

# **62-Course Specification of Environmental Engineering**

	I. Course Identification and General Information:					
1	Course Title:	Environmental Engineering				
2	Course Code & Number:	CE408				
	Credit hours:		(	C.H		Credit
3		Th.	Tu.	Pr.	Tr.	Hours
		2				2
4	Study level/ semester at which this course	5 <sup>th</sup> Level/ 2 <sup>nd</sup> semester				
4	is offered:					
5	Pre –requisite (if any):	Sanitary Engineering-2, Hydraulic			aulic	
		Structures				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Civi	l Enginee	ring		
9	Language of teaching the course:	English+ Arabic				
10	Location of teaching the course:	Classroom				
11	Prepared By:	Prof. Dr. Fadhl Al-Nozaily				
12	Date of Approval					

Prepared by

Head of Department Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti



## **II.** Course Description:

This course deals with basic topics in impact of Environmental of the Engineering project. This course deals with basic topics in Environmental Engineering. The course seeks to provide basics information about introduction to Environmental Engineering, Environmental Pollution and protection, Seven Main Environmental Problems, solid Waste Management, Introduction into Environmental and Social Impact Assessment.

III	III. Course Intended learning outcomes (CILOs)					
	of the course	PILOs				
a.1	Discuss the role of environmental Engineer in the society in adopting ethics as a principles of the profession, engineering swear to fulfill ethics and obligations (similar to the medical swear)	A4				
a. 2	Discuss the traditional practice of environmental regulations, the desired goals of Environmental Engineering, problem-solving complex system, the management of water resources system, the discharge of sewage system, solid waste management system	A4				
b.1	Discuss the environment in the Republic of Yemen, environmental problems, environmental protection, the fight against environmental pollution procedures, Islamic point of view for pollution of the environment (environmental awareness).	B1				
b.2	Discuss the global Environment Report and the Yemen commitment against different international conventions	В3				
c.1	Report the feasibility studies for deciding on the proper site and technology of solid waste landfill.	C4				
c.2	Report the proper mitigation measure against different types of projects based on the expected environmental impact	C2				
d. 1.	Communicate effectively and professionally within multi- disciplinary teams	D1				
<b>d.2</b>	Engage in self- and life- long learning.	D5				

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#### (A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies: Course Intended Learning Outcomes Teaching strategies Assessment Strategies Lecture Analyse a case; Field **a1-** Discuss the role of environmental Multimedia Presentations visit report, Oral Engineer in the society in adopting ethics Field visit presentation; as a principle of the profession, Group working Participation; engineering swears to fulfill ethics and Presentations Written assignment; obligations (similar to the medical **Tutorial** Multiple choice swear). exam; written exam Reading **a2-** Discuss the traditional practice of environmental regulations, the desired goals of Environmental Engineering, Lecture Case study Project- Written problem-solving complex system, the Individual/group projects assignment- Written

Presentations

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:					
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies			
<b>b1</b> - Discuss the environment in the Republic of Yemen, environmental problems, environmental protection, the fight against environmental pollution procedures, Islamic point of view for pollution of the environment (environmental awareness).	Lecture Multimedia Presentations Presentations Tutorial Reading	Participation- Written assignment written exam			
<b>b2-</b> Discuss the global Environment Report and the Yemen commitment against different international conventions.	Lecture Case study- Presentations	assignment written exam			

Prepared by Head o

Head of Department Dr. Abdulkareem Yahya Al khattabi

management of water resources system,

the discharge of sewage system, solid

waste management system.

Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti Academic Development Center & Quality Assurance Ass. Prof. Dr. Huda Al-Emad

exam

environmental impact.







