TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION – analytical chemistry – first year

This course covers all details of Quantitative and volumetric analysis of all kinds. It discusses all experiments required to test All kinds of titration

1. Teaching Institution	Al-Ayen University/Petroleum Engineering College
2. University Department/Centre	Petroleum Engineering
3. Course title/code	**analytical chemistry**
4. Modes of Attendance offered	classes+ Practical at the Lab
5. Semester/Year	First semester/ 2022-2023
6. Number of hours tuition (total)	4 hours (2 theoretical +2 practical)hours
7. Date of production/revision of this specification 9 / 10 / 2022	

8. Aims of the Course :: This course aims to introduce the first-stage student to the definition of analytical chemistry and its sections of quantitative and qualitative analysis as well as the sections of quantitative analysis and to explain the experiments related to this part of the types of chemical analyzes and their benefits

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals .

A1. Developing the skill of conducting experiments, extracting results, presenting them in the form of Mathematical calculations,

A2. Encourage teamwork in the laboratory work environment in the form of groups

A3. Develop a spirit of creativity in the method of conducting experiments

A4.

B. The skills goals special to the course.

B1. Contributing in new ideas creation for development devices used in experiments

B2. Experience of manufacturing devices that simulate the work of approved standard devices

Teaching and Learning Methods

1-lectures
2- Completing experiments in laboratories
3- Scientific discussions and dialogues and asking questions
4- Completing tasks by student work teams in the laboratory
5-Discuss laboratory test reports

Assessment methods

- Monthly exams
- daily exams
- Homework
- Evaluating the performance in the laboratory and evaluating the percentage of completion of laboratory tasks

C. Affective and value goals

C1. Develop students' ability to conduct reliable experiments with results for institutions and companies

C2.Introducing the idea of scientific research and conducting postgraduate projects based on equipment in the laboratory

Teaching and Learning Methods

1-lectures
2- Completing experiments in laboratories
3- Scientific discussions and dialogues and asking questions
4- Completing tasks by student work teams in the laboratory
5-Discuss laboratory test reports

Assessment methods

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1. Monthly exams
D2. Homeworks
D3. Final exam
D4.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2+2lab	**Chemical analysis**	**Definition of chemical analysis and its divisions**	Presentation + dialogue and discussion	Homework + report
2	2+2lab	**Quantitative analysis applications**	**Analysis of liquid samples**	Presentation + dialogue and discussion	Homework + report
3	2+2lab	**Quantitative analysis**	**volumetric analysis**	Presentation + dialogue and discussion	Homework + report
4	2+2lab	**Acidity and basicity function**	**Strong acids and bases**	Presentation + dialogue and discussion	exam
5	2+2lab	**Acidity and basicity function**	**Weak acids and bases**	Presentation + dialogue and discussion	Homework + report
6	2+2lab	**Back titration**	**dissociation constants**	Presentation + dialogue and discussion	Homework + report
7	2+2lab	**titration**	**Volumetric analysis**	Presentation + dialogue and discussion	Homework + report
8	2+2lab	Acid-base titration	Preparation and Standardization of an Acid and base	Presentation + dialogue and discussion	exam
9	2+2lab	Acid-base titration	Determination of the normality of 0.1N NaOH solution	Presentation + dialogue and discussion	Homework + report
10	2+2lab	Acid-base titration	Determination of Acetic Acid Content of Vinegar	Presentation + dialogue and discussion	Homework + report
11	2+2lab	Oxidation-Reduction Titrations	Standardization of potassium permanganate $KMnO_4$	Presentation + dialogue and discussion	Homework + report
12	2+2lab	Precipitation titrations	Determination of Chloride by the Mohr Method	Presentation + dialogue and discussion	Homework + report

13	2+2lab	Complexo metric Titration	Determination of total hardness in tap water	Presentation + dialogue and discussion	Final Exam

11. Infrastructure	
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1. Books Required reading:	(**Analytical chemistery..skoog)**
2. Main references (sources)	(Gary D. Christion , Purnendu K. Dasgupta ,"Analytical Chemistry ", Wiley ,seventh edition, (2014)
3-Recommended books and references (scientific journals, reports	(Najib Al-Sabea , " Practical analytical chemistry " university of Baghdad,(2011)
B-Electronic references, Internet sites…	F. P. Treadwell , " Analytical Chemistry" , Polytechnic Institute of Zurich , (1903)

12. The development of the curriculum plan
Using the published research from ASTM accredited international institutes Access to research related to the development and modification of devices, methods of use and all updated options