724 |
| Course title | Energy efficiency of buildings |
| Course status in the programme | Compulsory/Courses of Limited Choice |
| Course level | Post-graduate Studies |
| Course type | Academic |
| Field of study | Environmental Engineering and Management |
| Responsible instructor | Andra Blumberga |
| Academic staff | Gatis Žogla Agris Kamenders |
| Volume of the course: parts and credits points | 1 part, 4.0 Credit Points, 6.0 ECTS credits |
| Language of instruction | LV, EN, RU |
| Possibility of distance learning | Not planned |
| Maximum auditorium capacity | 50 |
| Maximum number of students per semester | 50 |
| Abstract | During study course „Building energy efficiency” students are faced with problems related to building energy efficiency. During this study course students are learning the basics of building energy consumption calculations and data analysis methods, which gives a possibility to compare different buildings. Great attention is paid to building energy efficiency improvement possibilities by using new technological solutions for building renovation and by using advanced building management systems. Also energy efficiency possibilities during building design phase are studied in this course. |
| Goals and objectives of the course in terms of competences and skills | To gain knowledge about energy consumption balance of buildings and the calculation principles. To gain knowledge about different energy efficiency technologies that can be used in buildings. To learn how to choose the optimal energy efficiency solutions and optimal energy management systems to improve the energy performance of buildings. To get acquainted with different data analysis methods. To gain practical experience in building energy efficiency improvement possibilities. |
| Structure and tasks of independent studies | Work with literature on innovative solutions for energy efficiency in buildings. Course work – to make an energy audit of a building and to offer possibilities how to improve the energy efficiency of this building. |
| Recommended literature | 1. Blumberga D., Blumberga A., Žogla G. Rokasgrāmata ēku energoefektivitātes pasākumu ieviešanai. - Rīga : Ekodoma, 2008. - 97 lpp. 2. Blumberga A., Blumberga D. Energoserviss. Energoservisa pakalpojumi. R.Mēnesupe, 2004, 121.lpp. 3. Efektīva apgaisme. Blumberga A., Blumberga D., Blumberga M., Cikmačs P., Veidenbergs I. Mācību līdzeklis. Apgāds Imanta, Rīga, 2002., 124 lpp. 4. Siltuma un elektrības taupīšana mājoklī. Blumberga A., Blumberga D., Veidenbergs I., Blumberga M., Circene B., Babajeva J., Radionova S, Rīga, Mēnesupe, 2003, 91 lpp. 5. Ēku energoefektivitātes likums ar to saistītā sekundārā likumdošana |
| Course prerequisites | none |

Course outline

| Theme | Hours |
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| Introduction. Energy efficiency of buildings, the main characterizing parameters. | 4 |
| Energy balance of buildings. | 16 |
| Energy consumption analysis. | 8 |
| Building's utilities. | 8 |
| Building management systems. | 4 |
| Energy efficiency measures in buildings. | 12 |
| Innovative solutions for improving building energy efficiency. | 8 |
| Presentation of course work | 4 |

Learning outcomes and assessment

| Learning outcomes | Assessment methods |
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| To be able to calculate the building energy consumption, to recommend measures that reduce energy consumption in the building and to determine the appropriateness of these measures | Examination – practical work, exam, course work Criteria: completed energy audit |
| Able to justify the tasks and role of various utilities in building | Examination - exam Criteria: describe and analyze different utilities in building |

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| Able to carry out building energy consumption analysis and to compare different buildings | Examination – practical works, exam, course work Criteria: completed data analysis |
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Study subject structure

| Part | CP | ECTS | Hours per Week | | | Tests | | |
|------|-----|------|----------------|-----------|------|-------|------|------|
| | | | Lectures | Practical | Lab. | Test | Exam | Work |
| 1. | 4.0 | 6.0 | 2.0 | 2.0 | 0.0 | | * | |