



وزارة التعليم العالي والبحث العلمي
جهاز الاشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الاكاديمي
قسم الاعتماد الدولي

وصف مقرر مادة الكيمياء العامة

الجامعة: جامعة الفرات الاوسط التقنية
الكلية المعهد: المعهد التقني الطبي الكوفة
القسم العلمي: التحليلات المرضية
المادة: الكيمياء العامة
تاريخ ملء الملف:

التوقيع :
اسم رئيس القسم : ا.م.د. ابتسام فارس
التاريخ:

التوقيع :
معد المقرر:
التاريخ:

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 programmed specification.

1. Teaching Institution	Al-Furat AL-Awsat technical university
2. University Department/Centre	Medical Technical Institute
3. Course title/code	
4. Programme(s) to which it contributes	Weekly contribute
5. Modes of Attendance offered	
6. Semester/Year	Semester for chemistry and annual for clinical chemistry
7. Number of hours tuition (total)	180 hrs.
8. Date of production/revision of this specification	
9. Aims of the Course	
	Aims to prepare graduates eligible to work in the field of chemical analysis in ministry of health . The study is designed to teach students the fundamentals of analytical chemistry and biochemistry.

10. Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

- A1. Analysis methods.
- A2. Understand how to deal with instruments & apparatus used.
- A3. Understand how to compare unknown results with standard values.
- A4. Learn essentials about analytical and biochemistry.
- A5.
- A6 .

B. Subject-specific skills

- B1. Apply the laboratory works in its specialization .
- B2. Analyzed all the tests .
- B3. To run and maintain lab. Equipments used.

Teaching and Learning Methods

Lectures ,practice ,training and summer training , power point representations..etc.

Assessment methods

Oral exam . written exam .mid exam .final exam . in addition to daily assessment ,absences , and seminar.

C. Thinking Skills

- C1. Internet survey.
- C2. Discussions.
- C3. Follow up of graduate students.
- C4. Programs for graduate students after graduation ..

Teaching and Learning Methods

Lectures, theoretical and practical.
 Reality visiting.
 Power point illustrations
 Meetings and discussions.

Assessment methods

- 1- A questionnaire .
- 2- Programs conferences.
- 3- Meetings and discussions.

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

- 1- internet use
- 2- student use methods of researches.
- 3- Follow up of graduate students.
- 4- Programs for graduate students after graduation

Theoretical syllabus	
Analytical chemistry	
Lect. No.	Topics
1.1	Atom , elements, radio isomers pollution with radio isomers , pollution with elements .
1.2	Relation between atoms, molecules ,energy, according to the new theory of atom.(Debroley equation). Matter , classification.
2.1	Chemical bonds, covalent ,Ionic , coordination , hydrogen.
2.2	Methods of analysis . qualitative and quantitative ,statistical methods of quantitative analysis, errors in

	quantitative analysis .
3.1	Methods of expressing concentration of solution , Molar solution ,normal solution .
3.2	Preparation of molar solution , dilution ,questions.
4.1	Percentage composition, part per million.
4.2	Chemical equilibrium, ionization, constant of water (PH and POH).
5.1	Ionization of weak electrolyte . calculation of PH of weak acids and weak bases.
5.2	Buffer solutions , classification .
6.1	Calculation of buffer solutions .
6.2	Uses of buffer solutions.
7.1	Volumetric analysis , classification , standard solution , examples .
7.2	Neutralization reactions .
8.1	Oxidation ,reduction reactions . examples.
8.2	Precipitation reactions.
9.1	Theory of indicators , reaction , properties ,examples.
9.2	Types of indicators.
10.1	Questions ,homework
10.2	Principles of colorimetry .
11.1	Beer-lambert law .
11.2	Standard solution/calibration curve.
12.1	Instruments of colorimetry.
12.2	Examination.

Organic chemistry

13.1	Introduction to organic chemistry organic compounds present in nature. Pollution with organic compounds.
14.1	Hydrocarbons, classification ,alkanes , alkenes, alkynes, benzene example , nomenclature, properties.
14.2	Alcohols , classification, and properties , Aldehydes, classification preparation, properties.
15.1	Ketones ,classification , properties ,preparation .
15.2	Carboxylic acids , classification , properties, preparation.
16.1	Amines , classification , properties , preparation.
16.2	Examination.

