

## Learning Outcomes

LO	Description
LO 1	1. Apply the essential facts, concepts, principles and theories in each of the five areas of chemistry (analytical, inorganic, organic, physical, and biochemistry) to solve scientific problems.
LO 2	2. Describe how atomic and molecular structures relate to observable properties and reactivities.
LO 3	3. Follow standard laboratory procedures involved in conducting synthetic and analytical work.
LO 4	4. Keep accurate records of experimental procedures, observations, and data.
LO 5	5. Operate a range of chemical instrumentation for chemical characterization, analysis, and separation.
LO 6	6. Evaluate the risks of chemicals (health, physical, and environmental) and laboratory procedures to mitigate their potential impact.
LO 7	7. Use good laboratory safety and chemical hygiene practices, such as personal protective equipment, disposal practice, etc.
LO 8	8. Formulate and analyze a range of chemical problems concisely.
LO 9	9. Solve chemical problems efficiently and accurately.
LO 10	10. Analyze and interpret experimental data.
LO 11	11. Rationalize trends and make predictions.
LO 12a	12a. Communicate appropriately to a variety of audiences (including chemists and non-chemists): in visual formats
LO 12b	12b. Communicate appropriately to a variety of audiences (including chemists and non-chemists): in written formats
LO12c	12c. Communicate appropriately to a variety of audiences (including chemists and non-chemists): in oral formats
LO 13a	13a. Convey complex technical information (including chemical structures) clearly, concisely, and accurately: in visual formats

LO 13b	13b. Convey complex technical information (including chemical structures) clearly, concisely, and accurately: in written formats.
LO 13c	13c. Convey complex technical information (including chemical structures) clearly, concisely, and accurately: in oral formats.
LO 14	14. Use library resources and databases to retrieve scientific information and publications.
LO 15	15. Critically assess scientific literature for reliability and validity.
LO 16	16. Interpret chemistry-related charts, graphs, diagrams, and chemical structures.
LO 17	17. Carry out research by selecting appropriate topics and procedures.
LO 18	18. Identify areas of chemistry relevant to social and daily life.
LO 19	19. Use a global perspective to contextualize topics in chemistry.
LO 20	20. Work independently and collaborate effectively in groups to achieve a common goal.
LO 21	21. Evaluate their own learning and apply learning and motivational strategies to support independent learning and further studies.
LO 22	22. Demonstrate academic and professional integrity consistent with the ethical standards of the discipline.
LO 23	23. Demonstrate effective time and resource management skills.
LO 24	24. Discuss the principles of green chemistry, chemical toxicity, and environmental sustainability related to chemistry with a general audience.