



RTU Course "Environmental Technologies"

11509 Vides aizsardzības un siltuma sistēmu katedra

General data

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| Code | EAS702 |
| Course title | Environmental Technologies |
| 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 | Dagnija Blumberga |
| Academic staff | Ivars Veidenbergs Sarma Valtere Jūlija Gušča Dzintars Jaunzems |
| Volume of the course: parts and credits points | 3 parts, 11.0 Credit Points, 16.5 ECTS credits |
| Language of instruction | LV, EN |
| Possibility of distance learning | Not planned |
| Abstract | The Environmental technologies course is related with various innovative solutions and approaches to reduce effect on environment from the manufacturing processes and maximize resource efficiency, including improving and developing management systems and optimizing manufacturing processes. Issues end-of-pipe technologies, cleaner production strategies and climate technologies are looked closely. |
| Goals and objectives of the course in terms of competences and skills | To gain knowledge about various environmental technologies and their environmental benefits, reduction of impact on environment and improvement energy efficiency. To understand the different degree of suitability of environmental technologies in production processes and the methods in choosing the optimal environmental technology types for solution of specific problems and / or non-compliance problems. |
| Structure and tasks of independent studies | Literature research work on different environmental technologies and their usability aspects. Assessing identification on importance of environmental technologies, benefits of environmental technologies and the existing environmental technologies evaluation methods. |
| Recommended literature | 1. M.Kļaviņš. Vides zinātne, LU akadēmiskais apgāds, 2009. 2. M.Kļaviņš, D.Blumberga, u.c. Klimata mainība un globālā sasilšana, LU akadēmiskais apgāds, 2008. 3. D.Blumberga, A. Blumberga. Vides tehnoloģijas, LU akadēmiskais apgāds, 2010. 4. L.Nilsson, P.O.Persson etc. Cleaner Production Technologies and Tools for Resource Efficient Production. The Baltic University, 2007. |
| Course prerequisites | Physics and Thermal and Mass Transfer |

Course outline

| Theme | Hours |
|---|-------|
| Gas treatment technologies | 16 |
| Reduction of water pollution and waste water treatment | 8 |
| Waste management | 8 |
| Use of excess energy | 8 |
| Recovery and retreatment technologies of contaminated environment | 8 |
| Cleaner production strategies | 16 |
| Rational use of water and energy | 16 |
| Conception of air basin protection | 16 |
| Raw materials and resources, rational use of them | 16 |
| Example of cleaner production | 16 |
| Concept of climate technologies | 9 |
| Effective technologies | 12 |
| Use of renewable energy | 9 |
| Use of natural sources | 9 |
| CO2 capture and storage | 9 |

Learning outcomes and assessment

| Learning outcomes | Assessment methods |
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| To be able to evaluate various end-of-pipe technologies. | Examination: exam,. Assessment criteria: Able to understand the various end-of-pipe technologies and the nature of use for real situations. |

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| To be able to analyze the principles of cleaner production and use of them to improve production processes and phases. | Examination: Exam. Criteria: Able to understand the cleaner production strategies and identify the suitable solution for existing problems. |
| To be able to understand the nature of climate technologies and concepts, incl. to be able to evaluate different optimize and improvement solutions for production processes. | Examination: exam. Assessment criteria: Able to analyze different possibilities of application and solutions of technologies in various production processes and technological stages. |
| To be able to be competent between different environmental technologies, incl. to be able to evaluate different optimization and improving solutions of production processes. | Examination: exam. Assessment criteria: Able to analyze different possibilities of technologies applications and solutions for various production processes and technological stages. |

Study subject structure

| Part | CP | ECTS | Hours per Week | | | Tests | | |
|------|-----|------|----------------|-----------|------|-------|------|------|
| | | | Lectures | Practical | Lab. | Test | Exam | Work |
| 1. | 3.0 | 4.5 | 1.0 | 1.0 | 1.0 | | * | |
| 2. | 5.0 | 7.5 | 2.0 | 1.0 | 2.0 | | * | |
| 3. | 3.0 | 4.5 | 1.0 | 1.0 | 1.0 | | * | |