



SARDAR PATEL UNIVERSITY

NAAC 'A' Grade (10-01-2023 To 09-01-2028)

Vallabh Vidyanagar-388120

Gujarat

Academic Program Structure

&

Curriculum

(Aligned with NEP-2020)

[M.Sc., Industrial Chemistry]

NHEQF Level: 6.0/6.5

Entry NHEQF Level	:	5.5/6
Duration	:	Two Years (Four Semesters)
Total Courses	:	24
Total Learning Hours	:	2400
Total Credits	:	88
Total Marks	:	2200

Graduate Attributes (GAs) upon successful completion of the program, graduates are expected to attain the following Graduate attributes.

GA1: Disciplinary Knowledge & Industrial Application

Graduates will possess in-depth knowledge of basics of chemistry and applied industrial aspects, including unit operations, process optimization, and pollution control, pharmaceuticals, chemical processing.

GA 2: Professional Skills & Industrial Compliance

Capable of working in industrial settings, while applying knowledge of Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP), chemical manufacturing processes, and safety standards.

GA 3: Problem Solving & Innovation

Skilled in analysing industrial issues, troubleshooting processes, and applying knowledge to deliver innovative and sustainable solutions, particularly in chemical and materials manufacturing

GA 4: Analytical Skills & Instrumentation Proficiency

Proficiency in using advanced analytical instruments (spectroscopy, chromatography, separation techniques) and interpreting data to make quality control decisions.

Programme Educational Objectives (PEOs): Within 2 years of completion of the programme, graduates will be able to”

PEO1: Strong foundation and in-depth knowledge of basic chemistry and Industrial Chemistry such as organic, analytical, process chemistry with industrial perspective.

PEO2: Empower students to apply chemical principles to real-world industrial processes like pharmaceuticals, petrochemicals, polymers, dyes, and materials.

PEO3: Enable and Train students in modern laboratory techniques, Develop analytical thinking instrumentation, and industrial chemical processes.

PEO4: Foster the ability to design experiments, analyse data, and contribute to research and development in chemical industries.

PEO5: Provide knowledge of process design, scale-up, quality control, safety measures, and environmental regulations in chemical industries.

PEO6: Ethical practices, teamwork, communication skills, and professional responsibility in industrial settings.

PEO7: Prepare students for careers in industries, research laboratory, quality control, academia, or entrepreneurship.

Programme Learning Outcomes (PLOs): “Upon successful completion of the programme, graduate will be able to”

PLO1: Students will acquire comprehensive knowledge and understanding of basic chemistry including organic chemistry, pharmaceutical chemistry, process chemistry and analytical chemistry, green chemistry.to solve challenges within the field.

PLO2: Student will be skilled to Scientifically design, carryout, record and analyse experiment and will be able to solve process related problems logically.

PLO3: Student will be able to create an awareness of the impact of Chemicals on the environment, society, and will be able to find out the green route for the chemical reactions or processes for sustainable development.

PLO4: Students will have a deep comprehension of ethical standards and norms within the field of applied chemistry, demonstrating their knowledge and adherence to professional ethics.

PLO5: Student will be able to modern technology, Instrumentation method for analysing and interpretation of data generated through experimental study.

PLO6: Students will be able to develop ability to design, simulate, and optimize chemical process units and plants using modern tools.

PLO7: Developing new technologies or improving existing ones for enhanced product quality and production efficiency.

Programme Specific Learning Outcomes (PSLOs): Industrial chemistry programs blend chemistry, engineering, and technology to produce professionals capable of working in industries such as petroleum, pharmaceuticals, polymers, Dyes and renewable energy. After completion of two year post graduate programme in Industrial Chemistry student will be able to:

PSO1: Apply fundamental and advanced knowledge of organic, analytical, pharmaceutical, and green chemistry to understand and solve problems related to chemical industries.

PSO2: Demonstrate proficiency in industrial processes and technologies, including chemical manufacturing, energy technology, dyes and oil industries, and the use of common industrial chemicals.

PSO3: Utilize modern analytical and spectroscopic techniques for qualitative and quantitative analysis, ensuring accuracy and reliability in industrial and research laboratories.

PSO4: Incorporate principles of green chemistry and sustainability to design eco-friendly processes, minimize waste, and reduce environmental impact in chemical industries.

PSO5: Ensure adherence to safety, health, and environmental regulations by applying knowledge of industrial safety management, risk assessment, and regulatory practices.

PSO6: Develop problem-solving and research skills to analyse industrial challenges, optimize processes, and innovate solutions in pharmaceuticals, materials, and chemical production sectors.



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NEP-2020 aligned Curriculum with effect from Academic Year 2026-27

[M. Sc. Industrial Chemistry]

Semester-I

Course Type	Course Code	Course Title	Teaching-Learning Scheme		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2S01NCICH01	Pharmaceutical Chemistry-I	4-0-1	120	4	25	25	50	50	100
DSC	P2S01NCICH02	Chemical Technology	4-0-1	120	4	25	25	50	50	100
DSC	P2S01NCICH03	Industrial safety Management – I	4-0-1	120	4	25	25	50	50	100
DSC	P2S01NCICH04	Industrial Chemistry Practical – I	0-8-0	120	4	25	25	50	50	100
DSC	P2S01NCICH05	Industrial Chemistry Practical – II	0-8-0	120	4	25	25	50	50	100
DSE	P2S01NEICH01	Selected Topics in Organic Chemistry- I	2-0-0	60	2	13	12	25	25	50
				600-660	22	138	137	275	275	550

DSC: Discipline Specific Core

DSE: Discipline Specific Elective

L: Lecture

P: Practical

T: Tutorial

FA: Formative Assessment

SA: Summative Assessment



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Semester-II

Course Type	Course Code	Course Title	Teaching-Learning Scheme		Credits	Assessment Scheme & Marks				
			L-P-T	Total Notional Hours		Internal Assessment			External Assessment	Total Marks
						FA	SA	Total		
DSC	P2S02NCICH01	Pharmaceutical Chemistry-II	4-0-1	120	4	25	25	50	50	100
DSC	P2S02NCICH02	Polymer Chemistry	4-0-1	120	4	25	25	50	50	100
DSC	P2S02NCICH03	Industrial safety Management – II	4-0-1	120	4	25	25	50	50	100
DSC	P2S02NCICH04	Industrial Chemistry Practical – I	0-8-0	120	4	25	25	50	50	100
DSC	P2S02NCICH05	Industrial Chemistry Practical – II	0-8-0	120	4	25	25	50	50	100
DSE	P2S02NEICH01	Selected topics in Organic Chemistry- II	2-0-0	60	2	13	12	25	25	50
				600-660	22	138	137	275	275	550

DSC: Discipline Specific Core **DSE:** Discipline Specific Elective **L:** Lecture **P:** Practical **T:** Tutorial
FA: Formative Assessment **SA:** Summative Assessment