

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: Chemistry of petroleum

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	Chemistry of petroleum/CE142
4. Program (s) to which it contributes	
5. Modes of Attendance offered	Fall time
6. Semester/Year	2 semester/year
7. Number of hours tuition (total)	3
8. Date of production/revision of this Specification	2011-2016
9. Aims of the Course	
<ol style="list-style-type: none">1. Learn to use the language of chemistry: symbolic representation, nomenclature, and terminology.2. Learn to think about chemical reactions and chemical and physical properties at the particulate level.3. Gain a conceptual understanding of and will be able to perform quantitative problem-solving skills in atomic structure, Stoichiometry, chemical equilibria, and electrochemistry.4. Ability to use their knowledge to analyze and construct solutions by instruments5. Introduce and develop an understanding the basic concepts of organic chemistry6. understanding the concepts of organic reactions for analysis of unit processes Students will learn the polymeric chemistry	

10• Learning Outcomes, Teaching, Learning and Assessment Method

A-Knowledge and Understanding

- A1. Basic information, concepts and terminology of the general principles of analytical chemistry, quantitative analysis, qualitative analysis, instrumental analysis, type of organic compounds
- A2. Demonstrating a broad and integrated knowledge and a deep understanding of determination of the compounds quantitatively and qualitatively with all calculations needed in the reaction in feed and product which is a very important part in the success of the production processes.
- A3. Ability to deal with all chemical compounds for the effective solution of intended problem

B. Subject-specific skills

- B1. Identify the chemical compounds
- B2. Estimate the reaction process data
- B3. Gain their ability to prepare reaction as whole calculations and reactions
- B4. Use laboratory, preparation and measuring equipment to provide data in support of theoretical understanding
- B5. Ability to calculate and Analyze the data of the production processes

Teaching and Learning Methods

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

Assessment methods

Midterm exams, Final exam, Quizzes, homework, partial test (Oral questions :- multiple choice, alternative response), Open questions that 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 in the production processes
- C2. Ability to calculate and Analyze the data of the production processes
- C3. Ability to follow the new application
- C4.

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

- D1. Be creative, particularly and analytical in the formulation and solution of problems
- D2. Work together in same-discipline teams to solve chemical reactions problems.
- D3.
- D4.

11.Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1 st semester					
1	3	Understanding Introduction to Analytical chemistry	Classification ,application	Lecture Data show	Oral questions
2	3	Ability to estimate the fundamental concepts	Review of fundamental concepts	Lecture tutorials	In class problem, homework problems
3	3	Ability to estimate the fundamental concepts	Review of fundamental concepts	tutorials	In class problem, homework problems
4	3	Ability to estimate the chemical equilibrium	Concept of chemical equilibrium	Lecture tutorials	In class problem, homework problems
5	3	Understanding acid base concept	Acid-bases and buffers	Lectures Example classes Video show	In class problem, homework problems
6	3	Ability to determine acid-base	Acid-bases and buffers	Lectures Example classes	In class problem, homework problems
7	3	Ability to determine acid-base mixtures	Mixtures weak acid and its salt or a weak base and its salt	Lectures Example classes	In class problem, homework problems, quiz
8	3	Ability to calculate buffer capacity	buffer capacity	Lectures Example classes tutorials	In class problem, homework problems, quiz
9	3	Understanding the volumetric analysis	Principle of volumetric analysis	Lectures Example classes Data show	Oral questions
10	3	Ability to do volumetric calculation	volumetric analysis	Lectures Example classes	In class problem, homework problems, quiz
11	3	Understanding the titration concept	Type of titration	Lectures Example classes	In class problem, homework problems
12	3	Ability to do the calculation of all titrations type	titration curve	Lectures Example classes, tutorials	In class problem, homework problems, quiz
13	3	Understanding the Gravimetric Analysis concept	Gravimetric Analysis	Lectures Example classes	In class problem, homework problems
14	3	Ability to do the calculation of Solubility Product	Solubility Product	tutorials	In class problem, homework problems, quiz
15	3	Understanding the Instrumental analysis concept	Instrumental analysis	Lectures Video show Example classes	Oral questions class problem
2nd semester					
16	3	Understanding Introduction to Organic Chemistry	Introduction , Classification Organic Chemistry	Lectures Data show	Oral questions
17	3	Ability to name the organic compounds	Names of organic compounds	Lectures Data show tutorials	quiz
18	3	Understanding the properties and ability to prepare Aliphatic compounds	Aliphatic compounds, alkane, alkene, alkyne, properties, preparation and reactions	Lectures Example classes tutorials	class problem

