**Study program: Waste management**

**Course title:Design of landfills**

**Professor/assistant: PhD Dragan Ž. Perić**

**Type of course:** elective

**ECTS credits: 7**

**Pre-requisites: -**

**Aims of the course:**
Prepare students to:understand the role of sanitary landfills in the waste management system, introduce national and EU regulations in the field of landfill design, introduce the criteria for evaluating the location of the sanitary landfill, know the basic elements of the landfill structure, introduce materials, criteria for their choice and limitations, introduce the flooring systems and the overlapping of the landfill and the collection of gases and process waters.

**Learning outcomes:**
Student is able to: apply models for assessing the location of the landfill,apply national and standards for the selection of materials and products for the production of landfills,submit the system of lining and coverings of the landfill,propose systems for the collection of landfill gas and waters,propose ways to use landfill gas and treatment of the waters,read and interpret project documentation,within of the team, participate in the development of textual and graphic parts of the project documentation.

**Syllabus**

*Theoretical part*
The role of landfills in a sustainable waste management system. Basic elements of landfills. Planning sustainable landfills. The importance of planning. National and EU regulations. Engineering criteria for landfill design. Selecting a location for the landfill. Mathematical models for evaluating the factors for selecting the location for the landfill. Designing the bottom of the body and the landfill site. Daily covers. Designing the landfill cover. Manage procedural waters. Landfill management. Closing and remediation of landfills. Remedy.
*Practical part*

**Literature**


1. J. Radosavljević, A. Đorđević, *Deponije i deponovanjekomunalnogotpada,* FakultetzaštitenaraduNiš, 2013
2. T. G. Townsend, J. Powell, P. Jain, Q. Xu, T. Tolaymat, D. Reinhart, *Sustainable Practices for Landfill Design and Operation*, Springer Science+Business Media, New York, 2015
3. Y.-T. Hung, L.K. Wang, N.K. Shammas, *Handbook of Environment and Waste management - Land and groundwater pollution control*, World Scientific Publishing, 2014.
4. G. Ristić, *Gradnadeponiji*, ZadužbinaAndrejević, 2000


| **Number of active classes** | | | Other forms of teaching: |
|---|---|---|---|
| Lectures: 2 | Practical classes: 3 | Research work: | |

**Teaching methods**
Teaching is conducted interactively in the form of lectures, auditory, laboratory and computer exercises. Computer exercises comprise the use of information and communication technologies in mastering the knowledge from the observed area. In addition to lectures and exercises, consultations are also held regularly.

**Grading system** (maximum 100 points), **grading scale**from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade7 from 61-70 points, grade8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.

| **Pre-exam obligations** | **points** | **Final exam** | **points** |
|---|---|---|---|
| activity during theoretical lectures | **10** | written exam | |
| practical training | **-** | oral exam | **30** |
| colloquium(s)/seminar papers | **40/20** | | |
| **Sum** | **70** | **Sum** | **30** |