Theoretical and practical course plan form - Ilam University of Medical Sciences

School: Health

Introduction to the lesson

Department: Environmental Health

Course Title: Wastewater and Surface Water Collection Network

Students: Environmental Health Engineering

Courses Prerequisites: Fluid Mechanics, Hydraulics Venue: School of Health

Course Name (Instructor):Dr. Sajjad Mazloumi

Number of units: 2 (1 theoretical unit - 1 workshop unit) Teaching time: Degree of students: Bachelor Email address: mazloomi-s@medilam.ac.ir

1. The general purpose of the lesson:

2. At the end of this course, students will be introduced to different methods of collecting municipal wastewater and surface water so that at the end of the course the student can participate in the preparation of sewer designs and surface water collection canals.

3. Instructor study resources:

1. Tchobanoglous. G. "Wastewater engineering, Collection and pumping of Wastewater, 2003.

2. Mara, D "Low - Cost Sewerage". Willey & Sons Inc. 1996.

3. Isolation. Mohammad Taghi, Wastewater Collection, University of Tehran Press, 2006

4. Miranzadeh Mohammad Baqer, Design of Sewage Collection Network, Hafiz Publishing, 2007

5. Fade. Amir Hussein, Asgari. Alireza, Dehghanifard Emad, .Sewage and surface runoff collection network, Khaniran Publications, 2012

4. Student exam resources:

1) Tchobanoglous. G. "Wastewater engineering, Collection and pumping of Wastewater, 2003.

2) Mara, D "Low - Cost Sewerage". Willey & Sons Inc. 1996.

3) Isolation. Mohammad Taghi, Wastewater Collection, University of Tehran Press, 2006

4) Miranzadeh Mohammad Baqer, Design of Sewage Collection Network, Hafiz Publishing, 2007

5) Fade. Amir Hussein, Asgari. Alireza, Dehghanifard Emad, .Sewage and surface runoff collection network, Khaniran Publications, 2012

5. How to evaluate a student during the course:

• Methods and time of assessment and assessment of the student and the bar related to each assessment:

Theory lesson

Method	Score	Date	Time
performing project	4	During semester	Scheduled training hours
End of term exam	16	End of semester	Scheduled training hours
Total	20		

Practical lesson

Method	Score	Date	Time
Doing the project and testing the project at the end of the semester	20	During semester	Scheduled training hours
total	20		

6. Student assignments during the course:

Solve the exercises presented in class

Participate in answering course questions

Participate in the evaluations of each session and solve assignments

Complete and complete the curriculum step by step

7. Teaching methods and teaching aids used

8. Teaching method in this course in the form of group discussion, problem solving, question and answer and using magic and whiteboard, the computer will have application software as well as the use of other educational media as needed.

9. Lesson rules and expectations from students

1- Attending the class on time and based on the set time

2- Observance of training and disciplinary regulations

3- Studying the contents of the previous session and preparing to attend the class

4- Solve problems at home and answer on the due date

5- According to the educational regulations, unjustified absence in the final exam will be considered as a score of zero and justified absence will cause the removal of that course.

Schedule of fluid mechanics curriculum for the first semester of the academic year 2020-2021

session	Specific Objectives (Outline	Specific behavioral goals	lecturer	Necessary preparation of students before the start of the class
1	The importance of implementing wastewater collection projects And definition of terms	The student gets acquainted with the importance of wastewater collection from economic, social, health, etc. points of view	Dr. Mazloumi	
2	Sewage collection network patterns	The student gets acquainted with different patterns of sanitary wastewater collection networks and surface runoff		Review the contents of the previous session
3	Different stages of collection network design: study phase, implementation and construction, operation and maintenance	The student will be acquainted with the different stages of a wastewater collection project from the proposed stage to its implementation and operation		
4	Determining the project period, forecasting the covered population and the effect on the amount of municipal wastewater	The student should be familiar with the design courses of wastewater collection facilities and the factors influencing the definition of the design course		
5	Calculate the amount of wastewater produced	The student will get acquainted with how to estimate the volume of production wastewater in different geographical areas and the factors affecting it.		
6	Hydraulic sewer pipes, different sections used in the collection plan and the advantages and limitations of selecting each pipe	The student will get acquainted with the hydraulic characteristics of sewer pipes, different sections of pipes and the advantages and disadvantages of different diameters.		
7	Calculations related to sewage flow and velocity, types of arithmetic and experimental relationships used Important criteria in calculations	The student will get acquainted with the characteristics of wastewater from the point of view of flow, speed of wastewater flow and how to calculate it.		

8	Methods and principles of design of sewer pipes	The student will get acquainted with the basics of designing sewer pipes		
9	Design of separate and composite systems	The student should be familiar with the principles of designing separate and composite and semi-composite systems and how to choose each of these methods		
10	Speed and depth of design taking into account H2S production, network ventilation, pipe corrosion prevention methods	Students will be introduced to different velocities in sewer ducts, anaerobic conditions, corrosion of pipe crowns and corrosion prevention methods.		
11	Cheap network design (sedimented sewage network and other uncommon types of sewage collection network)	Students become familiar with other uncommon methods of wastewater collection in different communities		
12	Pumps in sewage and surface water collection systems (types of pumps, pump selection)	The student will become familiar with sewage pumping systems and surface runoff		
13	Pumping stations	The student will get acquainted with pumping and location stations and how to manage these systems		
14	Sewage accessories	The student should get acquainted with the accessories of sewers according to the specifications of sewers and the type of pipes		
15	Prepare a sewage collection plan for a community	The student designs the submitted project, which includes a sewage collection line, and delivers it with scaled drawings. They also resolve ambiguities in various meetings		
16	Use of computer programs required to design sewage collection networks	Get acquainted with the essential software of the sewage collection project and even use some of these softwares in the curriculum project.		

17	End of semester exam			