Biochemistry

17.1	Biochemistry
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17.2	Biochemistry compounds, cell
18.1	Chemical composition of human being .
18.2	Carbohydrates, classification ,its presence ,its importance,
19.1	General properties of monosaccharide's.
19.2	Important monosaccharide's. Derivatives of monosaccharide's, reducing sugars. Its presence in human body , its reactions
20.1	Disaccharides and polysaccharides properties, reactions occurrence.
20.2	Lipids ,classification ,properties.
21.1	Fatty acids ,properties , reactions .
21.2	Essential fatty acids and unessential fatty acids . properties, reactions.
22.1	Hydrogenation and Rancidity.
22.2	Iodine no. measurement of degree of saturation.
23.1	Unsaturated fatty acids , properties its importance,
23.2	Compound lipids ,derived lipids cholesterol, its existence.
24.1	Proteins ,general properties ,peptide bond.
24.2	Amino acids , properties , occurrence.
25.1	Amino acid ,classification ,reactions.
25.2	Classification of proteins ,chemical properties of proteins.
26.1	Separation of organic compounds by chromatography.
26.2	Separation of amino acids.
27.1	Examination
27.2	Examination
28.1	Nucleic acids, nucleoprotein, analysis of nucleoprotein.
28.2	Nitrogenous bases, chemical composition.
29.1	Enzymes ,nomenclature, classification.
29.2	Enzymes, properties , factors in fleecing the rate of enzymatic reactions.
30.1	Enzyme ,inhibitions.
30.2	Hormones , properties.
31.1	Classification of hormones.
31.2	Protein hormones , non protein hormones.
32.1	Vitamins ,water soluble vitamins, classification, occurrence, deficiency.
32.2	Fat soluble vitamins , classification, occurrence,

	deficiency.
33.1	Complete of vitamins.
33.2	Criatine ,criatinine.

Practical syllabus	
Lab. No.	Topics
1.1	Type of glassware used.
1.2	Cleaning solutions, safety.
2.1	Cation analysis.
2.2	Unknown of cations. quiz.
3.1	Anion analysis.
3.2	Unknown of anions. Quiz.
4.1	Balance, preparation of percentage solutions.
4.2	Completion of preparation of percentage solutions.
5.1	Quiz, in balance and percentage solutions.
5.2	Preparation of normal solution and molar solution.
6.1	Dilution of concentrated solution.
6.2	Quiz, examination in dilution.
7.1	Buffer solutions, preparation PH.
7.2	PH. Meter.
8.1	Preparation of solution of known PH.
8.2	Quiz , unknown.
9.1	Volumetric analysis , acid-base. Titration. Preparation of standard borax. Solution
9.2	Quiz, unknown .
10.1	Oxidation – reduction reaction. Preparation of potassium permanganate.
10.2	Quiz, unknown.
11.1	Determination of ferrous ion. Percentage in copper sulphate . solution. Precipitation reactions.
11.2	Quiz, unknown.
12.1	Colorimetry , photometers.
12.2	Application of Beer's law.
13.1	Quiz. Unknown
13.2	Practical examination
14.1	Practical examination
14.2	Separation of organic compounds. Purification of organic compounds. Filtration, extraction.
15.1	Crystallization, sublimation ,distillation.
15.2	Physical properties of organic compounds. Melting points

	and boiling points.
16.1	Quiz, unknown.
16.2	Reactions of alcohols.
17.1	Quiz , unknown .
17.2	Reaction of aliphatic aldehydes.
18.1	Reaction of aromatic aldehydes.
18.2	Reaction of ketones.
19.1	Quiz , unknown.
20.1	Reaction of carboxylic acids.
20.2	Reaction of carboxylic acids.
21.1	Schme for identification of carboxylic acids.
21.2	Quiz , unknown.
21.2	Practical examination
22.1	Practical examination
22.2	Reactions of monosaccharide's ,fehling, Benedict, barfood ,selivanof,Molish tests.
23.1	Reactions of reducing disaccharides.
23.2	Reactions of non-reducing disaccharides.
24.1	Chromatography
24.2	Chromatography
25.1	Phenyl hydrazine. Test. Of mono-and-disaccharides.
25.2	Reaction of polysaccharides.
26.1	Scheme of identification of saccharides.
26.2	Quiz, unknown.
27.1	Lipids, solubility, reactions of fatty acids ,hydrolysis of fats and oils.
27.2	Test for saturation in fatty acids.
28.1	Saponifications ,emulsification.
28.2	Quiz, unknown.
29.1	Proteins, properties ,Albumine.
29.2	Peptone , metaprotein.
30.1	Casinogen
30.2	Quiz and practical examination.
31.1	Quiz and practical examination.
31.2	Urea and uric acid.
32.1	Test for urea and uric acid in urine.
32.2	Scheme for identification for proteins.
33.1	Quiz , unknown
33.2	Scheme for identification of sugars , lipids,proteins.

13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	