



Department of Chemistry
Indian Institute of Technology Indore

Bachelor of Science (B.S.)
in

**APPLIED & INDUSTRIAL
CHEMISTRY**

(A four-year undergraduate program)

Admission Open
Autumn 2026 onwards



Specialized Areas

AI/ML & Computational Modelling

Molecular Electronics

Chemicals & Pharmaceuticals

Energy & Materials

Highlights

**Flexible multidisciplinary
curriculum with diverse
elective options**

**Strong emphasis on
laboratory and hands-on
learning**

**Multiple specialization
choices based on student
interests**

**Excellent placement
opportunities with leading
companies**

**Admission through
JEE Advanced**

 <https://chemistry.iiti.ac.in/>

 chemistryoffice@iiti.ac.in

 +91-731-660-3340/3415



Dept. of Chemistry, IITI

Course Structure for

Bachelor of Science (B.S.)
in
Applied and Industrial Chemistry

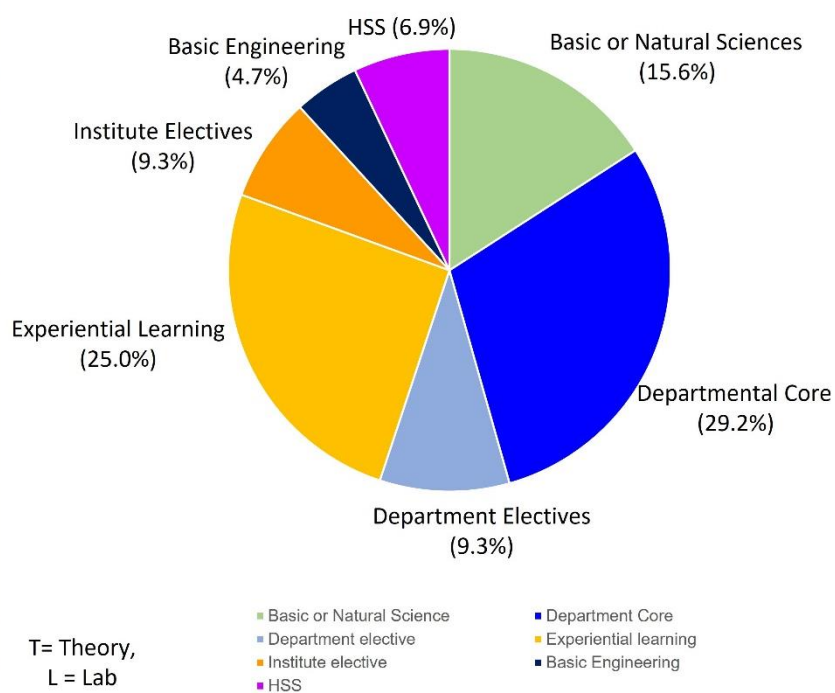
DEPARTMENT OF CHEMISTRY



INDIAN INSTITUTE OF TECHNOLOGY INDORE

Overall Credit Distribution

Classification	Credit Distribution
	Proposed
Basic or Natural Sciences (T+L)	25 (15.6%)
Basic Engineering (T+L)	7.5 (4.7%)
Departmental Core	47 (29.2%)
Department Electives	15 (9.3%)
Institute Elective	15 (9.3%)
HSS	11 (6.9%)
Experiential Learning (Labs, BSP, TRP, Internships, and makerspace)	40 (25.0%)
Total	160.5



1st Year B.S. in
Applied & Industrial Chemistry
Semester I

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
EE 101	Basic Electrical Engineering	1-1-0	2
ME 101	Engineering Mechanics	2-0-0	2
PH 107	Basics of Physics	2-1-0	3
PH 157	Physics Lab-I	0-0-2	1
MA 101N	Calculus-I	3-1-0 (1/2 Semester)	2
MA 103N	Calculus-II	3-1-0 (1/2 Semester)	2
HS 109	Language and Composition	2-0-0	2
HS XXX	Flexible Elective (HSS)	1-0-0	1
IC 152	Makerspace	1-0-6	4
CS 103	Computer Programming	2-0-0	2
IC 151	Computer Programming Lab	0-0-3	1.5
NO 101	National Sports Organization (NSO)	0-0-0	P/NP
	Total		22.5

Semester II

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
BSE 102	Bioscience	2-1-0	3
MA 102N	Linear Algebra	2-1-0 (1/2 Semester)	1.5
MA 104N	Differential Equation-I	2-1-0 (1/2 Semester)	1.5
ES 102	Environmental Studies: Scientific and Engineering Aspects	2-1-0 (1/2 Semester)	1.5
HS 102	Environmental Studies: Social Aspects	2-1-0 (1/2 Semester)	1.5
HS 104	Fundamentals of Economics	2-0-0	2
CH 105	Chemistry	3-0-0	3
CH 155	General Chemistry Lab	0-0-2	1
ZZ XXX	Flexible Elective-I	1-0-0	1
ZZ XXX	Flexible Elective-II	1-0-0	1
HS XXX	Flexible Elective (HSS)	1-0-0	1
NO 102	National Sports Organization (NSO)	0-0-0	P/NP
	Total		18

