

**Master of Science**  
**(M.Sc.)**

**Specialization**  
**(Analytical & Organic Chemistry)**



**School of Science and Engineering**  
**Navrachana University**  
Vadodara



## **Academic Advisory Board (Chemistry)**

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- 10. Dr. K. S. Kumar**, *Member (Internal), Navrachana University, Vadodara*
- 11. Dr. K. Poonam Kumar**, *Member (Internal), Navrachana University, Vadodara*

## Course Structure

Semester	I	II	III	IV	Total
Credits	26	26	19	19	90

### Credit Table

#### FIRST YEAR (Analytical Chemistry & Organic Chemistry)

##### Semester – I

Total Credits = 26

##### Theory Courses

Sr. No.	Course Code	Course Title	L	T	P	C
1.	CH – 112	Basics of Analytical Chemistry	3	0	0	3
2.	CH – 113	Aromaticity & Asymmetric Synthesis	3	0	0	3
3.	CH – 114	Surface Chemistry, Electrochemistry & Statistical Thermodynamics	3	0	0	3
4.	CH – 115	Quantum Mechanics & Metal Complexes	3	0	0	3
5.	CH – 116	Spectroscopy	3	0	0	3
	IT – 125	Computer Applications in Chemistry (Elective)	2	0	1	3
6.	ED – 125	Foundations of Education (Elective)	1	0	0	1
	ED – 126	Learner and Learning (Elective)	2	0	0	2

##### Practical Courses

1.	CH – 117	Analytical Chemistry Laboratory – I	0	0	2	2
2.	CH – 118	Organic Chemistry Laboratory – I	0	0	2	2
3.	CH – 119	Physical Chemistry Laboratory – I	0	0	2	2
4.	CH – 120	Inorganic Chemistry Laboratory – I	0	0	2	2

##### Semester – II

Total Credits = 26

##### Theory Courses

Sr. No.	Course Code	Course Title	L	T	P	C
1.	CH – 121	Fundamental Analytical Techniques	3	0	0	3
2.	CH – 122	Organic Reaction Mechanisms	3	0	0	3
3.	CH – 123	Chemical Kinetics, Macromolecules & Nuclear Chemistry	3	0	0	3
4.	CH – 124	Chemical Bonding & Organometallic Compounds	3	0	0	3
5.	CH – 125	Solid State Chemistry	3	0	0	3
	MG – 225	Management Basics (Elective)	3	0	0	3
6.	ED – 225	Teaching Approaches and Strategies (Elective)	2	0	0	2
	ED – 226	Educational Technology and Instructional Design	1	0	0	1

##### Practical Courses

1.	CH – 126	Analytical Chemistry Laboratory – II	0	0	2	2
2.	CH – 127	Organic Chemistry Laboratory – II	0	0	2	2
3.	CH – 128	Physical Chemistry Laboratory – II	0	0	2	2
4.	CH – 129	Inorganic Chemistry Laboratory – II	0	0	2	2

## Analytical Chemistry

### SECOND YEAR

#### Semester – III,

**Total Credits = 19**

#### Theory Courses

Sr. No.	Course Code	Course Title	L	T	P	C
1.	CH – 211	Spectrochemical Analysis – I	0	0	3	3
2.	CH – 212	Spectrochemical Analysis – II and Kinetic Methods of Analysis	3	0	0	3
3.	CH – 213	Separation Techniques	3	0	0	3
4.	CH – 231-37	Chemistry Elective – I	2	0	0	2
5.	CH – 231-37	Chemistry Elective – II	2	0	0	2

#### Practical Courses

1.	CH – 214	Analytical Chemistry Laboratory – III	0	0	3	3
2.	CH – 215	Analytical Chemistry Laboratory – IV	0	0	3	3

#### Chemistry Electives (Any Two)

1.	CH – 231	Materials Chemistry	2	0	0	2
2.	CH – 232	Molecular Reaction Dynamics	2	0	0	2
3.	CH – 233	Clinical Chemistry – I	2	0	0	2
4.	CH – 234	Bioorganic Chemistry	2	0	0	2
5.	CH – 235	Natural Products – I	2	0	0	2
6.	CH – 236	Heterocycles and Vitamins	2	0	0	2
7.	CH – 237	Patent Law, Patent Drafting and Filing	2	0	0	2