#### (C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies: **Course Intended Learning Outcomes Assessment Strategies** Teaching strategies Lecture Analyse a case; Field Visit, Multimedia **c.1-** Report the feasibility studies for Oral presentation; Presentations deciding on the proper site and Participation; Written Small group working technology of solid waste landfill. assignment; Multiple choice Presentations exam; written exam; group Reading work, Project. **c2-** Report the proper mitigation Case studymeasure against different types of Individual/group **Project** projects based on the expected projects

Presentations

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:							
Course Intended Learning Outcomes							
<b>d.1</b> Communicate effectively and professionally within multidisciplinary teams	Case study- Individual/group projects Presentations	Project					
<b>d2-</b> Engage in self- and life- long learning.	assignment Field visit apply updated software	Multimedia presentation Assignments from internet Design					

Prepared by Head of Department

Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti







# **IV.** Course Content:

# A – Theoretical Aspect:

	11 Incoronau inspect						
Or der	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours		
1	Introduction to Environment al Engineering	a1	The role of environmental Engineer in the society in adopting ethics as a principle of the profession, engineering swears to fulfill ethics and obligations the traditional practice of environmental regulations, the desired goals of Environmental Engineering, problem-solving complex system, the management of water resources system, the discharge of sewage system, solid waste management system.	2	4		
2	Environment al Pollution and protection	llution nd b1 the fight against environmental pollution procedures, Islamic point		3	6		
3	Seven Main Environment al Problems	b1,a.2,b.2	The global Environment Report and the Yemen commitment against different international conventions.	2	4		
4	Seven Main Environment al Problems	b1,a.2,b.2	The global Environment Report and the Yemen commitment against different international conventions.	1	2		
5	solid Waste Management	b1,c.1	Evaluate and report on feasibility studies for deciding on the proper	3	6		

Prepared by Hea

Head of Department Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti







### **IV.** Course Content:

### **A – Theoretical Aspect:**

Or der	Units/Topics List	<b>Learning Outcomes</b>	Sub Topics List	Number of Weeks	contact hours
			site and technology of solid waste landfill.		
6	Introduction into Environment al and Social Impact Assessment	b1,b.2, c.2,d.1	Evaluate and report on the proper mitigation measure against different types of projects based on the expected environmental impact	3	6
	Numbe	14	28		

# V. Teaching strategies of the course:

Lecture

**Multimedia Presentations** 

Presentations

**Tutorial** 

Reading

Small group working

Independent study

VI	. Assignments:			
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Reporting the field visits to the EPA, Landfill, specification organization; cleaning awareness organization	b1-a1-c1,b.2,d.2	1,2	1.5
2	Sag curve for the pollution discharged to the	41 .1 .2	2.4	2

Prepared by Head of Department

river/wadi

Dr. Abdulkareem

Yahya Al khattabi

Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti

d1-a1-a2-

Academic Development Center & Quality Assurance Ass. Prof. Dr. Huda Al-Emad

3

3,4







VI	VI. Assignments:							
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark				
3	summarizing the film about the EPA at different countries i.e. Kuwait	d1-a1-a2-b1-c1-c2	5,6	1.5				
4	Report on the EISA of landfill	a1-a2-b1-c1-c2,d.2	7,8	1.5				
5	Report of EISA for the school	a1-a2-b1-c1-c3	9,10	3				
6	Reports form internet	a1-a2-b1-c1-c3	11,12	3				
7	Computation problems for landfill design, route of landfill collection and landfill containers volumes	a1	13,14	1.5				

VII.	VII. Schedule of Assessment Tasks for Students During the Semester:						
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment %	Aligned Course Learning Outcomes		
1	Written assignment	1-14	15	15	a1-a2-b1,b.2-c1-c1		
2	Quizzes.	one time	5	5	B2-c1		
3	Mid-term exam.	$7^{\mathrm{th}}$	10	10	a1-a2-b2-c1		
4	Final-exam.	13	60	60	a1-a2-b1-c2		
5	Project	7,8	10	10	a2-b1-b2-c1-c2-d.1		
6	Sum		100	100%			

# VIII. Learning Resources:

• Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

### 1- Required Textbook(s) (maximum two ).

• 1-Davis and Cornwell (1998) Introduction to Environmental Engineering, Pumping of wastewater (Third Edition) McGraw-Hill Series)

### 2- Essential References.

Lecture note: Under preparation as a book by Dr. Fadhl Ali Al-Nozaily)

### 3- Electronic Materials and Web Sites etc.

Prepared by Head of Department Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti

# University of Sana'a Faculty of Engineering



2- web site of the Yemen EPA: <i>epayemen.org</i>	
3-web site of the international organizations such as UNIP: www.unep.org	

