

Overview of the First Level

The First Level program aims to build a basic foundation for students in general and organic chemical sciences, principles of chemical engineering and calculations, in addition to engineering drawing, manual skills in engineering workshops, and computer applications.

Course and Credit Hour Chart (First Level) Academic Year 2024-2025

Course Code	Course Title	Theory	Practical	Units	Course Type
101CPI	General Chemistry and Industrial Physics	2	3	3.5	Core Major
102CPI	Principles of Chemical Engineering and Calculations	2	2	3.0	Core Major
103CPI	Organic and Petroleum Chemistry I	2	3	3.5	Core Major
104CPI	Engineering and Chemical Drawing	1	3	2.5	Basic Engineering
105CPI	General and Applied Mathematics	3	0	3.0	Basic Requirement
106CPI	Engineering Workshops and Materials Technology	1	3	2.5	Practical Applied
107CPI	English Language and Computer Applications	2	2	3.0	General Requirement

Detailed Course Description - Part One

1. General Chemistry and Industrial Physics (General Chemistry & Industrial Physics) 101CPI | 3.5 Units

Course Objective: Studying atomic structure, chemical bonding, solutions and molarity, in addition to the principles of thermodynamics and the physical properties of fluids and petroleum liquids.

Practical Topics: Volumetric analysis, titration (Acid-Base Titration), density and viscosity measurement of petroleum liquids.

2. Principles of Chemical Engineering and Calculations (Principles of Chemical Engineering) 102CPI | 3.0 Units

Course Objective: Understanding dimensions and aspects of chemical processes, material balance (Material Balance) without and with a chemical reaction, and applying balance in evaporation and mixing units.

Weekly Topics: Units and dimensions, equations of state for ideal and real gases, mass balance in steady-state processes.

Continuation of Detailed Description of First Level Courses

3. Organic and Petroleum Chemistry I (Organic & Petroleum Chemistry I)

103CPI | 3.5 Units

Course Objective: Studying aliphatic and aromatic hydrocarbons, alkanes, alkenes, cyclic compounds, their nomenclature, preparation methods, and direct reactions, focusing on petroleum compounds.

Practical Lab: Simple and fractional distillation, crystallization, measuring melting and boiling points of organic compounds.

4. Engineering and Chemical Drawing (Engineering & Chemical Drawing)

104CPI | 2.5 Units

Course Objective: Learning the basics of engineering drawing, three orthographic views, sections, and drawing chemical and petroleum Process Flow Diagrams (PFD) and Piping and Instrumentation Diagrams (P&ID).

Practical Application: Projection of solid bodies, using engineering drawing software, and drawing symbols of valves, reactors, and distillation towers.

5. General and Applied Mathematics (General Mathematics)

105CPI | 3.0 Units

Course Objective: Equipping the student with mathematical skills in calculus, analytic geometry, vectors, matrices, and their applications in solving chemical problems.

6. Engineering Workshops and Materials Technology (Engineering Workshops & Materials)

106CPI | 2.5 Units

Course Objective: Practical training in plumbing, welding, turning, and benchwork workshops, along with studying the properties of corrosion-resistant materials used in petroleum pipes and tanks.

7. English Language and Computer Applications (English & Computer Applications)

107CPI | 3.0 Units

Course Objective: Enabling the student to use technical and engineering terms in the English language, and using basic computer processing and simulation software.

First Summer Training Requirements

After completing final examinations, first-level students are required to undergo practical summer training for four (4) weeks in approved chemical and petroleum workshops and laboratories to enhance applied skills.