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# Environmental economics
# SYLLABUS

***Study subject No:*** **2.3.**

***Responsible Unit:*** **Vytautas Magnus University (VMU)**

***Credits and distribution of academic hours*:***

| | Credits ECTS | Contact hours | | Independent study hours | Total hours |
|---|---|---|---|---|---|
| | | Lectures | Practical works or seminars | | |
| VMU | 2 | 10 | 8 | 42 | 60 |
| LBTU | 2 | 10 | 8 | 42 | 60 |
| **Total** | **4** | **20** | **16** | **84** | **120** |

** 1 ECTS = 30 hours (9 contact hours and 21 independent hours);*
*1 academic hour = 40 minutes;*
*Theoretical lectures not less than 50% of contact hours.*

***Course developers:***
Vytautas Magnus University (VMU), **Assoc. prof. Bernardas Vaznonis**
Latvia University of Life Sciences and Technologies (LBTU), **Assist. prof. Liga Feldmane**

***Notes:*** General study course for the master programme Bioeconomy.

**Prior knowledge:** Bioeconomy policy and development of bioeconomy sector, Theory of Economics.

**Annotation:** The course is intended to deepen theoretical knowledge of environmental economics, to develop skills for independent analysis and economic evaluation of environmental effects and environmental policy measures. After completing the course students will be able to evaluate environmental consequences of economic activities, to formulate recommendations for environmental policy implementation. The main study methods are analysis of theoretical literature, solution of tasks prepared based on the real problems, case analysis, involvement of students in discussions, independent readings.

**The aim:** To deepen theoretical knowledge of environmental economics, to develop skills for independent analysis and economic evaluation of environmental effects and environmental policy measures.

**Description of the organization and tasks of students' independent work:**
The student has to complete an independent work about an issue or case study in environmental economics and present it in the practicals.

***Learning outcomes (knowledge, skills and competences)***

| **Learning outcomes** | **Assessment methods** | **Levels of achievement** | | |
|---|---|---|---|---|
| | | **Satisfactory** | **Average** | **High** |
| **KNOWLEDGE** | | | | |
| Students will be able to understand theoretical | Test | 40-59 % of the questions are | 60-79 % of the questions are | 80-100 % of the questions are answered |

| | | | | |
|---|---|---|---|---|
| provisions of environmental economics, different approaches to solutions and tools of environmental problems caused by economic activities. | | answered and math problems are solved correctly. | answered and math problems are solved correctly. | and math problems are solved correctly. |
| Student will be able to understand and apply economic evaluation criteria and methods for valuation of environmental damage of economic activities, institutional, legal and economic measures of environmental policy, their evaluation criteria and methods. | Test | 40-59 % of the questions are answered and math problems are solved correctly. | 60-79 % of the questions are answered and math problems are solved correctly. | 80-100 % of the questions are answered and math problems are solved correctly. |
| Demonstrate the knowledge of interaction between the economical and environmental systems. | Independent work | Some understanding of challenges for the development of the environmental economics as a unified system. | Understanding of the systemic nature of the environmental economics and ability to analyse an ecosystem and the economy. | Understanding of the systemic nature of environmental economics and ability to effectively use a broad range of literature sources, research papers. |
| **SKILLS** | | | | |
| **Professional skills** | | | | |
| Skills to assess environmental consequences of economic activities, and the need of environmental regulation of economic activities using classical economic instrumentation. | Assignments and discussions in seminars, independent work | Insufficient understanding of the matters and difficulty in applying the acquired knowledge to independently formulate the opinion. | Understanding of the theoretical basis and ability to environmental consequences. | Ability to comprehend and reasonably discuss environmental consequences of economic activities. |
| Skills to formulate recommendations for choosing environmental policy measures and their improvement. | Assignments and discussions in seminars, independent work | Insufficient skills to formulate the opinion environmental policy measures and their improvement. | Average skills to formulate recommendations for choosing environmental policy measures. | Ability to formulate recommendations for choosing environmental policy measures. |
| **Soft skills** | | | | |
| Cooperate in a group. | Assignments and discussions in seminars | Difficulty in working and communicating with others, taking no initiative and passively observing in | Ability to work and communicate with others, make arguments, do calculations, yet there is no participation in group discussions | Ability to work and communicate with others, assume initiative and engage the other group members in the work. |

