

# Water Resources Engineering– 704372

## First Semester 2013/2014

### Syllabus

#### Description

Principles of water chemistry, Water consumption, Water tanks design, water sources and water quality, water treatment, water distribution networks design.

#### Instructors:

Dr. Moayyed. Shawaqfah  
Dr. Saad AlAyyash

#### Time/Location:

Section 1: Sunday, Tuesday and Thursday, 9:00 am. to 10:00 am, Room: TBA

Section 2: Sunday, Tuesday and Thursday, 11:00 am. to 12:00 noon, Room: TBA

#### Required Texts and References

There are no required texts for the class, reference material is readily available from several sources.

#### Recommended Reference Textbooks:

- ✓ Chin, D.A., *Water Resources Engineering*, Prentice Hall. 2006. 962 pages (addresses all of the major course topics, but only briefly discusses sanitary sewerage design).
- ✓ Mays, L.W., *Water Resources Engineering*, John Wiley & Sons. 2005. 860 pages

#### Software:

EPANet 2.00.12 (US EPA) water distribution system design and analysis software (March 5, 2008 most recent version for Windows XP).

<http://www.epa.gov/ORD/NRMRL/wswrd/epanet.html>

#### Grading

The final grade assigned for this course will be based on the following distribution, subject to modifications:

First Exam	25%
Second Exam	25%
Assignments and participation	10%
Final Exam	40%

#### Attendance Policy

Students are expected to attend all lectures. If an absence is unavoidable, the student should contact the instructor before the class meeting. Excessive unexcused absences may result in grade reductions. The student is expected to be in class and seated at the beginning of the course period.

**Cell Phones and Laptops in Class:**

The operation of cell phones or other personal messaging equipment will not be permitted in class. Laptop computers can be used during class for taking or following lectures.

**Academic Misconduct**

Any act of dis-honesty in any work constitutes academic misconduct. The university Academic Misconduct Disciplinary Policy will be followed in the event of academic misconduct and will be handled by the Dean's office.

**Schedule/Topic Outline**

<b>WEEK</b>	<b>From</b>	<b>To</b>	<b>TOPIC</b>
Week 1	15/09	19/09	<b>Orientation</b>
Week 2	22/09	26/09	<b>Introduction</b>
Week 3	29/09	03/10	<b>Collection and Distribution of Water</b> ✓ Intakes, Methods of Distribution. Storage Necessary ✓ Water demand, Water Distribution system design ✓ Computer software for water distribution network design (EPANET2)
Week 4	06/10	10/10	
Week 5	13/10	17/10	<b>Eid Al-Adha</b>
Week 6	20/10	24/10	<b>Water Treatment</b> ✓ Objectives of water treatment, water quality ✓ water treatment methods ✓ Water treatment systems
Week 7	27/10	31/10	
Week 8	03/11	07/11	<b>Coagulation and Flocculation</b> ✓ Unit process: physical-chemical method ✓ Coagulation process and coagulant aids ✓ Flocculation and mixing
Week 9	10/11	14/11	
Week 10	17/11	21/11	
Week 11	24/11	28/11	<b>Softening of Hard water</b> ✓ Unit process: chemical method ✓ Hardness definition, ✓ Lime-Soda Ash softening
Week 12	01/12	05/12	
Week 13	08/12	12/12	<b>Sedimentation</b> (Unit operation physical method)
Week 14	15/12	19/12	<b>Filtration</b> (Unit operation physical method)
Week 15	22/12	26/12	<b>Disinfection</b> (Unit process: chemical)
Week 16	29/12	02/01	FINAL EXAMS PERIOD
Week 17	05/01	09/01	

**First Exam****Tuesday 22 Oct. 2013****Second Exam****Tuesday 26 Nov. 2013**