**SYLLABUS** (MODULE-ERASMUS+)

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| Course/module (as specified in the approved curriculum for the field of study) **Freshwater protection** | ECTS**3** | Component code**ENVI 1.4** |
| Name in Polish**Ochrona wód** |
| 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)**Ryszard Staniszewski, Prof. UPP (****ryszard.staniszewski@up.poznan.pl****)** |
| Other teachers**-** |
| 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
 | 10 | * lectures
 | - |
| * practical classes
 | 10 | * practical classes
 | - |
| * field exercise
 | 10  | * field exercise
 | - |
| * other lessons
 |  - | * other lessons
 | - |
| * self-study
 |  45 | * self-study
 | - |
| Total number of hours: | 75 | Total number of hours: | - |
| **PRE-REQUSITES**Basics of aquatic ecosystems. |
| **OBJECTIVE OF COURSE/MODULE**Description of main sources of freshwater pollution. Presentation of field examples of water protection in rural areas. Comparison of water quality assessment systems. |
| **TEACHING METHODS**Lectures based on multimedia presentation with elements of discussion.Practical classes: individual project and presentation.Possibility to use distance learning tools and techniques. |
| **LEARNING OUTCOMES** | Referenceto field outcomes |
| Knowledge | O1: Basics of the functioning of lake and river ecosystems.O2: Water quality problems and water shortage in different regions. | Notapplicable |
| Skills | O3: Evaluation of freshwater quality and developing of means to improve situation.O4: Drawing conclusions based on obtained data and literature information. | Notapplicable |
| Socialcompetences | O5: Team work on particular freshwater problems. | Notapplicable |
| **METHODS TO VERIFY LEARNING OUTCOMES**Completion of the project during exercises. Report from field survey or on selected topic. Writing exam after lectures. | Outcome ReferenceNumbersO1, O2, O3, O1-O5  |
| **TEACHING CONTENT****Lectures**: Functioning of different aquatic ecosystems. Sources of water pollution. Water contamination in Europe and other continents. Water quality assessment – different older and recent systems. General principles of freshwater protection. Pollution indicators. Particular problems of shallow lakes. Autopurification of rivers affected by industrial pollution including mining activities. Effects of wastewater treatment and water conservation in rural areas.**Practical classes:** Water quality measurement – field surveys. Calculation of load of selected chemicals to waters. |
| **Forms and criteria for passing of course/module** Project/report evaluation and completion.Final written exam.  | Percentage of final mark50%50% |
| **LIST OF LITERATURE** 1. Polish Journal of Environmental Studies
2. Harper D. 1992. Eutrophication of freshwaters. Springer.
3. Loucks D.P. van Beek E. 2016. Water resources systems planning and management. Springer.
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