

## New Scheme-2020 (Applicable 2021 Batch)

**Dr. B. R. AMBEDKAR NATIONAL INSTITUTE OF TECHNOLOGY JALANDHAR**  
**DEPARTMENT OF CHEMISTRY**  
**SCHEME AND SCHEDULE OF COURSES**  
**M Sc IN CHEMISTRY**

### SEMESTER I

Course Code	Course Title	Hours /week			Credits
		L	T	P	
CY-501	Stereochemistry and Reaction Mechanism	3	1	0	4
CY-503	Thermodynamics and Chemical Kinetics	3	1	0	4
CY-505	Main Group Chemistry	3	1	0	4
CY-507	Physical Methods of Structure Elucidation	3	1	0	4
CY-509 MA-551	Basic Biological Chemistry / Mathematics for Chemists	3	0	0	3
CY-601	Seminar I	0	0	0	0
CY-511	Organic Chemistry Lab	0	0	8	4
<b>Total = 23 Credits</b>					

### SEMESTER II

Course Code	Course Title	Hours /week			Credits
		L	T	P	
CY-502	Quantum Chemistry	3	1	0	4
CY-504	Pharmaceutical Chemistry	3	0	0	3
CY-506	Surface Chemistry, Adsorption and Catalysis	3	1	0	4
CY-508	Principles of Organic Synthesis	3	1	0	4
CY-510	Symmetry and Group Theory	3	0	0	3
CY-512	Molecular Spectroscopy	3	0	0	3
CY-514	Physical Chemistry Lab	0	0	8	4
<b>Total = 25 Credits</b>					
CY-516	Summer Training in Research Lab/Industry (after second semester)	0	0	0	1

**SEMESTER III**

Course Code	Course Title	Hours /week			Credits
		L	T	P	
CY-515	Chemistry of Transition and Inner-transition Elements	3	1	0	4
CY-517	Intellectual Property Rights	3	0	0	3
CY-519	Analytical Principles and Instrumental Methods of Analysis	3	1	0	4
CY-521	Advanced Organic Chemistry	3	0	0	3
CY-5XX	Elective-I	3	0	0	3
CY-600	Project Phase I	0	0	4	2
CY-513	Inorganic Chemistry Lab	0	0	8	4

**Total = 23 Credits****SEMESTER IV**

Course Code	Course Title	Hours /week			Credits
		L	T	P	
CY-518	Frontiers in Physical Chemistry	3	0	0	3
CY-520	Interdisciplinary Topics in Chemistry	3	0	0	3
CY-522	Frontiers in Organic Chemistry	3	0	0	3
CY-5XX	Elective-II	3	0	0	3
CY-600	Project Phase –II	0	0	16	8
CY-601	Seminar II	0	0	0	0

**Total = 20 Credits****TOTAL CREDITS= 23+25+23+20+1=92**

**Dr. B. R. AMBEDKAR NATIONAL INSTITUTE OF TECHNOLOGY JALANDHAR**  
**DEPARTMENT OF CHEMISTRY**  
**LIST OF ELECTIVE COURSES FOR M. Sc. / Ph D CHEMISTRY STUDENTS**

Course Code	Course Title	Hours /week			
		L	T	P	Credits
CY-523	Ligand Field Theory	3	0	0	3
CY-524	Polymer Chemistry	3	0	0	3
CY-525	Bioinorganic Chemistry	3	0	0	3
CY-526	Advanced Inorganic Chemistry – I	3	0	0	3
CY-527	Advanced Inorganic Chemistry – II	3	0	0	3
CY-528	Solid State Chemistry	3	0	0	3
CY-529	Nanochemistry	3	0	0	3
CY-530	Photochemistry	3	0	0	3
CY-531	Environmental Chemistry	3	0	0	3
CY-532	Statistical Thermodynamics	3	0	0	3
CY-533	Industrial Organic Chemistry	3	0	0	3
CY-534	Leather Chemicals	3	0	0	3
CY-535	Drug Design and Development	3	0	0	3
CY-536	Mechanistic Inorganic Chemistry	3	0	0	3
CY-537	Natural Products	3	0	0	3

**LIST OF OPEN ELECTIVE COURSES FOR B. TECH / M Tech / Ph D STUDENTS**

Course Code	Course Title	Hours /week			
		L	T	P	Credits
CYOE-401	Molecular Electronic Devices	3	0	0	3
CYOE-402	Polymer Chemistry	3	0	0	3
CYOE-403	Nanoscience & Nanotechnology	3	0	0	3
CYOE-543	Scientific Documentation and Intellectual Property Rights	3	0	0	3

**LIST OF COURSES EXCLUSIVELY FOR Ph D CHEMISTRY STUDENTS**

Course Code	Course Title	Hours /week			
		L	T	P	Credits
CY-538	Green Chemistry	3	1	0	4
CY-539	Principles of Instrumental Methods of Analysis	3	1	0	4
CY-540	Advanced Spectroscopy	3	1	0	4
CY-541	Chemistry of Materials	3	1	0	4
CY-542	Macromolecular Chemistry	3	1	0	4

