

# 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	Petrochemical industries/CE.349
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 introduce and develop an understanding of raw materials of petrochemicals .	
2. To introduce petrochemical generation first :Basic petrochemicals,second: Intermeidates and third:final products;polymers	
3. Give the learner the skills necessary to accomdate considered what has been studied.	
4-Provide the student with confidence and study the skills to enable them to progress.	
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<b>10• Learning Outcomes, Teaching ,Learning and Assessment Method</b>
<b>A- Knowledge and Understanding</b> A1.Develop a deep understanding of petrochemical industries and the raw materials used in its production(Oil and Natural gas) 2.Knowing the detailed description of flow sheet for each PCs industries. A3Undestand the uses of these PCs materials. A4 Develop a deep understanding of petrochemical complexes.
<b>B. Subject-specific skills</b> B1. Give the learner a detailed demonstration of basic PCs production. B2. Develop a deep understanding of student about production of intermediate. B3Discuss different methods for production of final products..
<b>Teaching and Learning Methods</b>
Lectures, Tutorials , Example Classes , Informal and formal teamwork , Weekly homework problems
<b>Assessment methods</b>
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
<b>C. Thinking Skills</b> C1. An ability to apply effective, creative and innovative solutions, both independently and cooperatively, to current and future problems. C2.Understanding and description of flow sheet for different PCs industries.. C3.Solving different problems concerning the molecular weight and Dp of polymers. C4..
<b>Teaching and Learning Methods</b>
Lectures, Tutorials , Example Classes , Informal and formal teamwork , Weekly homework problems , Analysis of cases linked to the work environment , Practical Applications
<b>Assessment methods</b>
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
<b>1<sup>st</sup> semester</b>					
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.	Steam cracking, quenching, compression, separation.	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.
3	2	Knowing 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 benzene complexes.	Higher olefins , Linear alkyl benzene complexes.	Lectures, Tutorials , Example Classes , Practical Applications	partial test (Oral questions

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 y bSteam 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 Intermediates:: Methanol and Acetic acid production.	Intermediates: Methanol and Acetic acid,	Lectures, Tutorials , Example Classes , Practical Applications	partial test Oral questions.
8	2	: Intermediates Ethyleneoxide, Ethanoamine,Ethylene glycol,.Propylene derivative: Acrylonitrile.	Intermediates: Ethyleneoxide, Ethanolamine, Ethylene glycol,.Propylene derivative: Acrylonitrile.	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.
9	2	Ability to understand Intermediates:Adipic acid and MTBE.Deep understanding of Benzene derivative:Ethylbz,S T,Aniline, nitrobz cyclohexane.	Intermediates:Adipic acid and MTBE. Bz derivative:Ethylbz, ST,Aniline, nitrobz cyclohexane.	Lectures, Tutorials , Example Classes , Practical Applications	partial test Oral questions .

10	2	Cumene ,:Phenol And acetone,,:Benzoic acid and Terephthalic acid.	. Cumene ,:Phenol And acetone,,: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 Synthic fibers: polyester Nylon6 .	Synthic 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 ofproduction 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 <sub>4</sub>	r petrochemical complexes: Ethylene ,Propylene benzene Toluene ,xylene,and C <sub>4</sub>	Lectures, Tutorials , Example Classes , Practical Applications	multiple choice questions.

## 12.Infrastructure

### Requiredreading:

- CORETEXTS
- COURSEMATERIALS
- OTHER

### o Lecturers

Petrochemical Industries , by Dr. Jaber S. J amali , 2004,  
- Petrochemical Technology,1986..  
- Textbook of polymer science by Billmeyer, 3<sup>rd</sup> 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