KOMAR UNIVERSITY OF SCIENCE AND TECHNOLOGY
(KUST)

Environmental Engineering Fundamentals and Lab Course Syllabus			
Course Title	**Environmental Engineering Fundamentals and Lab**		
Course Code	**NVE3325C**	**No. of Credits**	**3 CH**
Department	**Civil and Environmental Engineering**	**College**	**Engineering**
Pre-requisites Course Code	**Chemistry I and lab**	**Co-requisites Course Code**	
Course Coordinator(s)	**Dr. Ibrahiem Abdul Razak Al-Ani**		
Email	**Ibrahiem.abdulrazaq@komar.edu.iq**	**IP No.**	
Other Course Teacher(s)/Tutor(s)	**None**		
Class Hours	**Section 1: Monday & Wednesday (8:00 to 9:30), Room 106**		
Office Hours	**Sunday (16:00 to 17:00), Monday (10:00 to 12:00), Thursday (9:00 to 2:00)**		
Course Type	**Departmental Requirement**		
Offer in Academic Year	**Spring 2016**		

COURSE DESCRIPTION

This course covers the fundamentals of environmental engineering. These fundamentals will serve the students well as a future environmental engineer, a future civil engineer, or in any profession in which the environment is a concern. It will present concepts and applications spanning the whole range of environmental engineering processes, including water and wastewater treatment, solid waste management, air pollution control, risk assessment, and pollutions prevention strategies. Laboratories/field trip(s) will cover site seeing, measurement techniques, and applications to process engineering and other environmental case studies. The emphasis is on engineering principles as well as engineering design. The concept of mass balance and energy balance will be used as a tool for problem solving. The course style has been taken with amendment from University of Colorado.

COURSE OBJECTIVES

Students will:

1. Understand the basic concepts of environmental engineering; and
2. Solve environmental engineering problems.

COURSE LEARNING OUTCOMES

After participating in the course, the students should be able to:

1. Understand the fundamentals of environmental engineering [ABET Program Outcome A].
2. Perform environmental hydrological analysis [ABET Program Outcome E].
3. Apply the environmental engineering principles to solve some environmental engineering problems including water treatment, wastewater treatment, and solid waste management [ABET Program Outcome E].
4. Explain the fundamental concepts of waste minimization and pollution prevention [ABET Program Outcome A].
5. Find solutions of air pollution, risk assessment, and other pollutions prevention strategies [ABET Program Outcome E].

GUIDELINES ON GRADING POLICY

A	95-100%	**C**	70-74%
A-	94-90%	**C-**	**65-69%**
B+	87-89%	**D+**	60-64%
B	83-86%	**D**	55-59%
B-	80-82%	**D-**	50-54%
C+	75-79%	**F**	0-49%
W	Withdrawal	**I**	Incomplete

Note: Passing Grade is 65% and above

COURSE CONTENT

Course topics include:

- Introduction
- Chemistry
- Hydrology
- Risk Perception, Assessment, And Management
- Water Quality Management
- Water Treatment
- Wastewater Treatment
- Air Pollution
- Solid Waste Management
- Noise Pollution

****Note: Adding more chapters is governed by the time.***

COURSE TEACHING AND LEARNING ACTIVITIES

Lectures: during a week, the theoretical lectures will be presented throughout the semester; the discussion of practical work within the lab will also be organized and illustrated with activities.

Quizzes: the contents of each lecture will be discussed during class for open question and answer to make sure every student will participate and be active.

Practical Field Trip Discussion: during the practical sessions the students will combine together in a group to discuss their class learning on particular topics.

In class brainstorming sessions: provide students with enough sources and background knowledge briefly within the topics during class to top up their challenge packs to be more active.

COURSE ASSESSMENT TOOLS

Assessment Tool	Description	Weight
Quizzes	Quizzes are scheduled as shown in the semester schedule.	**10%**
Midterm Exam	The Midterm will be conducted after week 7 of the semester. It will cover the first half of the course contents.	**20%**
Test	The test will be conducted after week 12 of the semester. It will cover part of the second half of the course contents.	**15%**
Field Trips /Experimental Lab works	Reports from Field Trip(s)/Lab works and practical discussions will be required.	**15%**
Design Project	The design project will require the students to work in groups and solve an environmental problem. The details of the project will be given during the semester. The students have to present their projects and highlight how did they solve/minimize/prevent the project issue(s).	**10%**
Final Exam	The final exam will be designed to cover all the students' learning outcomes for this course.	**30%**

Textbooks:

Principles of Environmental Engineering and Science, by Mackenzie L. Davis and Susan J. Masten, McGraw-Hill Publishing, (2nd Edition), 2004.

