1. **Basic Information**

**Course Title**: Wastewater Collection Systems **Code**: CVE 513

**Lecture**: 3 Hour **Tutorial**: ---- **Practical**: ---- **Total:** 3 Hour

**Program on which the course is given:** Post Graduate Preparatory Studies/ Sanitary and Environmental Engineering

**Major or minor element of program:** Elective

**Department offering the program:** Civil Engineering

**Department offering the course:** Civil Engineering

**Academic year / level:** Post Graduate Preparatory Studies.

**Date of specifications approval:** 2012

**B- Professional Information**

1. **Overall aims of course**
2. Apply the Theories of water flow hydraulics and associated wastewater collection systems issues.
3. Master scientific, technical and commercial understanding of wastewater collection systems issues and practice.
4. Master of the nature of Sanitary and Environmental Engineering through the integration of knowledge from wastewater collection systems.
5. Develop awareness of the role of numerical modeling in examining, understanding wastewater collection systems, drawing on an understanding of the underlying processes and knowledge of the characteristics of particular systems.

**Intended Learning outcomes of Course (ILOs)**

By the end of the course, the students will be able to:

1. **Knowledge and Understanding:**

a.1 Classify sciences related to wastewater collection practices and pinpoint the theories and basics in wastewater collection systems. (A.1)

a.2 Clarify the impact of wastewater collection systems on the environment and work towards its perpetuation. (A.4)

1. **Intellectual Skills**

b.1 Examine and anticipate the problems in wastewater collection systems and prioritize problems according to their classification. (B.1)

b.2 Read research papers analytically and topics associated with wastewater collection systems.(B.3)

1. **Professional and Practical Skills**
2. **General and Transferable Skills**

d.1 Reinforce effective communication skills through presentation and discussions.(D.1)

d.2 Contribute to the development of the professional wastewater collection practices through applications of information technology. (D.2)

d.3 develop and enhance leadership skills in professional contexts.(D.6)

1. **Contents**

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| --- | --- | --- | --- | --- | --- |
| **No** | **Topic** | **Credit hours** | **ILOs** | **Teaching / learning methods and strategies** | **Assessment method** |
| 1 | The sources and characteristics of wastewater | 3 | a.1, b.1, b.2 | Lectures |  |
| 2 | Types of sewers material | 3 | a.2, b.1, b.2 | Lectures |  |
| 3 | Types of sewerage systems | 3 | a.1, a.2, b.1 | Lectures | Assignments. |
| 4 | Installation of sewers | 3 | a.1, a.2, b.1, b.2 | Lectures |  |
| 5 | Sewerage system planning | 3 | a.1, a.2, b.1, b.2 | Lectures |  |
| 6 | Sewerage system planning | 3 | a.1, a.2, b.1, b.2 | Lectures |  |
| 7 | Sewerage system planning | 3 | a.1, a.2, b.1, b.2 | Lectures | Assignments. |
| 8 | Mid-term Exam | 3 | a.1, a.2, b.1 |  | Mid-term Exam |
| 9 | Design of different types of wastewater collection systems | 3 | a.1, a.2, b.1, b.2 | Lectures |  |
| 10 | Design of different types of wastewater collection systems | 3 | b.1, b.2 | Lectures | Assignments. |
| 11 | Sewer appurtenances | 3 | a.1, a.2, b.1, b.2 | Lectures |  |
| 12 | Storm water networks appurtenances | 3 | a.1, a.2,d.1, d.2, d.3 | Lectures, case study | Assignments. |
| 13 | Storm water networks appurtenances | 3 | a.1, a.2, b.1, b.2, d.1, d.2, d.3 | Lectures, case study |  |
| 14 | Wastewater pump station | 3 | a.1, a.2, b.1, b.2, d.1, d.2, d.3 | Lectures, case study | Report |
| 15 | Final Exam | 3 | a.1, a.2, b.1 |  | Final Exam |

1. **Teaching and Learning Methods**

\_\_\_√\_\_ Lectures

\_\_\_\_\_ Practical training / laboratory

\_\_\_\_\_ Seminar / workshop

\_\_\_\_\_ Class activity

\_\_\_√\_\_ Case study

\_\_\_√\_\_ Assignments / homework

1. **Student Assessment Methods**

\_\_\_√\_\_\_\_\_ four Assignments to assess Knowledge and Understanding

\_\_\_\_\_\_\_\_ Quiz to assess \_\_\_\_\_Knowledge and Understanding \_ Intellectual Skills

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\_\_\_\_√\_\_\_\_Mid-term exam to assess Knowledge and Understanding \_ Intellectual Skills \_\_\_\_√\_\_\_ Report to assess Knowledge and Understanding \_ Intellectual Skills \_\_\_\_√\_\_\_\_Final exam to assess Knowledge and Understanding \_ Intellectual Skills

1. **Assessment schedule**

Assessment 1 Assignments on weeks 3, 7, 10, 12

Assessment 2 Quizzes on weeks

Assessment 3 Mid-term exam on week 8

Assessment 4 Report on week 14

Assessment 5 Final exam on week 15

Other:------------------

1. **Weighting of Assessments**

Mid- Term Examination 15%

Final- Term Examination 67%

Report 10%

Practical Examination 00%

Semester Work 08%

Other 00%

Total 100%

1. **List of References**
   1. Course Notes

* Course notes prepared by instructor.
  1. Essential Books (Text Books)
* The Egyptian Code of Water and Wastewater Treatment Plants.
  1. Recommended Books
* Farag, M.A., Sanitary Engineering Encyclopedia, ISBN 977- 5758537-8.
  1. Periodicals Web sites, etc
* Science Direct
* Journal of applied science

1. **Facilities Required for Teaching and learning**

Lecture room equipped with computer and data show

1. **Matrix of course aims and ILO’s**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Course aim* | **a.1** | **a.2** | **a.3** | **a.4** | **b.1** | **b.2** | **b.3** | **b.4** | **b.5** | **c.1** | **c.2** | **d.1** | **d.2** | **d.3** | **d.4** | **d.5** | **d.6** | **d.7** |
| 1 | ● | ● |  |  | ● |  |  |  |  |  |  | ● | ● | ● |  |  |  |  |
| 2 | ● | ● |  |  |  | ● |  |  |  |  |  |  | ● | ● |  |  |  |  |
| 3 | ● | ● |  |  | ● | ● |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | ● | ● |  |  | ● | ● |  |  |  |  |  | ● | ● |  |  |  |  |  |

**Course coordinator:** Associate Prof. Dr. Hanan Ahmed Fouad kamel

**Course instructor:** Associate Prof. Dr. Hanan Ahmed Fouad kamel

**Head of department:** Prof. Dr.Ahmed Abd El Fatah **Date: 1 / 8 / 2015**