



Course Specifications

Course Title:	: Industrial Air Pollution
Course Code:	ENS 313
Program:	Environmental Health/ Environmental Sciences and Technology
Department:	Environmental Sciences Department
College:	Faculty of Meteorology, Environment and Arid Land Agriculture
Institution:	King Abdulaziz University

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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 type="checkbox"/>	Elective <input checked="" type="checkbox"/>	
3. Level/year at which this course is offered: 6 th Level / 3 rd Year			
4. Pre-requisites for this course (if any): ENS 311			
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	3	60%
2	Blended	-	-
3	E-learning	2	40%
4	Correspondence	-	-
5	Other	-	-

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	-
4	Others (specify)	-
	Total	-
Other Learning Hours*		
1	Study	
2	Assignments	0
3	Library	
4	Projects/Research Essays/Theses	0
5	Others (specify)	
	Total	0

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

- What is the main purpose for this course?
At the end of this course it is expected that students will be able to explain main concepts of industrial pollution prevention, apply environmental standards and

regulatory loading limits for industries, and outline methods for controlling emissions for different industries
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)</p> <p>1. The course lectures were partially posted in the form of PDF or power point presentation on the website of faculty member responsible for the course that could be accessed by the students enrolled in the course.</p> <p>2. Minor changes in the course content might be done according to changes in some circumstances (students' level or hot point in the field...).</p>
3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write	
...		
2	Skills :	
2.1	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise	
2.3		
2...		
3	Competence:	
3.1	Demonstrate independent role and as part of a team.	
3.2	Participate actively in a team.	
3.3	Analyze and discuss results of assignments	
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Classification of industries according to air pollutants.	2
2	Management of industrial emissions.	4
3	Pollution control techniques for particulate emissions.	4
4	Pollution control techniques for gaseous emissions.	4
5	Case Studies: Sources, characteristics, and control methods of air pollution for different industries.	12
Total		26

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		
1.1	List basic principles of industrial pollution prevention	<ul style="list-style-type: none"> • Explanations and examples are given for each topic in class lectures. • Involvement of students in active discussion about topics. • Providing an opportunity for students to apply what they learn in the classroom to real-life experiences. Homework assignments	<ul style="list-style-type: none"> • Short reports. • homework assignments • Periodic quizzes and the mid-term and final exams
1.2	State selection and use of emission standards.	" " " " "	" " " " "
1.3	Define basic principles of control techniques for industrial emissions.	" " " " "	" " " " "
2.0	Skills		
2.1	Summarize application of emission standards for different industries.	<ul style="list-style-type: none"> • Problem solving. 	<ul style="list-style-type: none"> • Midterm and final exams Checking the problems solved in the homework assignments.
2.2	Justify selection of suitable control methods for each industry	<ul style="list-style-type: none"> • Homework assignments. • Problem solving. 	<ul style="list-style-type: none"> • In class short quizzes • Midterm and final exams checking the problems solved in the homework assignments
2.3	Judge problems for management of industrial emissions	<ul style="list-style-type: none"> • Homework assignments. • Problem solving. 	<ul style="list-style-type: none"> • In class short quizzes • Midterm and final exams • Checking the problems solved in the homework assignments
3.3	Use experimental equipment related to the course.	Conduct experiments	Reports
3.0	Competence		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Demonstrate independent role and as part of a team.	<ul style="list-style-type: none"> Writing group reports Solving problems in groups. 	Grading homework assignments
3.2	Assess resources, time and cooperate with the other members of the group	" " " " "	" " " " "
3.3	Show results of work to others	" " " " "	" " " " "

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Theoretical part is usually assessed via homework assignments and written exams, including midterm exam.	3rd, 7th , 13th weeks	15%
2			

*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 √ h / week

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	1. List Required Textbooks Boss, M. and Dennis, D. (2001) Air Sampling and Industrial Hygiene Engineering, CRC Press LLC. ISBN: 1566704170, USA.)
Essential References Materials	Muezzinoglu, A. and Lloyd W.M.L. (1992) Industrial Air Pollution: Assessment and Control (NATO a SI series, series G, Ecological Sciences, NATO, USA)
Electronic Materials	Web Sites, Social Media, Blackboard, etc.) Websites on the internet that are relevant to the topics of the course Other Relevant Internet websites.

Other Learning Materials	
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2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Lecture room with max 20 seats. - Laboratory with a capacity of not less than 20 seats.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Equipment and illustration tools related to the course topics.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course contents covering	Students (direct through meetings, or indirect using the central online questionnaires)	Online questionnaire and Students- faculty meetings (advisory committee)
Quality of teaching	" " " " "	Online questionnaire and students- faculty meetings (advisory committee)
Office hours commitment	" " " " "	Online questionnaire and Students- faculty meetings (advisory committee)

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	END Dept. Council and Faculty Academic Accreditation Committee
Reference No.	
Date	April 15, 2021