

TEMPLATE FOR COURSE SPECIFICATION (Env. Poll & Safety in Petr. Ref. Eng.)

HIGHER EDUCATION PERFORMANCE REVIEW: Environmental Pollution & safety in Petroleum Refineries (2015-2016)

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Technology
2. University Department/Centre	Chemical Engineering Department
3. Course title/code	Environmental Pollution & safety in Petroleum Refineries /4411
4. Programme(s) to which it contributes	CE.4411
5. Modes of Attendance offered	Full
6. Semester/Year	1 semester/year
7. Number of hours tuition (total)	3
8. Date of production/revision of this Specification	
9. Aims of the Course	
1. To introduce an understanding of environmental, Environmental pollution of Petroleum Industry, the Earth's atmosphere and its composition and global environmental issue such as climate change and green house effect. Known the protocols that have been held to reduce these problems.	
2. Study the environmental pollution such as air, water and solid pollution , type of petroleum pollutants and their sources.	
3. knowledge of the equipments used to contral the petroleum pollution.	
4. Design of some petroleum pollution control equipment	

10• Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1. Develop a deep understanding of issues related to the environmental pollution by petroleum refinery plants. A2. Master the ability to solve the petroleum pollution A3. the ability to give a scientific consulting to petroleum refinery plants around the reduction of the cause of pollution.
B. Subject-specific skills B1. Apply the scientific and engineering information to solve specific problem in petroleum refinery B2. Ability to give scientific consulting.
Teaching and Learning Methods
Lectures, Tutorials , Example Classes , Homework
Assessment methods
Midterm exams , Final exam , Quizzes, Weekly homework, writing report
C. Thinking Skills C1. An ability to characterize, analysis and evaluate the pollution problems in a certain place and decide the most appropriate ways to solve them C2. An ability to draw on your academic or subject knowledge to identify solutions of a practical or technical nature. C2. Identify knowledge gaps and opportunities to solve pollution and design control equipment
Teaching and Learning Methods
Lectures, Tutorials , Example Classes
Assessment methods
Midterm exams , Final exam , Quizzes, Weekly homework

D. General and Transferable Skills (other skills relevant to employability and personal development).

D1. working in a group or team to solve effectively the problems related to environmental pollution

D2. Speed intuitive, predictability and evaluate information and ideas in the handling of pollution from petroleum and other industries

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st semester					
1	3	Knowledge of environment concept and phenomenon of greenhouse effect	Introduction Definition Environment of petroleum pollution, Petroleum Pollutant Atmosphere of Earth, Greenhouse effect and greenhouse gases	Lectures	partial test (Oral questions)
2	3	Knowledge of environment pollution and its effect on the climate change	Global warming ; Ozone layer depletion, Acid rain; The world action for the problem,	Lectures	partial test (Oral questions)
3	3	Knowledge of air pollution	Air pollution by petroleum pollutants, type of air pollution, air control equipments, the parameter determined before choice the proper equipment.	Lectures	partial test (Oral questions)
4	3	Knowledge of air pollution control equipment	Type of air control equipment, operation of the each equipments, advantages and disadvantages of each equipment with sketch for each equipment.	Lectures	partial test (Oral questions)
5	3	Design of equipment	Design of Settling Chamber	Lectures + drive the design equation	partial test (Oral questions)

6	3	Design of equipment	Solve examples about settling chamber	Lectures + Examples+ tutorials	partial test (Oral questions)
7	3	Design of equipment	Design of Cyclone	Lectures + drive the design equation	partial test (Oral questions)
8	3	Design of equipment	Solve examples about Cyclone	Lectures + Examples+ tutorials	partial test (Oral questions)
9	3	Water pollution	Water pollution, source of water, type of water pollutants	Lectures	partial test (Oral questions)
10	3	Water treatment	Wastewater, Clacification of Wastewater, Wastewater treatment	Lectures	partial test (Oral questions)
11	3	Measurment of water pollution	Dissolved oxygen DO, Biological oxygen demond BOD, drive euation to estimate of DO & BOD	Lectures	partial test (Oral questions)
12	3	Measurment of water pollution	Solve equation to calculate of DO & BOD	Solve examples	partial test (Oral questions)
13	3	Measurment of water pollution	Oxygen Sag Curve, Oxygen deficit, drive equation to calculate oxygen deficit, D	Lectures	partial test (Oral questions)
14	3	Measurment of water pollution	Solve examples to calculate oxygen Deficit, D	Lectures	partial test (Oral questions)
15	3	Solid waste managments	Solid waste; Clacification of solid waste;Solid waste disposal methods	Lectures	partial test (Oral questions)
one semester					
16					
17					
18					
19					
20					
21					
22					

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	<ul style="list-style-type: none"> ○ Lecturers ○ C.S.Rao , “Environmental Pollution Control Engineering”, 2nd eddition , New Age International(P) Limited, Published, 2006, Reprint 2007. ○ R. K. Sinnott, Chemical Engineering Design, Vol. 6. 4th edition, Chemical Engineering Design, 2005, pp. 450-457. ○ Noel de Never, “Air Pollution Control Engineering”, McGraw-Hill, Inc 1987.
Special requirements (include for example workshops, periodicals, IT software, websites)	Websites
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	Before undertaking this module the student should have undertaken the following: Basic Principles of chemical engineering I and II , chemistry , mathematics I and II ,Physical chemistry , as well simultaneous courses:- Thermodynamics , and applied mathematics
Minimum number of students	Central Admission
Maximum number of students	Central Admission