**Syllabus**

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| Discipline’s code | Discipline’s title |  | Number of ECTS | SWSTSelf-work of student with teacher, in hours | SWSTSelf-work of student without teacher, in hours |
| Lect. | Pract. | Lab. |
|  | **Environmental Impact Assessment**  | **30** | **30** | **0** | **6 (180 hours)** | **8** | **112** |

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| Academic presentation of the course | **Aim of course:** to acquire knowledge about the Environmental Impact Assessment (EIA) legislation, processes, procedures. During theoretical and practical lectures, students gain knowledge of what kind of procedures should be applied to assess different planned (proposed) activities.**As a result of studying the discipline, students should be able to:*** Get knowledge on sustainable development of society, technical, technological, and organizational solutions in environmental engineering.
* Collect, analyse and interpret data, to formulate research tasks for the solution of environmental protection engineering problems.
* Apply interdisciplinary principles of sustainable development for making engineering decisions by combining costs, benefit, safety, quality, reliability, and impact on the environment.
* Prognose the impact on the environment with the help of computer programs;
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| Prerequisites | Environmental Chemistry; Environmental Physics; Information technologies; Prevention of Environmental pollution; Atmosphere protection; Soil and Ecosystem protection; Water and Wastewater; Physical pollution |
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| Information resources  | * Glasson, J., Therivel, R. Chadwick, A. (2012). Introduction to environmental impact assessment. Routledge. 4th Edition. 392 p.
* Mareddy, A. R., Shah, A., & Davergave, N. (2017). Environmental Impact Assessment: Theory and Practice. 632 p.
* Eccleston, C. H. (2011). Environmental impact assessment: A guide to best professional practices. CRC Press. 262 p.
* Jain, R., Urban, L., Balbach, H., & Webb, M. D. (2012). Handbook of environmental engineering assessment: Strategy, Planning, and Management: 1st Edition. 1316 p.
* Fischer, T.B. (2010). The Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach, Taylor and Francis., p. 186.
 |
| Web sources | * Environmental Assessment of Plans, Programmes and Projects Ruling of the Court of Justice of the European Union Internetinis leidinys: <https://ec.europa.eu/environment/eia/pdf/EIA_rulings_web.pdf>
* Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environmen: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011L0092>
* Sadler, B.; Dusik, J.; Fischer, T.; Partidario, M.; Verheem, R.; Aschemann, R. (2012). *Handbook of Strategic Environmental Assessment* (pp. 1–621). CRC Press. <https://doi.org/10.4324/9781849775434>
* Jain, R. (2012). *Handbook of environmental engineering assessment: strategy, planning, and management* (p. xxii). Butterworth-Heinemann.
* <https://doi.org/10.4324/9781849775922>
* Banfi, P., Lantieri, A., Mcguinn, J., Mcneill, A. (2017). *Environmental impact assessment of projects guidance on scoping (Directive 2011/92/EU as amended by 2014/52/EU).* [Publications Office]. <https://op.europa.eu/en/publication-detail/-/publication/4d59e72a-cb4c-11e7-a5d5-01aa75ed71a1/language-en>
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Calendar (schedule) the implementation of the course content**:**

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| --- | --- | --- | --- |
| **Week** | **Topic title (lectures, practical classes, Independent work of students, IWS)** | **Number of hours** | **Maximum score** |
| *1* | *2* | *3* | *4* |
|  | Lecture. Introduction and environmental impact assessment (EIA) procedures. Environmental impact assessment origins and development | 2 | 2 |
| Practical class. Analysis of information required for EIA selection | 2 | 2 |
|  | Lecture. Legislation of Environmental impact assessment. Strategic and transboundary EIA | 2 | 2 |
| Practical class. Comparative practice worldwide of EIA | 2 | 2 |
|  | Lecture. Procedures of Environmental Impact Assessment of Proposed Economic activity. | 2 | 2 |
| Practical class. Analysis of the methodologies of the planned economic activity | 2 | 2 |
|  | Lecture. Impact prediction, evaluation and mitigation | 2 | 2 |
| Practical class. Differences between environmental impact assessment and strategic environmental assessment. | 2 | 2 |
|  | Lecture. Impact of the proposed economic activity on the main components of the environment and methods used for impact assessment. Software packages. | 2 | 2 |
| Practical class. GIS and work with the data | 2 | 2 |
|  | Lecture. Determining the need for an EIA of the planned economic activity | 2 | 2 |
| Practical class. Determining the need for an EIA | 2 | 2 |
|  | Lecture. Alternatives of mitigation measures. Methods used for comparison | 2 | 2 |
| Practical class. Evaluation of alternatives to mitigation measures | 2 | 2 |
|  | Lecture. Planning and application of preventive measures for the impact  | 2 | 2 |
| Practical class. Calculation of the effectiveness of environmental technologies | 2 | 2 |
|  | Lecture. Analysis and assessment of the impact of economic activities on ambient air  | 2 | 2 |
| Practical class. Analysis of the potential impact of the planned economic activity on the atmosphere in Caspian sea region | 2 | 2 |
|  | Lecture. Assessment of impacts on aquatic ecosystems | 2 | 2 |
| Practical class. Analysis of the potential impact of the planned economic activity on the hydrosphere in Caspian sea region | 2 | 2 |
|  | Lecture. Analysis and assessment of the impact of physical pollution  | 2 | 2 |
| Practical class. Impact of the planned economic activity in the context of physical pollution in Caspian sea region | 2 | 2 |
|  | Lecture. Assessment of the impact on the landscape, biodiversity | 2 | 2 |
| Practical class. Analysis of the potential impact of the planned economic activity on the landscape and biodiversity in Caspian sea region | 2 | 2 |
|  | Lecture. Environmental impact on soil | 2 | 2 |
| Practical class. Analysis of the potential impact of the planned economic activity on the soil in Caspian sea region | 2 | 2 |
|  | Lecture. Risk analysis of possible accidents of the planned economic activity | 2 | 2 |
| Practical class. Calculation of losses and damage due to destruction or damage to landscape complexes | 2 | 2 |
|  | Lecture. Public participation in the EIA process. Involving the public in the environmental impact assessment procedure through interactive method  | 2 | 2 |
| Practical class. Publicity of the report on the environmental impact of economic activities | 2 | 2 |
|  | *Self-work of student without teacher:* Environmental impact assessment of the planned economic activity of the selected object *(Course project)*The course project presents the stages of the environmental impact assessment of the object, the applied procedures, and reviews the relevant normative documents. The measures, information and tools used to prepare the environmental impact assessment are described in detail. Students perform data analysis, define the scope of environmental impact assessment, which is based on literature sources. The selected pollution control measures are substantiated, the analysis of technological process optimization is performed. Computer models provide an analysis of the impact of the evaluated economic activity and prepare and present a graphic part of the course project. | 68 | 40 |
|  |  |  | **SUM: 100** |
|  | *Self-work of student without teacher:* Preparation to the control work | 20 |  |
|  | *Self-work of student without teacher:* Preparation to the exam | 24 |  |
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|   | *Self-work of student with teacher:* Individual consultations during semester  | 8 |  |