

SEWERAGE SYSTEM

Course Code/Course ID : kan.02_pNadGen73WXI

Type of course: obligatory

Teaching language: English

Director of studies: dr inż. Ireneusz Nowogoński

Name of lecturer: IEE teachers

Form of instruction	Number of teaching hours per semester	Number of teaching hours per week	Semester	Form of receiving a credit for a course	Points ECTS
Full-time studies					6
Lecture	30	2		Exam	
Project	30	2		Grade with notes	

THE AIM OF THE LECTURE:

Familiarize students with the principles of design, construction, operation and repair of the sewerage network.

ENTRY REQUIREMENTS:

Formal: completion of the course – Hydrology and Hydrogeology, Fluid Mechanics.

Informal: elementary knowledge connected with Water Supply.

SCOPE OF COURSE TOPICS:

Lecture program:

Classification and characteristics of sewage disposal systems. Components of the sewerage system. Dimensioning of cross drains. Pipes and materials used to build a sewage system.

Sewer Facilities: manholes and connecting chambers, chamber bleeds, gullies, storm water overflows separators, siphons, detention tanks, scrubbers, outlets, pumping stations and rules for their design. Construction and repair of the network by excavation.

Pressure and Vacuum Sewer systems. Principles of construction and exploitation of the channels and network objects.

Project program:

Mixed sewer construction project for the city of about 20 thousand residents. Sanitary sewerage along street..

TEACHING METHODS:

Presenting methods: informational-problem solving lecture.

Solving methods, seminar – practical: project method..

LEARNING OUTCOMES:

Symbol	Learning outcomes after completion of the course. Student:	The reference to the effects of education in the field of technical sciences
Knowledge		
K_W13	knows the basic concepts, objectives and targets for waste water	T1A_W04

	disposal	
K_W17	has a general knowledge of the elements of the sewer systems, their dimensioning, construction, exploitation and repair, knows the techniques and tools used to solve simple engineering tasks in this field	T1A_W07
K_W26	knows the rules of the establishment and development of forms of individual entrepreneurship in the environmental engineering and design, executive and exploitation of facilities and environmental engineering systems	T1A_W11
Skill		
K_U01	can obtain information from literature, databases and other properly selected sources	T1A_U01
K_U02	can individually design sewerage network in gravity/pumping system	T1A_U14; T1A_U16
Social competences		
K_K06	correctly identifies and resolves dilemmas associated in the profession of environmental engineer	T1A_K05
K_K03	recognizes and understands the importance and impact of nontechnical aspects of environmental engineering business, including its impact on the environment and the resulting responsibility for decisions	T1A_K02

ASSESSMENT CRITERIA:

Lecture - Obtainment positive from exam. Examination has written form and it contains 3 problematic questions.
Project – positive evaluation from Project Seminar, considering presence on seminar, performing two projects and knowledge from the range of topics.

Got points / Opinion - 0-50% / insufficient; 51-60% / sufficient; 61-70% / sufficient plus; 71-80% / good; 81-90% / good plus; 91-100 / very good positive exam note. The basis for determining the cumulative rating is the weighted average obtained by adding: 0.67 lecture grade, 0.33 assessment from project classes. The weighted average is rounded to two decimal places. The total rating is based on the weighted average according to the rule: below 3.24 - sufficient, from 3.25 to 3.74 - satisfactory plus, from 3.75 to 4.24 - good, from 4.25 to 4.74 - a good plus, from 4.75 – very good.

SELF STUDENT'S WORK:

Contact hours: 75 hours.

Student's independent work: 75 hours.

RECOMMENDED READING:

1. Gruszecki T., Wartalski J. Sewerage, materials for designers. Koszalin, 1986
2. Błaszczak W. Stamatello M. Urban sewerage systems building. Warszawa 1975
3. Kulickowski A. Problems of trenchless renewal of sewage pipes. Kielce 1998
4. Kotowski A. Basics of safe dimensioning of drainage areas. Seidel-Przywecki 2015
5. Królikowska J., Królikowski A. Storm waters - drainage, management, pre-treatment and use. Seidel-Przywecki 2012

OPTIONAL READING:

1. Collective work, technical guidelines for the implementation and acceptance of plastic installations, Polish Corporation for Sanitary and Heating, Gas and Air Conditioning Techniques. Warszawa 1996
2. Kulickowski A. Sewerage pipes. Kielce 2001
3. Catalogs of producers of pipes and sewage facilities
4. Standards and regulations

REMARKS