19	3	Understanding the properties and ability to prepare Aliphatic compounds	Aliphatic compounds, alkyl halides properties, preparation and reactions	Lectures Example classes tutorials	class problem
20	3	Understanding the properties and ability to prepare Aliphatic compounds	Aliphatic compounds, alcohols properties, preparation and reactions	Lectures Example classes tutorials	class problem, quiz
21	3	Understanding the properties and ability to prepare Aliphatic compounds	Aliphatic compounds, ether, carbonyl groups properties, preparation and reactions	Lectures Example classes tutorials	class problem
22	3	Understanding the properties and ability to prepare Aliphatic compounds	Aliphatic compounds, ester, carboxylic acid properties, preparation and reactions	Lectures Example classes tutorials	class problem
23	3	Understanding the properties and reactions of Aliphatic compounds	Aliphatic compounds, amines properties, preparation and reactions	Lectures Example classes tutorials	class problem, quiz
24	3	Understanding the properties and reactions of aromatic compounds	aromatic compounds, classification, properties	Lectures Example classes tutorials	class problem
25	3	Understanding the properties and reactions of aromatic compounds	aromatic compounds,, properties ,reactions, preparation	Lectures Example classes tutorials	class problem
26	3	Ability to prepare and deal with aromatic compounds	aromatic compounds,, properties ,reactions, preparation	Lectures Example classes tutorials	class problem, quiz
27	3	Understanding the hetero compounds	hetero compounds, all types and reactions	Lectures Example classes tutorials	class problem
28	3	Understanding the hetero compounds	hetero compounds, all types and reactions	Lectures Example classes tutorials	class problem
29	3	Ability to determine the organometallic compounds	organometallic compounds and its reactions	Lectures Example classes tutorials	class problem
30	3	Ability to determine the organometallic compounds	organometallic compounds and its reactions	Lectures Example classes tutorials	class problem

12. Infrastructure	
<p>Required reading:</p> <ul style="list-style-type: none"> · CORE TEXTS · COURSE MATERIALS · OTHER 	<p>Lectures</p> <p>Morrison, R. Thornton; Boyd, R. Neilson "Organic Chemistry" 6th edition, 2001</p> <p>Skoog, D.A., West D.M., Holler F.J., and Crouch S.R. "Fundamentals of analytical chemistry", 8ed edition, Brooks/Cole Cengage Learning. 2004</p> <p>OTHER</p> <p>Brown, LeMay, Bursten, "Chemistry the central science", 8th edition</p> <p>Janice Gorzynsky Smith, "Organic chemistry" 1st edition, (2008)</p> <p>Y. Anjaneyulu, K. Chandrasekhar "Analytical chemistry", (2006)</p> <p>Prentice-Hall of India private limited New Delhi "Organic chemistry" (1971)</p> <p>اسس الكيمياء التحليلية . د. مؤيد العبايجي ود سعد ثابت 1986</p> <p>الكيمياء العضوية جزئين . د. صائبة صادق الحسن و د. محمد جواد الحبيب</p> <p>المبادئ الاساسية في الكيمياء التحليلية . د. نجا جمعة صالح .. جامعة تكنولوجيا بغداد 1991</p>
Special requirements (include for example workshops, periodicals, IT software, websites)	<p>1- laboratory</p> <p>2- websites</p>
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 principle of general chemistry
Minimum number of students	Non
Maximum number of students	Non