

EASTERN MEDITERRANEAN UNIVERSITY
DEPARTMENT OF CHEMISTRY

COURSE CODE	<i>CHEM112</i>	COURSE LEVEL	<i>Freshman</i>
COURSE TITLE	General Chemistry	COURSE TYPE	Faculty Core
CREDIT VALUE	(4,2) 4	ECTS VALUE	6
PREREQUISITES	None	COREQUISITES	None
DURATION OF COURSE	One semester	Semester and year	SPRING 2022-23

COURSE WEB PAGE	<p>You will have access to the class material on the course link which is available on Distance Learning Institute web page (http://lms.emu.edu.tr). We will shortly refer to it as the <i>Moodle</i> page. You will be able to reach</p> <ul style="list-style-type: none"> - A copy of the course outline - Lecture presentation slides (Lecture notes) - General Chemistry Laboratory Booklet - Answer keys of quizzes and exams - Past exam papers - Lab and Tutorial schedules - Announcements 				
	Group	Name	e-mail	Office	Telephone
<i>Instructor</i>	1	Elvan YILMAZ	elvan.yilmaz@emu.edu.tr	AS229	1086
<i>Responsible Assistant</i>	1	Namık Refik KERKÜKLÜ	namik.kerkuklu@emu.edu.tr	AS225	1064

CATALOGUE DESCRIPTION

Intermolecular Forces, Liquids and Solids; Solutions; Chemical Kinetics; Chemical Equilibrium; Acids and Bases; Aqueous Ionic Equilibrium; Free Energy and Thermodynamics; Electrochemistry.

AIMS & OBJECTIVES**(Relationship of Course to Program Outcomes)**

This course is the second component of the two-semester General Chemistry course for chemistry and molecular biology and genetics students. The course is aimed at providing the student with

- an adequate background in fundamentals of chemistry
- an understanding of chemical concepts,
- critical and analytical thinking skills to draw relationship between chemical concepts,
- systematic problem-solving skills through conceptual and numerical problems,
- scientific literacy and awareness to establish connections between chemistry and real life or their major field of study
- basic chemistry laboratory skills.

LEARNING OUTCOMES

- Make a connection between molecular geometry, intermolecular forces and physical properties
- Recognise the components of a solution, understand the dissolution and solubility concepts
- Be able to express solution concentration
- Describe and calculate colligative properties
- Be able to calculate the rate of a chemical reaction, understand the effect of concentration and temperature on the reaction rate
- Be able to use the integrated rate law
- Understand the concept of chemical equilibrium and Le Chatelier's principle
- Be able to express the equilibrium constant
- Define acids and bases and be able to calculate pH of a solution
- Distinguish between strong acids/ bases and weak acids/bases
- Calculate acid and base dissociation constants
- Become familiar with the buffer solution concept
- Grasp the chemical potential concept
- Understand spontaneity of chemical processes, entropy and the second law of thermodynamics
- Describe heat transfer and entropy changes
- Calculate Gibbs free energy, free energy changes and entropy changes in chemical reactions
- Be able to balance oxidation-reduction reactions
- Calculate standard potentials for electrochemical cells using half-reactions
- Relate cell potential, free energy and the equilibrium constant
- Use symbols and units correctly; and formulate appropriate mathematical and chemical equations for solving problems
- Apply the theoretical concepts and methods of chemistry covered in this course to solve problems
- Use dimensional analysis method for solving numerical problems
- Use efficiently and effectively a variety of printed and electronic text, material (including the textbook) relevant to the course
- Handle chemicals properly, perform experiments as a team safely, and write lab reports
- Use good scientific English for written and oral communication

ASSESSMENT (Exams & Home-works) (See also Grading Criteria)

Exams:

- There will be **two midterm exams**, and **one final exam**. Final exam will include questions from all topics covered in the whole semester. There will be no questions from the lab experiments in midterm and final exams.
- All students should have a non-programmable scientific calculator, which can be used in exams. Mobile phones and tablets are not allowed in the exams. You may not use them as calculator.
- Students can see their papers in the first 10 days following the announcement of results, but not later than that.
- All assessment (including lab report and lab exams) marks will be announced via the student portal; they will not be announced on notice boards or elsewhere.
- Exams regarding the lab sessions are explained in the Laboratory section of this course outline.

Make-up Exams

Caution:

- We strongly recommend the student not to miss exams given on the regularly scheduled dates.
- Students having not attended the **Midterm** or **Final** exams are entitled to enter the Make-up Exam. **One CAN NOT sit for the make-up exam to improve his/her already existing regular exam mark.**
- There will be a **single make-up session** with different question sets for midterm and final exams. **You may make up either the midterm or the final exam.**
- The date will be right after the “Final Exams” period. It will be announced on the course web page.
- There will be **no make-up exam for quizzes, lab quizzes.**
- No medical report is needed for the make-up exam.
- No application is needed to sit in the make-up exam.
- There will be no make-up of make-up exams.
- Not attending both midterm and final exams, including make-up exams will result in NG grade.