References:

1. Fundamentals of Environmental Engineering, by Danny D. Reible, CRC Press, 1st edition, 1998.
2. Introduction to Environmental Engineering and Science, by Gilbert M. Masters, Prentice-Hall, (2nd Edition), 1998.
3. Fundamentals of Environmental Engineering, by James R. Mihelcic, Wiley, 1st edition, 1999.

COURSE POLICY *(including plagiarism, academic honesty, attendance etc)*

KUST Academic Policy
http://sar.komar.edu.iq/files/Student%20hand%20Book%202013.pdf

Attendance Policy:
Students are expected to attend each class for the entire semester. Students are responsible for material present in lectures. Only students with official KUST absence, family crises, and illness are excused from class. Three occasions of lateness count as one absence. The student who misses 10 percent of the classes will be placed on probation.

Make up Policy:
Since all examination are announced in advance, zero grade will be given to any missed examination unless a student's has an acceptable reason, such as illness, for not being able to take the examination during all those days when the examination was announced.

Academic Dishonesty:
Any type of dishonesty (Plagiarism, Copying another's test or home-work, etc) will Not be tolerated. Students found guilty of any type of academic dishonesty are subject to failure in this course, plus further punishment by the University Council.

GUIDELINES FOR SUCCESS

1. Be able to work independently and in groups.
2. Pay-attention in the classes and to the instructions given by the instructor is the key for success.
3. Extend your knowledge beyond the given textbooks in order to master the subject, and
4. Try not to miss the classes.

Note: Supplementary problems will be given either as homework in the text book and which are posted in the Google Classroom and during the class.

Week	Beg/End Dates	Topics (Chapters)	Course Assignments per chapter
1	28-2 to 3-3 / 2016	Introduction to Environmental Engineering Principles	NA
2	6-3 to 10-3 / 2016	Chemistry	NA
3	13-3 to 17-3 / 2016	Hydrology	Quiz # 1
4	27-3 to 31-3 / 2016	Hydrology (Cont'd)	NA
5	3-4 to 7-4 / 2016	Risk Perception, Assessment and Management Lab works on determination of alkalinity of water	Practical Discussions/Reports
6	10-4 to 17-4 / 2016	Water Quality and Management	Quiz # 2
7	17-4 to 21-4 / 2016	Water Quality and Management (Cont'd) Lab works/field trip on water quality/waste water treatment plants/systems/measurements (PH, Temp, Conductivity, …etc) / Videos/ Examples	Practical Discussions / Reports
	22-4 to 28-4 / 2016	Midterm Exam	
8	2-5 to 5-5 / 2016	Water Treatment	NA
9	8-5 to 12-5 / 2016	Wastewater Treatment	
10	15-5 to 19-5 / 2016	Air Pollution Lab Works/Field Trip on Air	Quiz # 3 Practical

		Pollution (Particulate Test) / Measurements / Examples on few countries / Videos	**Discussions/ Reports**
11	**22-5 to 26-5 / 2016**	**Solid Waste Engineering**	**NA**
12	**29-5 to 2-6 / 2016**	**Solid Waste Engineering (Cont'd)** **Lab Works/ Field Trip on Solid Waste Plants/ Recycling Centre / Measurements / Videos / Examples**	**Practical** **Discussions/ Reports**
		Test	
13	**5-6 to 9-6 / 2016**	**Noise Pollution**	**Quiz # 4** **Project Presentation**
14	**12-6 to 16-6 / 2016**	**Noise Pollution** **Lab Works/ Field Trip on Noise Pollution/ Measurements / Videos / Examples**	**Practical** **Discussions/ Reports**
15	**19-6 to 23-6 / 2016**	**Review Week for Academic Courses**	
16	**24-6 to 30-6 / 2016**	**Final Examination for Academic Courses**	