

<b>University of Petra</b>		
<b>Faculty of Art &amp; Science</b>		كلية الآداب والعلوم
<b>Department of Chemistry</b>		قسم الكيمياء

## Course Syllabus

**Year : 2019 / 2020**

**Semester: Second**

Course No.	Course Title	Prerequisite	Co-requisite	Credit Hours Lectures /Lab.	ECTS: European Credit Transfer System
101243	Analytical chemistry Laboratory	101102	101241	1	4

Instructor Name	E-mail	Office No.	Office ext.	Office Hours
Amal almaareef	aalmaareef@uop.edu.jo	7214	7214	Thu, Tue, 12:00 – 13:00 Mon., 10:00 – 1:00

<b>Coordinator's Name:</b> (if applicable)	
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<b>Short Course Description</b>	<p>A practical course of quantitative analysis by using classical methods such as adiffernt types of volumetric and gravimetric analysis of lab and real samples.</p> <p>This course is designed to augment Analytical chemistry 101241.</p>
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### Course Objectives

- To provide practical experience in obtaining accurate, precise chemical methods using different classical methods.
- Evaluate, interpret and synthesis of chemical information and data.
- To instill in students a sense of enthusiasm for analytical chemistry, an appreciation of its application in different contexts and to involve them in an intellectually stimulating and satisfying experience of learning and studying.

**Course Intended Learning Outcomes (ILOs) and their Alignment with Program ILOs, Teaching and Learning Methods, and Assessment Methods:**

Upon successful completion of this course, students are expected to achieve the following learning outcomes:

Course ILOs	Program ILOs	Teaching and Learning Method	Assessment Method
<b>Knowledge (K)</b>			
Describe the principles of quantitative and qualitative chemical analysis using conventional methods and instrumental techniques	K3	Lectures & make experimental	Reports, discussion, exams, and homework
<b>Intellectual Skills (I)</b>			
Estimate chemical data by performing calculations related to all experiments mentioned in the laboratory manual.	I2	Lectures & make experimental	Reports, discussion, exams, and homework
<b>Practical skills (P)</b>			
To develop a number of students skills like solution preparation, proper use of laboratory tools and apparatus, quantitative wet chemistry techniques, the assessment and interpretation of data.	P3	Lectures & make experimental	Reports, discussion, exams, and homework
Apply different methods of quantitative analysis. Use of laboratory equipment and standard procedures & safely.	P1	Lectures & make experimental	Reports, discussion, exams, and homework
<b>Transferable Skills (T)</b>			
Communication skills, covering both written and oral communication.	T1	Lectures & make experimental	Reports, discussion, exams, and homework

**Course Schedule:**

Week	Topic Details	Course ILO number	Reference
1	<i>Safety and Laboratory Rules</i> Explain the safety and laboratory rules which the student dealt with.	P1& T1	Laboratory Manual
2	Calibration of volumetric glasswares [Burette and pipette]	K1& P2 P1& T1	Laboratory Manual
3	Statistical handling of data	K1& P2 P1& T1	Laboratory Manual
4	Preparing and Diluting Solutions	K1& P2 P1& T1	Laboratory Manual
5	Titrimetric methods of analysis Acid - base Titration: <ul style="list-style-type: none"><li>➤ Standardization of acid solution [HCl]</li><li>➤ Standardization of NaOH solution against the HCl solution</li></ul>	K1& P2 P1& T1	Laboratory Manual
6	Applications of Neutralization titration in aqueous Media <ul style="list-style-type: none"><li>➤ Determination of phosphoric acid in commercial acid</li><li>➤ Determination of the molar mass of an unknown monoprotic acid</li></ul>	K1& P2 P1& T1	Laboratory Manual
	<b>Midterm Exam</b> Theoretical Exam involving the first 5 experiments.		
7	Compleximetric titrations (Titration with EDTA)	K1& P2 P1& T1	Laboratory Manual
8	Precipitation Titrations: <ul style="list-style-type: none"><li>➤ Mohr's method.</li><li>➤ Fajan's method.</li><li>➤ Volhard's method.</li></ul>	K1& P2 P1& T1	Laboratory Manual
9	Redox Titration (Iodine Titration)	K1& P2 P1& T1	Laboratory Manual
10	Gravimetric method Gravimetric determination of sulfate	K1& P2 P1& T1	Laboratory Manual
11	Determination of calcium by quantitative precipitation and titration.	K1& P2 P1& T1	Laboratory Manual

### Assessment Methods and Grading System:

Assessment method	Grade	Comments
Midterm Exam	30	
Reports	20	
Evaluation	10	
Final Exam	40	
<b>Total</b>	<b>100</b>	

### Learning References:

<b>1- Textbook (s):</b>
Manual of analytical chemistry laboratory 1.
<b>2- References:</b>
Quantitative chemical analysis, Daniel C. Harris, Freeman, 8 <sup>th</sup> edition, 2010
Analytical chemistry, Gary. D. Christian, 5 <sup>th</sup> edition, John Wiley and sons, 2005
<b>3- Other Resources:</b>
<<Labs, computer resources, lecture rooms needed for the course>>

### Course Policies<sup>1</sup>

- Attendance Policy: University regulations apply to attendance.
- Academic Honesty: Academic dishonesty is an unacceptable mode of conduct, and will not be tolerated in any form at University of Petra. All persons involved in academic dishonesty and plagiarism in any form will be disciplined in accordance with University rules and regulations.

Approved by	Name	Date	Signature
Coordinator of Curriculum Committee	Dr. Abdelmnim Altwaiq	24/10/2019	
Faculty Dean/ Head of Department	Prof. Rami Abdel Raheem	24/10/2019	

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<sup>1</sup> Additional information may be added in this section according to the nature of the course.