



Course Specifications

Course Title:	Environmental Engineering Principles
Course Code:	CE 317
Program:	B.Sc. in Civil Engineering
Department:	Civil Engineering
College:	Jubail University College
Institution:	Jubail University College

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	4
3. Course Learning Outcomes	4
C. Course Content	4
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	6
1. Learning Resources	6
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	7

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 3, Second Year
4. Pre-requisites for this course (if any):	SCI 154 General Chemistry
5. Co-requisites for this course (if any):	None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	✓	100
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

CE 317 Introduction to Environmental Engineering (3-0-3)

Prerequisite: SCI 154

Introduction to environmental pollution; Types and Classification of Pollutants, Sources of Pollutants, organic & inorganic including pesticides, carbohydrate, protein and fat., Effects and remediation of air, water, land, noise and radiation Pollution, Water quality parameters; Basic analysis of water quality parameters, Water quality standards, (U.S. & WHO, etc.), Introduction to water supply and sanitation; Population forecast, Water uses & consumption; Municipal solid waste management and disposal; Air pollution characteristics, effects, measurements, control, meteorology, and dispersion; Noise pollution control; Introduction to wastewater testing, treatment and reuse; Environment Impact Assessment

2. Course Main Objective

The main aim of this course is to enable the students to gain the basic knowledge about environmental engineering. It will also act as a bridge between general chemistry course and advance environmental engineering courses offered by the civil engineering department.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Describe types, classification, sources, effects, and remediation of pollutants.	8
1.2	Mention basic water quality parameters, quality standards, municipal solid waste management, disposal and basic principles of environmental impact assessment.	8
2	Skills :	
2.1	Analyze population, based on future population forecast methods	1
2.2	Solve problems related to water supply, water uses and consumption in a community.	1
2.3	Communicate ideas related to environmental engineering.	3
3	Values	
	N/A	

C. Course Content

No	List of Topics	Contact Hours
1	Unit 1. Introduction To Environmental Pollution 1.1 Types and Classification of Pollutants. 1.2 Sources of Pollutants, organic & inorganic including pesticides, carbohydrate, protein, fat & metals.	6
2	Unit 2. Effects and Remediation of Pollution 2.1 Air 2.2 Water 2.3 Land 2.4 Noise and 2.5 Radiation Pollution	6
3	Unit 3. Water Quality 3.1 Water quality parameters, Basic analysis of water quality parameters. Water quality standards, (U.S. & WHO, etc.). 3.2 Introduction to water supply and sanitation.	6
4	Unit 4. Population Forecast 4.1 Future population forecast methods.	3
5	Unit 5. Water Uses & Consumption 5.1 Commercial, domestic, industrial and other uses and consumption.	3
6	Unit 6. Municipal Solid Waste Management And Disposal 6.1 Sources of Municipal Solid Waste. 6.2 Disposal of Municipal Solid Waste.	3
7	Unit 7. Air Pollution 7.1 Air pollution characteristics, Air pollution effects, Air pollution measurements. Air pollution control, meteorology, and dispersion.	6
8	Unit 8. Noise pollution	3

	8.1 Sources of noise pollution. 8.2 Control of noise pollution.	
9	Unit 9. Introduction to wastewater testing, treatment and reuse 9.1 Wastewater quality 9.2 Wastewater treatment & reuse	3
	Unit 10. Environmental Impact Assessment 10.1 Introduction 10.2 Importance of EIA, How to carryout EIA 10.3 Case study	6
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe types, classification, sources, effects, and remediation of pollutants.	Interactive learning	Quiz 1, midterm, assignment 1
1.2	Mention basic water quality parameters, quality standards, municipal solid waste management, disposal and basic principles of environmental impact assessment.		Quiz 1, midterm, assignment 1, assignment 2 & final
2.0	Skills		
2.1	Analyze population, based on future population forecast methods	Interactive learning Self-directed and independent learning	Quiz 2, assignment 2, midterm & final
2.2	Solve problems related to water supply, water uses and consumption in a community.		Quiz 2, assignment 2 & final
2.3	Communicate ideas related to environmental engineering.		Quiz 2, assignment 2 & final
3.0	Values		
	N/A		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	4	10%
2	Assignment 1	6	10%
3	Mid-term LT	8	20%
4	Quiz 2	12	10%
5	Assignment 2	14	10%
6	Final Exam LT	17-19	40%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Office hours 5 hr/week; students can go in times of office hours for teacher to explain what could not be understood from the lesson.

- Students can communicate with a staff member outside the official working hours by email.
- Students are also encouraged to visit their academic advisors.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Davis and Masten , (2013) <i>Principles of Environmental Engineering and Science</i> , Third Edition, USA: McGraw Education
Essential References Materials	Davis and Cornwell . (2012). <i>Introduction to Environmental Engineering</i> , USA: McGraw-Hill Education. Weiner and Matthew (2003). <i>Environmental Engineering</i> . USA: Butterworth-Heinemann.
Electronic Materials	http://www.epa.gov.us
Other Learning Materials	US Environmental Protection Agency Standards

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture rooms with a capacity of at least 25 students and fitted with multimedia projector and a computer.
Technology Resources (AV, data show, Smart Board, software, etc.)	None
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment as per QMS-Policy-006 Feedback Survey, QMS-QAP-116 Monitoring Students' Satisfaction	Students	Indirect: Analyzing the results of the following surveys Course Evaluation Survey (CES), Program Evaluation Survey (PES), Student Experience Survey (SES)
Quality of Exam papers and Verifying Standards of Student Achievement as per QMS-Policy-004 Policy for Examinations and	Examination Committee	Direct: Peer review of examination papers and review or double check a minimum of three or 10% of

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Marking, QMS-ACP-102 Procedure for Marking Examinations		answer papers. Verifying the entries in the Activity Mark Sheet.
Achievement of learning outcomes as per QMS-Policy-001 Course Review, QMS-CDP-106, QMS-CDP-112 Curriculum Review	Faculty	Direct: Course Report (Section B-3)
Implementation of the action plans based on previous semester as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS-CDP-112 Procedure for Curriculum Review	Faculty	Direct and Indirect: Course report (Section G-1, G-2)
Monitoring Teaching and Learning as per QMS-Policy-005 Monitoring of Teaching and Learning	Chairperson/Program Director/Course Director	Indirect: Feedback by Chairperson/Program director/Course director. Program Delivery Record.
Effectiveness of planned Teaching Strategies QMS-Policy-001 Course Review	Faculty	Indirect: Course Report (Section B-4)
Course effectiveness and planning for improvement as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS-CDP-112 Procedure for Curriculum Review	Faculty	Direct and Indirect: Course report (Section G-3)
Verifying Standards of Student Achievement and Quality of Exam papers as per QMS-ACP-119 External Assessment Review	Assessment External Reviewer	Direct: Report of assessment external reviewer. Review of sample of ten or 10% of student's assessments and coursework scripts.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Civil Engineering Department Council
Reference No.	REG MIN-CED-10
Date	27-04-2020

Appendix A Revision Details

Revision no.	DESCRIPTION	Reference MoMs			
		DC		CDC	
		Sem	#	Sem	#
1	Revision of Course Teaching Strategies and action verbs based on the comments of NCAAA reviewer	392	4	392	4
2	Course Specification Template 2018	402			