

School of pharmacy

Department Medicinal Chemistry

Course title: General Chemistry

Credit (Theory or Practical): 1 Credits (Practical)

Prerequisite: General chemistry (Theoretical)

Responsible Lecturer: Dr.Golsanamlu

Course Lecturers: Dr. Mokhtari, Dr. Asadi, Dr.Golsanamlu

Field of Study: Master of Pharmacy (M-Pharm)

Course Instructor Information

Academic Rank: **Assistant Professor**

Field of Specialization: Medicinal Chemistry

Workplace: Faculty of Pharmacy

Email Address: golsanamlou.z@iums.ac.ir

Course Description:

General Chemistry Lab is a 1-credit practical course held over 32 hours. The objectives of this course are to familiarize students with the principles of laboratory safety, as well as practical topics such as solution preparation, density, viscosity, qualitative analysis of cations and anions, preparation of H₂ O₂ , preparation of bleach, factors affecting reaction rate, determination of water hardness, and molar solubility.

● Course objectives (Competency):

- Introduction with fundamental principles of safety in a chemical laboratory
- Preparing and investigating the chemical properties of certain compounds
- Achieve data recording and communication in experimental procedures and findings.

● Specific Objectives (Core Competency)

- Demonstrate proficiency in using standard laboratory equipment and essential techniques. To develop fundamental hands-on skills, ensuring safe, accurate, and independent work in the

laboratory. Correctly use analytical balances for mass measurements and various glassware for volume measurements.

-Calculate required masses and volumes to prepare solutions of a specific concentration (molarity, mass percent, etc.) and interpret how concentration and solute identity affect measurable physical properties (like density, viscosity, etc.).

-To experimentally explore the principles of chemical kinetics and investigate factors that influence the rate of a chemical reaction.

-Perform qualitative analysis to identify and separate common cationic and anionic species. To apply principles of solubility and precipitation reactions to systematically identify unknown ions in a mixture.

-Determine key water quality parameters, including water hardness and molar solubility, and apply titration and equilibrium concepts to analyze water samples.

Educational Approach:

Virtual approach In-person approach Blended approach

Teaching-Learning Methods (according to the chosen educational approach):

-Interactive Lecture (Q&A, Quizzes, Group Discussion, etc.)

-Observation and experimentation-based learning

Student responsibilities:

- Regular attendance in class and compliance with laboratory rules

- Reviewing the agenda and participating in class discussions

- Performing practical work and submitting a practical work report

-Taking the final exam

Note: Attendance is mandatory for all students. The maximum allowable justified absences are a maximum of **1 session**. Otherwise, the score for that course or section will be considered as zero. Allowed absences are accepted if students bring in documents for that, and the related professor approves them. Acting against absences (either excused or not) will be the decision of the professor and the agreement of the college.

Note: All students in the course must submit the assignments specified by the instructors (project, report preparation, exercise solutions, etc.) by the stipulated deadline.

General Chemistry Course Plan (M-Pharm)

Tuesday 8-10

	Subject	Teaching-Learning method	Lecturer	Date
1	Safety Orientation and Compliance Agreement.	Interactive Lecture Observation and experimentation-based learning	Dr. Mokhtari	28 Oct. 2025
2	Preparation of Buffer and Standard Solutions	Interactive Lecture Observation and experimentation-based learning	Dr. Mokhtari	4 Nov. 2025
3	Measurement of Density and Viscosity of Liquids, and Titration	Interactive Lecture Observation and experimentation-based learning	Dr. Mokhtari	11 Nov. 2025
4	Cation Analysis (Group I Cations and Group III Cations)	Interactive Lecture Observation and experimentation-based learning	Dr. Golsanamlu	18 Nov. 2025
5	Anion Identification (Group 1)	Interactive Lecture Observation and experimentation-based learning	Dr. Golsanamlu	25 Nov. 2025
6	Preparation of H ₂ O ₂ and Investigation of its Properties - Preparation of Bleach and Investigation of its Properties	Interactive Lecture Observation and experimentation-based learning	Dr. Golsanamlu	۲ Dec. 2025
7	Determination of Water Hardness by Titration	Interactive Lecture Observation and experimentation-based learning	Dr. Asadi	9 Dec. 2025
8	Factors Affecting Reaction Rate - Molar Solubility and Common Ion Effect	Interactive Lecture Observation and experimentation-based learning	Dr. Asadi	۱۶ Dec. 2025
9	Final Theoretical and Practical Exam	-	-	۲۳ Dec. 2025

Student Assessment Method:

Type of assessment mentioned: Formative and summative assessment (question and answer each session, class quizzes, midterm exam, and final exam).

Grading contribution of the course instructors:

Professors	Class Activity	Final exam (practical/theoretical)	Sum
Dr Asadi	2	3	5
Dr Mokhtari	3	4.5	7.5
Dr Golsanamlu	3	4.5	7.5

References:

“Chemistry: the molecular nature of matter and change”. Martin S. Silberberg, Patricia Amateis, Virginia Polytechnic. Seventh edition.