2nd Year B.S. in
Applied & Industrial Chemistry

Semester III

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ XXX	Course-I Minor Program	2-1-0	3
MA 207 (B)	Differential Equation-II	3-1-0 (1/2 Semester)	2
CH XXX	Probability and Statistics for Chemical Applications	2-1-0 (1/2 Semester)	1.5
CH XXX	Introductory Quantum Chemistry	2-0-2 (1/2 Semester)	1.5
CH XXX	Chemical Thermodynamics	2-1-0	3
CH XXX	Introductory Organic Chemistry	2-1-0	3
CH XXX	Coordination Chemistry	2-1-0	3
CH XXX	Solid State and Material Chemistry	2-1-0	3
CH XXX	Chemical Synthesis Lab	0-0-4	2
CH XXX	Department Elective-I	X-X-X	3
	Total		22/25

Semester IV

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ 2XX	Course-II Minor Program	2-1-0	3
MA 204N	Numerical Methods	2-0-2	3
CH XXX	Chemical Kinetics	2-0-2 (1/2 Semester)	1.5
CH XXX	Main-group Chemistry	2-1-0 (1/2 Semester)	1.5
CH XXX	Biological Chemistry	2-1-0 (1/2 Semester)	1.5
CH XXX	Analytical Chemistry	2-1-0	3
CH XXX	Reaction Mechanism and Retrosynthesis	2-1-0	3
CH XXX	Analytical Chemistry Lab	0-0-4	2
CH XXX	Department Elective-II	X-X-X	3
ZZ 2XX	Institute Elective-I	X-X-X	3
	Total		21.5/24.5

3rd Year B.S. in
Applied & Industrial Chemistry

Semester V

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ 3XX	Course-III Minor Program	2-1-0	3
CH-XX	Stereochemistry and Electrocyclic Reactions	2-0-2	3
CH XXX	Electrochemistry	2-1-0 (1/2 Semester)	1.5
CH XXX	Symmetry and Spectroscopy	2-1-0	3
CH XXX	Organometallic Chemistry of Transition Metals	2-1-0 (1/2 Semester)	1.5
CH XXX	Industrial Chemistry	2-0-2	3
CH XXX	Electrochemistry and Energy Lab	0-0-4	2
CH XXX	Computational Modelling Lab	0-1-2	2
CH XXX	Department Elective-III	X-X-X	3
ZZ 3XX	Institute elective-II	X-X-X	3
	Total		22/25

Semester VI

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ 3XX	Course-IV Minor program	2-1-0	3
CH XXX	Catalytic Transformations	2-1-0 (1/2 Semester)	1.5
CH XXX	Polymer Chemistry	2-1-0 (1/2 Semester)	1.5
CH XXX	Data Analysis and Introduction of AI/ML in Chemistry	2-1-0	3
CH XXX	Spectroscopy for Structure Determination	2-1-0	3
CH XXX	Medicinal Chemistry	2-0-0	3
CH XXX	Drug Design and Discovery Lab	0-0-4	2
CH XXX	Prototype and applied Chemistry Lab	0-0-4	2
CH XXX	Department Elective-IV	X-X-X	3
ZZ 3XX	Institute Elective-III	X-X-X	3
	Total		22/25

**4th Year B.S. in
Applied & Industrial Chemistry**

Semester VII

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ XXX	Course-V Minor Program	2-1-0	3
CH XXX	BS-Project	0-0-32	16
ZZ XXX	Internship Or Professional/Societal-Connect Basket Course	X-X-X	1.5
	Total		17.5/20.5

Semester VIII

Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
CH XX	Translational Research Project	0-0-12	6
CH XXX	Department Elective-V	X-X-X	3
ZZ XXX	Institute Elective-IV	X-X-X	3
ZZ XXX	Institute Elective-V	X-X-X	3
	Total		15

Suggested List of the Elective Courses

Semester	Course Codes	Course Title	Weekly Contact Hours (L-T-P)	Credits
III (DE-I)	CH 2XX	Principles of Optoelectronics	2-1-0 (1/2 Semester)	1.5
	CH 2XX	Environmental Chemistry	2-1-0 (1/2 Semester)	1.5
	CH 2XX	Chemistry of Inner Transition Metals	2-1-0 (1/2 Semester)	1.5
IV (DE-II)	CH 2XX	Colloidal Chemistry	2-1-0 (1/2 Semester)	1.5
	CH 2XX	Molecular Self-Assembly	2-1-0 (1/2 Semester)	1.5
	CH 2XX	Computer Programming for Chemical Applications	2-1-0 (1/2 Semester)	1.5
V (DE-III)	CH 3XX	Magnetochemistry	2-1-0	3
	CH 3XX	Sustainable Chemical Process	2-1-0	3
	CH 3XX	Molecular Material	2-1-0	3
VI (DE-IV)	CH 3XX	Electrochemical Systems	2-1-0	3
	CH 3XX	Quantum Chemistry: Atoms and Molecules	2-1-0	3
	CH 3XX	Pharmaceutical Chemistry	2-1-0	3
	CH 3XX	Chemistry of Semiconducting Materials	2-1-0	3
VIII (DE-V)	CH 4XX	Materials for Energy Applications	2-1-0	3
	CH 4XX	Chemistry in Healthcare	2-1-0	3
	CH 4XX	Molecular Modelling	2-1-0	3
	CH 4XX	Electronic Structure Methods	2-1-0	3
	CH 4XX	Sensors	2-1-0	3
	CH 4XX	Oil, Gas and Petrochemicals	2-1-0	3