IX.	Course Policies:
1	Class Attendance: min 75%  - The students should have more than 75% of attendance according to rules and regulations of the faculty.
2	<ul><li>Tardy:</li><li>The students should respect the timing of attending the lectures. They should attend with 1 minute from starting of the lecture.</li></ul>
3	Exam Attendance/Punctuality: - The student should attend the exam on time. The punctuality should be implemented according to rules and regulations of the faculty for midterm exam and final exam.
4	Assignments & Projects: - The assignment is given to the students after each chapter, the student has to submit all assignments for checking on time.
5	Cheating: -If any cheating occurred during the examination, the student is not allowed to continue and he/she has to face the examination committee for enquiries.
6	Plagiarism: - The student will be terminated from the faculty if one student attends the exam on another behlf according to the policy, rules and regulations of the university.
7	Other policies: - All the teaching materials should be kept out of the examination hall The mobile phone is not allowed There should be a respect between the student and his teacher.

Reviewed By	Vice Dean for Academic Affairs and Post Graduate Studies
	Dr. Tarek A. Barakat
	Dr. Mohammad Algorafi
	Deputy Rector for Academic Affairs Dr. Ibrahim AlMutaa
	Dr. Ahmed mujahed
	Dr. Munaser Alsubri

Prepared by Head of Department Dr. Abdulkareem

Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi

Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti



# Course Plan (Syllabus) of Environmental <u>Engineering</u>

I. Information about Faculty Member Responsible for the Course:						rse:	
Name of Faculty Member	Prof. Fadhl Ali Al- Nozaily	Office Hours					
Location& Telephone No.	Office: Sanitary/Hydraulics Building; 777381627	SAT	SUN	MON	TUE	WED	THU
E-mail	drfadhl@yahoo.com						8-10

II.	II. Course Identification and General Information:					
1	Course Title:	Environmental Engineering				
2-	Course Number & Code:	CE408				
			С.Н			
3-	Credit hours:	Th.	Tu.	Pr.	Tr.	Hours
						2
4-	Study level/year at which this course is	5 <sup>th</sup> Level/ 2 <sup>nd</sup> semester				
	offered:					
5-	Pre –requisite (if any):	Sanitary Engineering II, Hydraulic				
3		Structures				
6-	Co –requisite (if any):					
7-	Program (s) in which the course is	Civil Engineering				
/-	offered					
8-	Language of teaching the course:	English+ Arabic				
9-	System of Study:	Semester/ credit hrs				
10-	Mode of delivery:	Lecture				
11-	<b>Location of teaching the course:</b>	Class				

Prepared by Head of Department

Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti



### III. Course Description:

This course deals with basic topics in impact of Environmental of the Engineering project. This course deals with basic topics in Environmental Engineering. It seeks to provide basics information about introduction to Environmental Engineering, Environmental Pollution and protection, Seven Main Environmental Problems, solid Waste Management, Introduction into Environmental and Social Impact Assessment

### IV. Intended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop:
- **a.1** Discuss the role of environmental Engineer in the society in adopting ethics as a principle of the profession, engineering swears to fulfill ethics and obligations (similar to the medical swear) A4 (E)
- **a. 2** Discuss the traditional practice of environmental regulations, the desired goals of Environmental Engineering, problem-solving complex system, the management of water resources system, the discharge of sewage system, solid waste management system A4 (E)
- **b.1** Discuss the environment in the Republic of Yemen, environmental problems, environmental protection, the fight against environmental pollution procedures, Islamic point of view for pollution of the environment (environmental awareness). B1 (I)
- **b.2** Discuss the global Environment Report and the Yemen commitment against different international conventions B3 (I)
- **c.1** Report the feasibility studies for deciding on the proper site and technology of solid waste landfill. C4 (E)
- **c.2** Report the proper mitigation measure against different types of projects based on the expected environmental impact C2 (E)
- **d. 1.** Communicate effectively and professionally within multi-disciplinary teams D1 (A)
- **d.2** Engage in self- and life- long learning. D5 (I)



