**SYLLABUS** (MODULE-ERASMUS+)

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| Course/module (as specified in the approved curriculum for the field of study) **Urban and landscape ecology** | ECTS**4** | Component code**ENVI 4.4** |
| Name in Polish**Ekologia miast i krajobrazu** |
| Unit(-s) providing the course/module (Faculty, Institute/Department)**Faculty of Environmental and Mechanical Engineering, Department of Ecology and Environmental Protection**  |
| Head of course/module (e-mail address)**Marta Lisiak-Zielińska, PhD (****marta.lisiak@puls.edu.pl****)** |
| Other teachers**Klaudia Borowiak, Prof; Szymon Jusik, PhD; Arlinda Cakaj, MSc** |
| Course category**Open** | Language**English** | Level**Bachelor/Master** | Profile**Academic-general** | Semester**Winter** |
| **TYPE OF CLASSES/LECTURES AND THE NUMBER OF HOURS**(organised classes/lectures and self-study) |
| Type of studies: full-time |  | Type of studies: extramural |  |
| * lectures
 | 25 | * lectures
 | - |
| * practical classes
 | 20 | * practical classes
 | - |
| * field exercise
 | 5  | * field exercise
 | - |
| * other lessons
 |  - | * other lessons
 | - |
| * self-study
 |  50 | * self-study
 | - |
| Total number of hours: | 100 | Total number of hours: | - |
| **PRE-REQUSITES**Basics of environmental sciences and GIS. |
| **OBJECTIVE OF COURSE/MODULE**The aim of the course is to acquaint students with aspects of contemporary and future trends of urban areas in regard to ecological aspects, as well as of landscape ecology, both at theoretical and practical levels.  |
| **TEACHING METHODS**Lectures based on multimedia presentation with elements of discussion.Practical classes: individual project.Possibility to use distance learning tools and techniques. |
| **LEARNING OUTCOMES** | Referenceto field outcomes |
| Knowledge | O1: Student has extended knowledge about environmental, social and technical conditions influencing the urban structure.O2: The student knows the basic concepts of urban development, as well as the principles of sustainable city planning in accordance with international law. | Notapplicable |
| Skills | O3: The student is able to analyse spatial data (using GIS tools) in the field of spatial planning and the assessment of ecosystem services in towns.O4: The student is able to conduct research in this field of spatial planning and find practical application of geoinformatics.O5: The student is able to assess the impact of human activities in the town by identifying ecological footprints. | Notapplicable |
| Socialcompetences | O6: Students will be aware of the importance of spatial planning in urban areas, including the impact on the environment, and will be aware of the responsibility for making decisions. | Notapplicable |
| **METHODS TO VERIFY LEARNING OUTCOMES**Writing exam includes the content of the lectures.Completion of the project during the practical classes.  | Outcome ReferenceNumbersO1, O2, O3, O4, O5, O6 |
| **TEACHING CONTENT****Lectures**: 1. Introduction to the study (practical information regarding the course, the definition and history of the field, background).
2. Basic approaches, concepts and definitions in urban and landscape ecology.
3. Urban climate & urban sustainability, soils, vegetation, animals, ecosystems, green spaces.
4. Global effect of Urban Heat Islands (UHI).
5. Air pollution in cities - consequences and challenges.
6. Urban ecosystems – abiotic component.
7. Urban ecosystems – biotic component (part I).
8. Urban ecosystems – biotic component (part II).
9. Ecological networks in cities.
10. Application of urban ecology.
11. Application of landscape ecology.
12. Final evaluation.

**Practical classes:** 1. Data source in landscape and urban ecology.
2. Ecosystem services – basic concepts (Project no. 1 – Comparison of ecosystem services for a selected city based on cartographic data).
3. Using urban and landscape ecology principles in spatial planning.
4. Landscape assessment - landscape structure (Project no. 2 – Analysis of the rural-urban transect and landscape metrics for selected parts of the city).
5. Work on the projects.
6. Students’ presentation.
7. Water footprint.
8. Carbon footprint.
9. Green areas in cities (Project no. 3 – Analysis and classification of urban green areas using GIS tools).
10. Work on the project. Final evaluation.

**Field exercise:** Study visit in Poznań (revitalization of city, green areas in city, examples of rural-urban transect). |
| **Forms and criteria for passing of course/module** Written individual report. Project evaluation and completion.Final written exam.  | Percentage of final mark20%30%50% |
| **LIST OF LITERATURE** 1. Blowers, A., & Evans, B. (Eds.). (2013). Town planning into the 21st century. Routledge.
2. Duany, A. (2002). Introduction to the special issue: The transect. Journal of Urban Design, 7(3), 251-260.
3. Abson, D. J., & Termansen, M. (2011). Valuing ecosystem services in terms of ecological risks and returns. Conservation Biology, 25(2), 250-258.
4. Rees, W. (2018). Ecological footprint. In Companion to environmental studies (pp. 43-48). Routledge.
5. McGarigal, K., & Marks, B. J. (1995). FRAGSTAT. Spatial analysis program for quantifying landscape structure. USDA Forest Service General Technical Report PNW-GTR-351.
6. https://www.millenniumassessment.org/en/index.html.
7. https://transect.org/index.html
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