| | | | | |
|---|---|---|---|---|
| | | group work and during group work presentations. | and the presentation of the results. | |
| Present the results of independent work | Independent work | Unconvincing presentation of poorly structured results of independent work. | Convincing presentation of well- structured results of independent work; an ability to argue the opinion. | Convincing presentation of well-structured results of independent work; an ability to argue the opinion and discuss findings of other authors (sources). |
| **COMPETENCE** | | | | |
| Integrate environmental economics findings into the current paradigm and use them to create original solutions. | Independent work, tests | Only basic terms in the context of environmental economics topics are used in communication. | Environmental economics' terms and the most important relevant findings, focusing on them in discussions on economic and social problems are reasonably used in communication. | Environmental economics' terms and the most important relevant findings, focusing on them in discussions on economic and social problems, are reasonably used in communication, thereby giving a new insight into current public discussions. |

***Requirements for awarding credit points:*** The final mark in the course is based on cumulative score of successfully written two tests, prepared independent work (presentation) and activity in seminars.

***Knowledge assessment and prerequisites for taking a test or examination***

** 10 percent are equal to one point on a 10-point marking scale (or 10 percent are equal to 0.5 point on a 5-point marking scale).*

| Topic | Type of assessment | Percentage | Assessment deadline |
|---|---|---|---|
| Topics 1-6 | Test | 30% | Within the specified time for the test |
| Topics 7-12 | Test | 30% | Within the specified time for the test |
| Analysis of Environmental Economics issues or case study | Independent work | 30% | Within the specified time for the submission and presentation |
| All topics | Activity in seminars | 10% | During the entire semester |
| Total: Formal test with a mark (Cumulative score) | | 100% | - |

## *The course contents*

### *1. Lectures*

1. Evolution of environmental economics. Main concepts and historical perspective. 21st Century - a new look at economics.
2. Economic growth and environmental problems. Theoretical provisions of environmental economics. Theories of interaction between environment and economy.
3. Sustainable economic development. Dimensions of sustainability. Environmental principles of economic development. Environmental aspects of corporate social responsibility.
4. Environmental and sustainable development indicators. Ecological capacity. Ecological footprint. Environmental Sustainability index. Environmental performance index. Sustainable society index.
5. Green economy and green growth. Degrowth movement.
6. Externalities and their economic regulation. Environmental damage assessment methods. Pigou tax effectiveness. R. Coase theorem and its applications.
7. Climate change and its prevention. International agreements on climate change.
8. Food security and energy security.
9. Resource classification. Resource scarcity. Economics as a system exploiting environmental resources.
10. Environmental public goods and ecosystem services. Economic regulation of their provision.
11. Ecosystem valuation methods. Total economic value of the environment. Environmental economic assessment methods.
12. Sustainable waste management and Circular economy. Tax policy regarding waste management.

### *2. Practicals*

1. Implementation of the principles of sustainable development and business social responsibility in the company. The benefits of such activities for stakeholders (employees, customers, suppliers, the community and society as a whole) and the organization itself (provide not only positive examples, but also the challenges that the organization faces in achieving sustainable development goals).
2. A case study of negative externality and it's economic regulation / internalization. Assume various external costs associated with externality (loss of biodiversity, landscape degradation, water pollution, health damages, productivity costs, tourism losses) and find the best economic regulation tools to solve the environmental problem (emission regulations, regulation of equipment process, environmental taxes, subsidies for environmental technologies, emission permits, negotiations among potential polluters and potential pollutes).
3. Approaches how to use environmental and sustainable development indicators.
4. **Test** about the main concepts, economic problems, sustainable development, environmental indicators, green economy and externalities.
5. Analysis of the main international agreements on climate change in working groups.
6. Resource analysis according to their value (use value, non use value, total value).
7. Approach of ecosystem services and environmental public goods in practical application.
8. Analysis of case studies in waste management.
9. Test about climate change, food security, resources, ecosystem services and waste management.
10. Presentations of independent work.

