1. **Basic Information**

**Course Title**: Advanced Water Treatment **Code**: CVE 512

**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**

1-Employ the direct application of knowledge to the assessment of wastewater engineering in rural areas.

2-Work professionally in the treatmentof wastewater in rural areas.

3-Manage the principles of wastewater engineering in rural areas.

**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 engineering in rural areas practices and pinpoint the theories and basics in wastewater engineering.(A.1)

a.2 List ethical and legal principles of professional practice in Sanitary and Environmental Engineering. (A.2)

a.3 Explain the effect of professional practice on the environment and work towards its conservation and maintenance. (A.4)

1. .**Intellectual Skills**

b.1Solve various problems in the field of wastewater engineering in rural areas. (B.2)

b.2Make professional decisions in the light of available information. (B.5)

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

d.1develop and enhance leadership skills in professional contexts. (D.2)

1. **Contents**

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| **No** | **Topic** | **Credit hours** | **ILOs** | **Teaching / learning methods and strategies** | **Assessment method** |
| 1 | Water supply Engineering | 3 | a.1,b.1, b.2, d.1 | Lectures |  |
| 2 | Water Consumption | 3 | b.1, b.2, d.1 | Lectures |  |
| 3 | Collection works for surface water | 3 | a.1, b.1, b.2, d.1 | Lectures | Assignments. |
| 4 | Purification works | 3 | a.1, | Lectures |  |
| 5 | Purification works | 3 | a.2, b.2, d.1 | Lectures |  |
| 6 | Sedimentation | 3 | b.2, d.1 | Lectures |  |
| 7 | Filtration | 3 | a.1, a.2, a.3, | Lectures | Assignments. |
| 8 | Mid-term Exam | 3 | a.1, a.2, a.3, b.1, b.2, d.1 |  | Mid-term Exam |
| 9 | Disinfection | 3 | b.1, b.2, d.1 | Lectures |  |
| 10 | Distribution Tanks | 3 | a.1, a.2, | Lectures | Assignments. |
| 11 | Types of pipe net work | 3 | a.1, a.2, a.3, b.1, b.2, d.1 | Lectures |  |
| 12 | Advanced water treatment systems | 3 | b.2, d.1 | Lectures, case study | Assignments. |
| 13 | Rapid sedimentation and air floatation | 3 | b.1, b.2, d.1 | Lectures, case study |  |
| 14 | desalination | 3 | a.1, a.2, a.3, b.1, b.2, d.1 | Lectures, case study | Report |
| 15 | Final exam | 3 | a.1, a.2,a.3 , b.2, d.1 |  | Final Exam |

1. **Teaching and Learning Methods**

\_\_\_√\_\_ Lectures

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

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

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

\_\_\_√\_\_ Case study

\_\_\_√\_\_ Assignments / homework

1. **Student Assessment Methods**

\_\_\_√\_\_\_\_\_five Assignments to assess Intellectual Skills

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

\_\_\_\_√\_\_\_\_Mid-term exam to assess Knowledge and Understanding

\_\_\_\_√\_\_\_ Report to assess Knowledge and Understanding Intellectual Skills

\_\_\_\_√\_\_\_\_Final exam to assess Knowledge and Understanding

1. **Assessment schedule**

Assessment 1 Assignments on weeks 3, 7, 9,10, 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
* Terence J. McGhee, Water Supply and Sewerage, (ISBN 0-07-100873-3).
  1. Periodicals Web sites, etc
* Science Direct
* American society of civil engineering journal

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 | ● | ● |  |  |  | ● |  |  |  |  |  | ● |  |  |  |  |  |  |

**Course coordinator:** Associate Prof. Dr. Badr El Din Hegazy

**Course instructor:** Dr. Ahmed Abo El Magd

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