

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

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	Chemical from petroleum/CE346
4. Programme(s) to which it contributes	None
5. Modes of Attendance offered	Fall
6. Semester/Year	1 semester/year
7. Number of hours tuition (total)	3
8. Date of production/revision of this Specification	2015-2016
9. Aims of the Course	
1. To know sources: (feed stock). These sources are petroleum fractions and natural gases.	
2. To introduce petrochemicals generations: first : basic PCs, 2 nd : derivatives, 3 rd : end product.	
3. Provide practice at developing critical thinking skills, solving open ended problems and to work in teams.	

10• Learning Outcomes, Teaching, Learning and Assessment Method

A-Knowledge and Understanding

- A1. Deep understanding of chemical derived from petroleum and gas and understand the important role it plays in our life. The chemical reactions of their production also included.
- A2. Discuss the flowsheets or block diagram for PCs production.
- A3. Understand different uses of chemicals derived from oil and gas.
- A4. Knowing the PCs complexes.

B. Subject-specific skills

- B1. Apply different chemical processing to explain the different stages of processing of these petrochemicals.
- B2. Develop the understanding of student by demonstrating the detailed flowsheet or block diagram of derivatives and final products (polymers).
- B3. Calculate the Mwt and Dp of polymers.

Teaching and Learning Methods

Lectures, Tutorials, Example Classes, Informal and formal teamwork, Weekly homework problems

Assessment methods

Midterm exams, Final exam, Quizzes, Weekly homework, Team and homework problems, partial test (Oral questions :- multiple choice, alternative response), Open questions that have a definite answer, or do not have a definite answer

C. Thinking Skills

- C1. An ability to apply effective, creative and innovative solutions, both independently and cooperatively, to current and future problems.
- C2. Solve problems of PCs processes through logic.
- C3. Characterization and analyses the performance of different chemical processes used to convert oil and gas to chemicals.
- C4. Using scientific information to calculate average Mwt and Dp of polymers.

Teaching and Learning Methods

Lectures, Tutorials, Example Classes, Informal and formal teamwork, Weekly homework problems, Analysis of cases linked to the work environment, Practical Applications

Assessment methods

Midterm exams, Final exam, Quizzes, Weekly homework, Team and homework problems, partial test (Oral questions :- multiple choice, alternative response), Open questions that have a definite answer, or do not have a definite answer

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

D1. Work together in same-discipline teams to solve PCs problems.

D2. Speed intuitive and evaluate information and ideas in the handling of chemicals derived from oil and gas.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st semester					
1	2	Ability to characterized introduction :include :raw materials and characterization of PCs industries	Introduction , raw materials and characterization of PCs industries	Lectures, Tutorials , Example Classes , Practical Applications	partial test :Oral questions.
2		Ability to understand steam cracking process, quenching, compression, separation.		Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.
3	2	Kowing energy system for low olefins complex Diolefins complexes :separation of	Energy system for low olefins complex. Diolefins complexes, separation of BD and IB	Lectures, Tutorials , Example Classes , Practical Applications	Open questions that have a definite answer , or do not have a definite answer
4	2	Deep understanding of Higher olefins ,Linear alkyl bz complexes.		Lectures, Tutorials , Example Classes , Practical Applications	

5	2	Ability to know and separate the Aromatics compounds.	Aromatics compounds.	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.
6	2	Ability to characterized Syn gas and hydrogen production by Steam cracking and Partial oxidation	Syn gas and hydrogen production by Steam cracking and Partial oxidation	Lectures, Tutorials , Example Classes , Practical Applications	Open questions that have a definite answer , or do not have a definite answer.
7	2	Ability to understand Syn gas derivatives: Methanol and Acetic acid production.	Syn gas derivatives: Methanol and Acetic acid,	Lectures, Tutorials , Example Classes , Practical Applications	partial test Oral questions.
8	2	Ethylene derivatives: Ethyleneoxide, Ethanoamine, Ethylene glycol, Propylene derivative: Acrylonitrile.	Ethylene derivatives: Ethyleneoxide, Ethanolamine, Ethylene glycol, Propylene derivative: Acrylonitrile.	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.
9	2	Ability to understand C4 derivatived: Adipic acid and MTBE. Deep understanding of Benzene derivative: Ethylbz, ST, Aniline, nitro bz cyclohexane.	C4 derivatived: Adipic acid and MTBE. Bz derivative: Ethylbz, ST, Aniline, nitro bz cyclohexane.	Lectures, Tutorials , Example Classes , Practical Applications	partial test Oral questions .

10	2	Cumene ,:Phenol And acetone,Toluene derivatives:Benzoic acid and Terephthalic acid.	. Cumene ,:Phenol And acetone,Toluene derivatives:Benzoic acid and Terephthalic acid.	Lectures, Tutorials , Example Classes , Practical Applications	Open questions that have a definite answer , or do not have a definite answer.
11	2	Knowing final product:Polymers: introduction to polymers, Calculating average Mwt of Polymers, Production of LDPE,HDPE .	Polymers:introduction,Mwt calculation, Production of LDPE,HDPE .	Lectures, Tutorials , Example Classes , Practical Applications	partial test Oral questions .
12	2	Ability to understand polymers : production of PP and P.V.C ..	Polymers:production of PP and P.V.C	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.
13	2	Understanding of production of Synthetic fibers: Nylon6 –	Synthetic fibers: polyester ,Nylon6 .	Lectures, Tutorials , Example Classes , Practical Applications	Open questions that have a definite answer , or do not have a definite answer
14	2	Ability to understand of production of Nylon66 and Acrylic	Nylon66 and Acrylic production.	Lectures, Tutorials , Example Classes , Practical Applications	partial test Oral questions .
15	2	Understanding of petrochemical complexes: Ethylene ,Propylene, benzene Toluene ,xylene,and C ₄	petrochemical complexes: Ethylene ,Propylene benzene Toluene ,xylene,and C ₄	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.

12.Infrastructure

Required reading:

- CORE TEXTS
- COURSE MATERIALS
- OTHER

○ Lecturers

Petrochemical Industries , by Dr. Jaber S. Jamali , 2004,
- Petrochemical Technology, 1986..
- Textbook of polymer science by Billmeyer, 3rd ed. Wiley-Interscience , New York – 1985
- Hydrocarbon processing :petrochemical processes 2005.

Special requirements (include for example workshops, periodicals, IT software, websites)	Websites
Community-based facilities (include for example, guest Lectures, internship, field studies)	field trips

13. Admissions	
Pre-requisites	Before undertaking this module the student should have undertaken the following: Organic chemistry, Unit operation and English language
Minimum number of students	Central admission
Maximum number of students	Central admission