**List of sources of training, methodological and scientific literature and information**

***Compulsory reading (books, scientific articles, online sources etc.):***


1. Hussen, A. M. 2019. Principles of Environmental Economics and Sustainability: an Integrated Economic and Ecological Approach. Routledge, 440 p.
2. Hussen, A. M. 2005. Principles of Environmental Economics. Economics, Ecology and Public Policy. Routledge, p. 383. – https://ashraffeps.yolasite.com/resources/Environmental_Eco./Principles%20of%20Environmental%20Economics.pdf
3. Harris, J. M. 2018. Environmental and Natural Resource Economics: a Contemporary Approach. Routledge, 666 p.
4. Kaneko, N., Yoshiura, S., Kobayashi, M. 2014. Sustainable Living With Environmental Risks. –10.1007_978-4-431-54804-1%20(4).pdf
5. Maler, k. G., Vincent, J. R. 2003. Handbook of Environmental Economics. 519 p. – https://www.sciencedirect.com/handbook/handbook-of-environmental-economics/vol/1/suppl/C
6. Metz, B. 2010. Controlling Climate Change. University Press, Cambridge. – http://controllingclimatechange.net/book/Controlling_Climate_Change_by_Bert_Metz.pdf
7. Environmental Economics. 2007. Environmental Literacy Council. – http://abi.gtk.szie.hu/system/files/upload/course_material/enviroecon-vol1.pdf


***Further reading:***


1. Global Footprint Network, Open Data Platform (footprintnetwork.org)
2. European Association of Environmental and Resource Economists, https:www.eaere.org/
3. The 2020 Environmental Performance Index (EPI), https://epi.yale.edu/epi-results/2020/component/epi
4. Environmental Performance Index 2020. Global metrics for the environment: Ranking country performance on sustainability issues, https://epi.yale.edu/downloads/epi2020report20210112.pdf
5. Green Growth Index 2020, https://greengrowthindex.gggi.org/wp-content/uploads/2021/03/2020-Green-Growth-Index.pdf
6. Global Green Economy Index, https://dualcitizeninc.com/global-green-economy-index
7. Climate Change Performance Index, https://ccpi.org/ranking
8. Sustainable Development Goals, https://www.un.org/sustainabledevelopment/sustainable-development-goals, https://sdgs.un.org/goals
9. The United Nations Environment Programme and the 2030 Agenda Global Action for People and the Planet, https://www.unep.org/resources/report/united-nations-environment-programme-and-2030-agenda-global-action-people-and
10. A European Green Deal, https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
11. Guide of Good Environmental Practices, https://promocionsocial.org/wp-content/uploads/2018/04/Guide-Good-Environmental-Practices-Social-Promotion-Foundation-2017-10-09.pdf
12. Consumer Environmental Trends Report 2019, https://www.tetrapak.com/content/dam/tetrapak/publicweb/my/en/sustainability/tetra-pak-consumer-environmental-trends.pdf
13. Sesini, G., Castiglioni, C., Lozza, E. 2020. New Trends and Patterns in Sustainable Consumption: A Systematic Review and Research Agenda. Sustainability. – https://www.mdpi.com/2071-1050/12/15/5935/htm
14. Academic Journal "Environment and Development Economics", Cambridge University Press.
15. Academic Journal "Environmental and Resource Economics", Springer.
16. Academic Journal "Journal of Development Economics", Elsevier.



*The material is elaborated with financial support of the European Union Erasmus+ Programme.*
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