# V. Course Content:

• Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

### **A – Theoretical Aspect:**

	Theoretical Aspects			
Ord er	Topics List	Sub Topics List	Week Due	Contact Hours
1	Introduction to Environmental Engineering	The role of environmental Engineer in the society in adopting ethics as a principle of the profession, engineering swears to fulfill ethics and obligations the traditional practice of environmental regulations, the desired goals of Environmental Engineering, problem-solving complex system, the management of water resources system, the discharge of sewage system, solid waste management system.	1-2	4
2	Environmental Pollution and protection	Discussing the environment in the Republic of Yemen, environmental problems, environmental protection, the fight against environmental pollution procedures, Islamic point of view for pollution of the environment (environmental awareness).	3-5	6
3	Seven Main Environmental Problems	The global Environment Report and the Yemen commitment against different international conventions.	6-7	4
4	Midterm Exam		8	2
5	Seven Main Environmental Problems	The global Environment Report and the Yemen commitment against different international conventions.	9	2
6	solid Waste Management	Evaluate and report on feasibility studies for deciding on the proper site and technology of solid waste landfill.	10-12	6

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### **V. Course Content:**

• Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

### **A – Theoretical Aspect:**

Ord er	Topics List	Sub Topics List	Week Due	Contact Hours
7	Introduction into Environmental and Social Impact Assessment	Evaluate and report on the proper mitigation measure against different types of projects based on the expected environmental impact	13-15	6
8	8 Final Exam			2
	Number of Weeks /and Units Per Semester			32

### VI. Teaching strategies of the course:

Lecture

Multimedia Presentations

Tutorial

Field visits

Small group working

Independent study







VII.	Assignments:			
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Reporting the field visits to the EPA, Landfill, specification organization; cleaning awareness organization	b1-a1-c1,b.2,d.2	1,2	1.5
2	Sag curve for the pollution discharged to the river/wadi	d1-a1-a2-	3,4	3
3	summarizing the scientific film about the EPA at different countries i.e. Kuwait	d1-a1-a2-b1-c1-c2	5,6	1.5
4	Report on the EISA of landfill	a1-a2-b1-c1-c2,d.2	7,8	1.5
5	Report of EISA for the school	a1-a2-b1-c1-c3	9,10	3
6	Reports form internet	a1-a2-b1-c1-c3	11,12	3
7	Computation problems for landfill design, route of landfill collection and landfill containers volumes; landfill poster	a1	13,14	1.5

VIII. Schedule of Assessment Tasks for Students During the Semester:					
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment	
1	Written assignment	1-14	15	15	
2	Quizzes.	one time	5	5	
3	Mid-term exam.	7 <sup>th</sup>	10	10	
4	Final-exam.	13	60	60	
5	Project	7,8	10	10	

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### **IX.** Learning Resources:

• Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

### 1- Required Textbook(s) (maximum two ).

• 1-Davis and Cornwell (1998) Introduction to Environmental Engineering, Pumping of wastewater (Third Edition) McGraw-Hill Series)

### 2- Essential References.

Lecture note: Under preparation as a book by Dr. Fadhl Ali Al-Nozaily)

### 3- Electronic Materials and Web Sites etc.

2- web site of the Yemen EPA: epayemen.org

3-web site of the international organizations such as UNIP: www.unep.org



	x. Course Policies:			
Unles	ss otherwise stated, the normal course administration policies and rules of the Faculty of			
8	apply. For the policy, see:			
	Class Attendance: min 75%			
`1	- The students should have more than 75% of attendance according to rules and			
	regulations of the faculty.			
	Tardy:			
2	- The students should respect the timing of attending the lectures. They should attend			
	with 1 minute from starting of the lecture.			
	Exam Attendance/Punctuality:			
3	- The student should attend the exam on time. The punctuality should be implemented			
	according to rules and regulations of the faculty for midterm exam and final exam.			
	Assignments & Projects:			
4	- The assignment is given to the students after each chapter, the student has to submit			
	all assignments for checking on time.			
	Cheating:			
5	-If any cheating occurred during the examination, the student is not allowed to			
	continue, and he/she has to face the examination committee for enquiries.			
	Plagiarism:			
6	- The student will be terminated from the faculty if one student attends the exam on			
	another behalf according to the policy, rules and regulations of the university.			
	Other policies:			
7	- All the teaching materials should be kept out of the examination hall.			
- The mobile phone is not allowed.				

Prepared by Head of D

Head of Department Dr. Abdulkareem Yahya Al khattabi Quality Assurance Unit Ass. Prof. Dr. Mohammad Algorafi Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti