M.Sc. Industrial Chemistry
Choice Based Credit System
This course has Two Centric Electives of Specialization:
1. Fine Chemicals (Group A) and 2. Pharmaceuticals (Group B)
Four Semester Course
Course Structure 2015-17

SEMESTER I

Course Code	Title of the Paper (s)	Course Type	L	T	P	Total Credit
IC-101	Analytical Chemistry	Core	3	0	0	3
IC-102	Physical Chemistry	Core	3	0	0	3
IC-103	Organic Chemistry-I	Core	3	0	0	3
IC-104 A IC-104 B	Paints & Pigments Bio-Chemicals	Elective	3	0	0	3
IC-105	Laboratory-I	Core	0	0	3	3
IC-106	Laboratory-II	Core	0	0	3	3
IC-107	Seminar	Core	0	0	1	1
IC-108	Assignment	Core	0	0	1	1
	Total Valid Credits					**20**
IC-109	Comprehensive Viva-voce	Virtual credit				4

Total Credits for First Semester: valid credits + virtual credits = 24

SEMESTER II

Course Code	Title of the Paper (s)	Course Type	L	T	P	Total Credit
IC-201	Chemistry of Natural Products	Core	3	0	0	3
IC-202	Organic Chemistry-II	Core	3	0	0	3
IC-203	Organic Chemistry-III	Core	3	0	0	3
IC-204 A IC-204 B	Polymer Science-I Medicinal Chemistry	Elective	3	0	0	3
IC-205	Laboratory-I	Core	0	0	3	3
IC-206	Laboratory-II	Core	0	0	3	3
IC-207	Seminar	Core	0	0	1	1
IC-208	Assignment	Core	0	0	1	1
	Total Valid credits					**20**
IC-209	Comprehensive Viva-voce	Virtual credit				4

Total Credits for Second Semester: valid credits + virtual credits = 24

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SEMESTER III

Course Code	Title of the Paper (s)	Course Type	L	T	P	Total Credit
IC-301	Spectroscopy	Core	3	0	0	3
IC-302	Unit Operations	Core	3	0	0	3
IC-303 A IC-303 B	Polymer Science-II Medicinal Chemistry-II	Elective	3	0	0	3
IC-304 A IC-304 B	Pesticides Pharmaceutics	Elective	3	0	0	3
IC-305	Laboratory-I	Core	0	0	3	3
IC-306	Laboratory-II	Core	0	0	3	3
IC-307	Seminar	Core	0	0	1	1
IC-308	Assignment	Core	0	0	1	1
	Total Valid credits					**20**
IC-309	Comprehensive Viva-voce	Virtual Credit				4

Total Credits for Third Semester: valid credits + virtual credits = 24

SEMESTER IV

Course Code	Title of the Paper (s)	Course Type	L	T	P	Total Credit
IC-401	IPR, TQM & Technology Management	Core	3	0	0	3
IC-402	Advance Instrumental Techniques	Core	3	0	0	3
IC-403	Organic Chemistry-IV	Core	3	0	0	3
IC-404 A IC-404 B	Petrochemicals, Oils & Soaps Medicinal Chemistry-III	Elective	3	0	0	3
IC-405	Industrial Training	Core	0	0	3	3
IC-406	Project Viva	Core	0	0	3	3
IC-407	Seminar	Core	0	0	1	1
IC-408	Assignment	Core	0	0	1	1
	Total Valid credits					**20**
IC-409	Comprehensive Viva-voce	Virtual credit				4

Total Credits for Fourth Semester: valid credits + virtual credits = 24

Minimum number of credits to be earned for award of Degree: 96

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SEMESTER-I

IC 101 - ANALYTICAL CHEMISTRY

UNIT- 1

Data Analysis

Types of errors, propagation of errors, accuracy and precession, significant figures, least square analysis, average, standard deviation, t test, F test, Q test, standardization of analytical methods.

Titrimetric Methods of Analysis

General concept, stoichiometric calculations, acid-base titrations, titration curves, acid-base indicators, complexometric titration, metal ion indicator, precipitation titrations, adsorption indicators.

UNIT – 2

Gravimetric Methods of Analysis

Principles of gravimetric analysis, formation and properties of precipitates, applications of gravimetric analysis, organic precipitation.

Solvent Extraction

Theoretical principle, classification, factors favoring extraction, extraction equilibrium, instrumentation and application.

UNIT – 3

Ion Exchange Chromatography

Theories, use of synthetic ion exchangers in separation, chelating ion exchange resins, liquid ion exchangers, experimental techniques and applications.

Separation Techniques

Classification of chromatographic techniques, fundamentals of paper, thin layer, column and electrophoresis, ion chromatographic techniques. Application of these techniques in qualitative and quantitative analysis.

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UNIT – 4

Gas Chromatography

Principles, theories, instrumentation and application of GSC and GLC, on line GC/Mass and GC/IR analysis.

HPLC

Principles, instrumentation and role of HPLC in qualitative and quantitative analysis, comparison of GC and HPLC. Application of LC/MS in analysis.

UNIT – 5

Nephelometry and Turbidimetry

Introduction, general principles, instrumentation and application.

Flame photometry

Introduction, theory, instrumentation, interferences and factors affecting flame photometry.

Atomic Absorption Spectroscopy

Theory of atomic absorption spectroscopy, instrumentation, application in quantitative analysis: ICP-AAS.

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