TEMPLATEFORCOURSESPECIFICATION

HIGHER EDUCATIONPERFORMANCEREVIEW: Chemistry

COURSE SPECIFICATION

ThisCourseSpecificationprovidesaconcisesummary ofthemainfeaturesofthe course and the learning outcomes that a typical student might reasonably be expected toachieve and demonstrateif he/she takesfulladvantage of thelearning opportunities thatare provided.It shouldbe cross-referencedwith theprogrammedspecification.

1. TeachingInstitution	University of Technology
2. UniversityDepartment/Centre	Chemical Engineering Department
3.Course title/code	Chemistry / CE122
4.Program (s) towhichitcontributes	
5.Modesof Attendance offered	Fall time
6.Semester/Year	2 semester/year
7. Number ofhourstuition(total)	3
8. Dateof production/revision of this Specification	
9. Aimsof the Course	
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 instruments 5. Introduce and develop an understanding the basic concepts of organic chemistry 6. understanding the concepts of organic reactions for analysis of unit processes Students will learn the polymeric chemistry	

10·LearningOutcomes, Teaching,LearningandAssessmentMethod

A-Knowledge andUnderstanding

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 the compounds quantitatively and qualitatively with all calculations needed the reaction in feed and product which is 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 reactions 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

TeachingandLearningMethods

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

Assessmentmethods

Midterm exams ,Final exam ,Quizzes, homework, partial test (Oral questions :- multiple choice ,alternative response), Open questions that have a definite answer

C. ThinkingSkills

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. Generaland Transferable Skills (other skillsrelevanttoemployabilityand personal development).

D1.Becreative, 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/Moduleor TopicTitle	Teaching Method	Assessment Method
1st 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 prepareAliphatic compounds	Aliphatic compounds, alkane, alkene, alkyne, properties, preparation and reactions	Lectures Example classes tutorials	class problem
19	3	Understanding the properties and ability to prepareAliphatic 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	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	Ability to determine the organometallic compounds	organometallic compounds and its 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	Understanding the concept of polymers	Polymer classification, polymerization process and application	Lectures Example classes tutorials	class problem

12.Infrastructure

Requiredreading:
·CORETEXTS
·COURSEMATERIALS
·OTHER

Lectures
W.C. pierce, E.L. Haenisch, "Quantitative Analysis" 4th edition, 1958
Morrison, R. Thornton; Boyd, R. Neilson "Organic Chemistry" 6th edition, 2001
Skoog, D.A., West D.M., Holler F.J., and Crouch S.R. “Fundamentals of analytical chemistry”, 8ed edition, brooks/Cole Cengage Learning. 2004
اسس الكيمياء التحليلية . د. مؤيد العبايجي ود سعد ثابت 1986
الكيمياء العضوية جزئين . د. صائبة صادق الحسن و د. محمد جواد الحبيب
المبادئ الاساسية في الكيمياء التحليلية .د نجاة جمعة صالح ..جامعة تكنولوجيا بغداد 1991

Specialrequirements(include for example workshops,periodicals, ITsoftware, websites)	1- laboratory 2- websites
Community-based facilities (include forexample,guest Lectures, internship,field studies)	Field trips

13. Admissions	
Pre-requisites	Before under taking this module the student should have undertaken the principle of general chemistry
Minimumnumber ofstudents	Non
Maximumnumber ofstudents	Non