Environment and Sustainable Development in Baltic Sea Region

<table>
<thead>
<tr>
<th>Total Contact Hours</th>
<th>Number of hours for lectures</th>
<th>Number of hours for seminars and practical assignments</th>
<th>Number of hours for laboratory assignments</th>
<th>Independent study hours</th>
<th>Date of course confirmation</th>
<th>Responsible Unit</th>
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<td>64</td>
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<td>0</td>
<td>96</td>
<td>30.08.2013</td>
<td>Division of Environmental science</td>
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Course abstract

Study course provide knowledge on environmental science and sustainable development on global, regional and local level. Analyse on environmental, social and economic issues and problems are given in interaction, taking in account causal relationship, as well as, possibilities of positive solutions. Study course is orientated to develop understanding all over the world as complicated, but holistic and interactive system. Earth environment is examined at atmosphere, hydrosphere, lithosphere and biosphere levels. Functions and mechanisms of these spheres, but specially, natural resources and pollution, are analysed through material and energy flows. Serious attention is pay for better understanding role and consequences of the man in natural world, building anthropogenic environment.

Learning outcomes

**Academic knowledge:**
1. Acquired knowledge about basic principles in environmental science and sustainable development.
2. Acquired knowledge about most important global, regional and local environmental problems and possible solutions to do away with these problems.
3. Get to the back of natural resources and environmental pollution life cycles and understanding their significance in economy and community, use this competency.

**Professional competence:**
1. Familiarised with skills to make complicated analyses of natural, environmental, economical and social problems, as well as to analyse state of environment in Latvia and Europe.
2. Acquired skills to identify local and national resources and provide risk analysis in respect of sustainable development.
3. Developed readiness of speech and discussion about main principles, problems and modern solutions concerning sustainable development.
4. Adopted practical acquirement in use and interpretation of national and international legislation.
5. Developed proficiency to use different environmental and sustainable development indicators and data bases.
Course plan

1. THEME
INTRODUCTION

2. THEME
ENVIRONMENTAL SCIENCE
Development of the Environmental Science – historical approach. Interaction between man and nature – substantial element for formation of the environmental science. Main principles and relevant parts of the environmental science. Integrative and interdisciplinary character of the environmental science. Systemic approach.

3. THEME
ECOSYSTEM SERVICES
What Do 'Ecosystem Services' Mean? Provisioning Services (water, food, timber, textile fibers, medications, soil). Regulation of Environmental Parameters (amount of oxygen in air, carbon and nitrogen cycle, microclimate regulation). Role of Ecosystems in Runoff Regulation. Support Services (pollination, decomposition of the remains of organic matter). Non-material Services. What Is the Price of an Ecosystem?

4. THEME
ECOLOGY

5. THEME
HUMANS AND THE ENVIRONMENT – ENVIRONMENTAL SYSTEMS

6. THEME
NATURAL DISASTERS

7. THEME
RESOURCES
Natural and Environmental Resources; their Value. Classification of Natural Resources. Depletion, Exhaustion and Management of Natural Resources. Mineral

8. THEME
ENVIRONMENTAL POLLUTION

9. THEME
CLIMATE CHANGE

10. THEME
WATER POLLUTION

11. THEME
LITHOSPHERE POLLUTION

12. THEME
ENVIRONMENTAL HEALTH

13. THEME
ECONOMICS - THE ENVIRONMENT – GROWTH

14. THEME  
NATURE PROTECTION  

15. THEME  
CULTURAL ENVIRONMENT  

16. THEME  
ENVIRONMENTAL LEGISLATION  

17. THEME  
ENVIRONMENT AND TERRITORY PLANNING  
18. THEME
ENVIRONMENTAL POLICY, MANAGEMENT, INSTITUTIONS

19. THEME
INTERNATIONAL COOPERATION IN ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT

20. THEME
ENVIRONMENTAL TECHNOLOGIES

21. THEME
PREVENTION OF THE AIR POLLUTION
Need for reduction of the air pollution in Latvia and EU. Methods for reduction of the air pollution. Reduction of the emissions of sulphur and nitrogen oxides and participle matter from permanent sources. Purification plants and devices. Climate technologies. CO2 capture and storage Technologies.

22. THEME
TECHNOLOGIES FOR DRINKING WATER PROCESSING
Water transmission and distribution systems. Water storing – reservoirs and water towers. Riga Water Ltd.

23. THEME
WASTEWATER TREATMENT TECHNOLOGIES

24. THEME
SOLID WASTE MANAGEMENT SYSTEM

25. THEME
SUSTAINABLE DEVELOPMENT

26. THEME
IMPLEMENTATION OF THE SUSTAINABLE DEVELOPMENT

27. THEME
A STUDENTS' PERSPECTIVE ON SUSTAINABLE DEVELOPMENT: IT IS OUR TASK TO CREATE AN ATTRACTIVE, SUSTAINABLE FUTURE!
Requirements for awarding credit points
For successful acquirement of study course need at least mark “4” in 1-10 grade system, which include knowledge and skills gain at lectures, seminars and self-tough process. At the end of study course is exam.
Final mark are calculated as average from results of tests, seminars or workshops at the semester time (50 %) and result of exam (50 %).
Seminars (2 x 2 hours), Environmental films (2 hours), Environmental stimulation game (2 hours), First test (1 hour), Second test (1 hours). Total 10 hours. Final aptitude – written exam.

Compulsory reading

Further reading
Periodicals and other sources
1. Ambio http://www.ambio.kva.se
3. Environmental Science and technology: http://pubs.acs.org/journals/esthag
4. University of Latvia homepage for Environmental education
   www.geo.lu.lv/vides_izglitiba
7. LU Ģeogrāfijas un Zemes zinātņu fakultāte http://www.geo.lu.lv/vides_izglitiba

Notes
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Study course includes:
- 2 seminars (2 hours each):
- Environmental stimulation game (2 hours), „Management of the National Park” or „Pyramid” or „Fish game”.
- demonstration of the dokumental film (2 hours)
1. An Inconvenient Truth (Al Gore)
   or
2. The Age of Stupid (Brittish Council)