



The Hashemite University
Faculty of Science
Course Description

Department: Chemistry.	
Year : 2016/2017	Semester : 2nd Summer Semester

Course Information	
Course Title	Special Topics – Electroanalytical Chemistry
Course Number	0103497.
Course Credits	3.
Course Time	9:20 – 10:30.
Instructor	Dr. Ayman A. Issa.
Office Location	Chem. 208.
Office Hours	Daily: 10:30-11:00
E-mail	aymani@hu.edu.jo

Text Book	
Title	Principles of Instrumental Analysis.
Author(s)	Skoog, Holler, and Nieman.
Publisher	Saunders College Publishing.
Edition and Year	6 th Edition, 2007
References	<ol style="list-style-type: none">1. Bard, A and Faulkner L., <i>Electrochemical Method: Fundamentals and Applications</i>, Wiley and Sons, NY, 2nd Ed., 2001.2. Brett, C. and Brett, M., <i>Electrochemistry: Principles, Methods, and Applications</i>, Oxford Univ. Press, Oxford, 1993.3. Any library book related to electrochemical analysis and electrochemistry.

Evaluation Policy		
Assessment Type	Expected Date	Weight
Mid-Term Exam	Aug. 16, 2017	35%
Homeworks and Quizzes	Every Lecture	15%
Report – Project	Deadline: Aug. 24, 2017	10%
Final Exam	Sep. 10 – 14, 2017	40%

Notes:

- All homeworks **MUST** be submitted via **e-mail** within a maximum of **THREE DAYS** after finishing the concerned chapter/topic, **unless you have been told otherwise.**
- Absence from mid-term exam must be followed by an acceptable excuse; where a **Make-up exam** will be held. Otherwise, the grade of **ZERO** will be given.



Teaching and Learning Methods

Lectures, using overhead projector and LCD projector (data show).

Discussion lectures will be given after each chapter/topic.

Quizzes (oral and written) will be given during lectures and after each chapter.

Homeworks are required from each student and will be submitted and graded via *e-mail*, unless told otherwise. Subject in email should contain student's name, number, and homework number.

Textbook, Lectures, Questions, Final Answers, References, Grading and other documents are found in my website:

<http://staff.hu.edu.jo/aymani>

Course Contents

Topics	Text-Book Homework questions
Introduction and Basic Concepts of electroanalytical chemistry: Oxidation Reduction reactions, electrochemical cells and thermodynamics, electrode potentials, introduction to the double layer theory and mass transfer mechanisms, and polarization.	<u>HW 1</u> Chapter 22: <u>8c, 9, 17.</u>
Potentiometric Methods: Cells, reference electrodes, indicator electrodes, and potentiometric titrations.	<u>HW 2</u> Chapter 23: <u>17, 23, 25b.</u>
Coulometric Methods: Electrolysis, potentiometric coulometry, and coulometric titrations.	<u>HW 3</u> Chapter 24: <u>4, 8.</u>
Voltammetric Methods: Cells, working electrodes, Linear scan voltammetry, rotating disk electrodes, polarography, cyclic voltammetry and anodic stripping techniques.	<u>HW 4</u> <u>optional</u> Chapter 25: <u>5, 10, 11.</u>
Modified Electrodes: An introduction to modified electrodes. Some real applications of platinum-modified electrodes.	---
Chronoamperometry: An concise introduction to chronoamperometry and chronocoulometry.	---
Kinetics of Electrode Reactions: Electrochemical kinetics, electrified interfaces and the double layer theory, Mass transport.	---

Good Luck!