#### Semester – IV,

**Total Credits = 19**

#### Theory Courses

Sr. No.	Course Code	Course Title	L	T	P	C
1.	CH – 216	Electroanalytical Methods	3	0	0	3
2.	CH – 217	Organic Industrial Analysis	3	0	0	3
3.	CH – 218	Organic Analytical Chemistry	3	0	0	3
4.	CH – 238-43	Chemistry Elective – III	2	0	0	2
5.	CH – 238-43	Chemistry Elective – IV	2	0	0	2

#### Research Work

1.	CH – 219	Dissertation	0	0	5	5
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#### Comprehensive Viva

1.	CH – 220	Comprehensive Viva – voce	0	1	0	1
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#### Chemistry Electives (Any Two)

1.	CH – 238	Nano Materials	2	0	0	2
2.	CH – 239	Forensic Analysis	2	0	0	2
3.	CH – 240	Clinical Chemistry – II	2	0	0	2
4.	CH – 241	Industrial Chemical Analysis and Quality Control	2	0	0	2
5.	CH – 242	Phytochemistry	2	0	0	2
6.	CH – 243	Natural Products – II	2	0	0	2



## Organic Chemistry

### SECOND YEAR

#### Semester – III, Organic Chemistry

Total Credits = 19

##### Theory Courses

Sr. No.	Course Code	Course Title	L	T	P	C
1.	CH – 221	Organic Spectroscopy	0	0	3	3
2.	CH – 222	Organic Synthesis and Reagents	3	0	0	3
3.	CH – 223	Advanced Synthetic Methods	3	0	0	3
4.	CH – 31-37	Chemistry Elective – I	2	0	0	2
5.	CH – 31-37	Chemistry Elective – II	2	0	0	2

##### Practical Courses

1.	CH – 224	Organic Chemistry Laboratory – III	0	0	3	3
2.	CH – 225	Organic Chemistry Laboratory – IV	0	0	2	2

##### Chemistry Electives (Any Two)

1.	CH – 231	Materials Chemistry	2	0	0	2
2.	CH – 232	Molecular Reaction Dynamics	2	0	0	2
3.	CH – 233	Clinical Chemistry – I	2	0	0	2
4.	CH – 234	Bioorganic Chemistry	2	0	0	2
5.	CH – 235	Natural Products – I	2	0	0	2
6.	CH – 236	Heterocycles and Vitamins	2	0	0	2
7.	CH – 237	Patent Law, Patent Drafting and Filing	2	0	0	2

#### Semester – IV,

Total Credits = 19

##### Theory Courses

Sr. No.	Course Code	Course Title	L	T	P	C
1.	CH – 226	Photo and Stereochemistry	0	0	3	3
2.	CH – 227	Green Synthesis	3	0	0	3
3.	CH – 228	Pericyclic and Free Radical Reactions	3	0	0	3
4.	CH – 238-40	Chemistry Elective – I	2	0	0	2
5.	CH – 238-40	Chemistry Elective – II	2	0	0	2

##### Research Work

1.	CH – 229	Dissertation	0	0	5	5
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##### Comprehensive Viva

2.	CH – 230	Comprehensive Viva – Voce	0	1	0	1
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##### Chemistry Electives (Any Two)

1.	CH – 238	Nano Materials	2	0	0	2
2.	CH – 239	Forensic Analysis	2	0	0	2
3.	CH – 240	Clinical Chemistry – II	2	0	0	2
4.	CH – 241	Industrial Chemical Analysis and Quality Control	2	0	0	2
5.	CH – 242	Phytochemistry	2	0	0	2
6.	CH – 243	Natural Products – II	2	0	0	2