Objections:

According to EMU by-laws, objections should be made within 10 days of announcement of marks. Objections to any grade must first be made to the instructors. If still unsatisfied students may petition the head of department.

Method of Assessment:

Midterm I	22.5%
Midterm II	22.5%
Laboratory work	15%
Final	40%

Passing **old lab marks (6/15)** of repeating students are transferrable; therefore, they don't have to repeat the lab work.

ATTENDANCE

Lectures:

- The students are expected to attend all lectures. Less than 50% attendance will result in “NG” grade. (See the Grading Criteria).
- Attendance is taken regularly. The instructor may take the attendance in the first or the second hour of a two-period session.
- Each student can follow his/her attendance records from the on-line attendance follow-up system in portal.

Lab sessions:

- Missing 2 or more experiments out of 4 results in failure from Chem112 with an NG grade.

LABORATORY RULES (Some of the following rules may not apply to online experiments)

- Laboratory work is compulsory.
- Four experiments will be done during the semester. **Missing two or more experiments will result in failure in CHEM112 with an NG grade.** In other words, you **must perform at least 3 experiments.**
- Students who are late by 10 or more minutes will NOT BE ALLOWED in to the LAB.
- Students must attend lab only on the dates allocated to their group.
- Calculators are allowed and necessary.
- Students are allowed to the lab after signing a statement of confirmation that they have read and understood the lab safety rules.
- Students are not allowed to the lab without a lab coat. Lab coats must be always worn in the lab. Lab coats are available in the bookstore or in the shops around the Campus.
- Long hair must be neatly tied up.
- Eating, drinking chewing gum and smoking are hazardous and NOT ALLOWED in the LAB.
- Mobile phones are strictly forbidden and must be turned off.
- There will be a quiz about the experiment to be performed at the beginning of each lab session. Sharing of calculator, pencil or eraser during a lab quiz is NOT ALLOWED. A student caught cheating in the Quiz will have his/her quiz cancelled and receive ZERO marks!
- Each student is expected to submit a lab report after the experiment. No excuses are accepted for late submission.
- Do not leave the lab during lab sessions without informing the Lab teachers.
- There will be a lab final exam at the end of the semester.

<ul style="list-style-type: none"> - Students can make-up only one missed experiment at the end of the semester (See the schedule below). Only Experiment 1 can be taken as an additional lab make-up. - Lab quiz, report and final marks will be announced on the web page of the course. - Rules and regulations are summarised in more detail in the lab manual. Lab assistants will provide further information and guidance. 	
GRADING CRITERIA	
A to F	Letter grades are determined by a “curve system”. No letter-grade templates apply.
NG nil grade	Conditions that will lead to NG grade. i) Not attending any two exams ii) Not attending 2 or more lab sessions iii) Less than 50% attendance (lectures+ lab and tutorial + exams)
Important notice to all students repeating the course for a better grade: Whatever grade you receive at the end of this semester will replace your previous grade.	
TEXTBOOK R. Chang and K.A. J.Overby, Chemistry , Mc Graw Hill International Edition, 13th ed., 2019 (ISBN: 978-1-260-08531-0) Or R. Chang and K.A. J.Overby, Chemistry , Mc Graw Hill International Edition, 14th ed., 2022 (ISBN10: 1260784479) (ISBN13: 9781260784473)	
Important Note: <ul style="list-style-type: none"> - You can buy the book from the online shop of the authorised bookstore (Deniz Shop) https://www.denizshop.com/dau-kitaplari - Please be informed that only e-book will be available. - A registration code can be used by only one student. Never give this code to others. 	
LEARNING / TEACHING METHOD <ul style="list-style-type: none"> - Classroom lectures and tutorials - Biweekly tutorial and lab sessions 	

COURSE CONTENT AND LECTURE SCHEDULE		
Week	Date	Topics
1	1Mar-3 Mar	Intermolecular Forces, Liquids and Solids
2	6 Mar-10 Mar	Intermolecular Forces, Liquids and Solids
3	13 Mar-17 Mar	Solutions
4	20 Mar-24 Mar	Solutions
5	27 Mar-31 Mar	Chemical Kinetics
6	3 Apr- 7 Apr	Chemical Kinetics
7	10 Apr- 14 Apr	Chemical Equilibrium
8	17 Apr- 20 Apr	Acids and Bases -Strong Acids and Strong Bases
9,10	24 Apr-8 May	Midterm Week
11	9 May-12 May	Weak Acids and Weak Bases Polyprotic Acids Lewis Acids and Bases
12	15 May-19 May	Buffer Solutions
13	22 May-26 May	Entropy, Free Energy and Equilibrium
14	29 May-31 May	Electrochemistry
15	5 June -8 June	Electrochemistry
16,17	12 June-26 June	Final Exams

ACADEMIC HONESTY – PLAGIARISM Cheating is copying from others or providing information, written or oral, to others. Plagiarism is copying without acknowledgement from other people’s work. According to university by laws cheating and plagiarism are serious offences punishable by disciplinary committee ranging from simple failure from the exam or project, to more serious action (letter of official warning, suspension from the university for up to one semester). Disciplinary action is written in student records and may appear in student transcripts.
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