NATIONAL INSTITUTE OF TECHNOLOGY DURGAPUR
DEPARTMENT OF CHEMISTRY

CURRICULUM FOR 5-YEAR INTEGRATED M.Sc. IN CHEMISTRY

The distribution of subjects for Semester I & II is the same with Chemistry course in B.Tech

		Semester - III					
Sl. No	**Code**	**Subject**	**L**	**T**	**S**	**C**	**H**
1	MAC331	Mathematics - III	3	1	0	4	4
2	CYC301	State of Matter and Chemical Thermodynamics	3	1	0	4	4
3	CYC302	Atomic Structure and Chemical Bonding	3	1	0	4	4
4	CYC303	Stereochemistry and Basic Principle of Organic Chemistry	3	1	0	4	4
5	PHC331	Physics - II	3	0	0	3	3
6	PHS381	Physics – II Laboratory	0	0	3	1.5	3
7	CYS351	Qualitative Analysis of Organic Samples	0	0	3	1.5	3
8	XES381	Co-curricular Activities - III (optional)	0	0	0	0	0
		TOTAL	**15**	**4**	**6**	**22**	**25**

		Semester - IV					
Sl. No	**Code**	**Subject**	**L**	**T**	**S**	**C**	**H**
1	CYC401	Biochemistry: Structure and function	3	0	0	3	3

2	CYC402	Phase-Equilibrium, Chemical Kinetics and Catalysis	3	1	0	4	4
3	CYC403	Chemistry of Elements and Radioactivity	3	1	0	4	4
4	CYC404	Organic Reaction Mechanism and Reactive Intermediates	3	1	0	4	4
5	YYE44*	Open elective-1	3	0	0	3	3
6	CYS451	Thermodynamic Properties of Solution and Mixture	0	0	4	2	4
7	CYS452	Identification of Acidic and Basic Radicals	0	0	4	2	4
8	CYS453	Biochemistry Laboratory	0	0	3	1.5	3
9	XES481	Co-curricular Activities - IV (optional)	0	0	0	0	0
		TOTAL	**15**	**3**	**11**	**23.5**	**29**

Semester - V

Sl. No	Code	Subject	L	T	S	C	H
1	CYC501	Fundamentals of Electrochemistry and Surface Chemistry	3	1	0	4	4
2	CYC502	Chemistry in Solution and Solid State Chemistry	3	1	0	4	4
3	CYC503	Chemistry of Heterocyclic Compounds and Natural Products	3	1	0	4	4
4	CYC504	Industrial Chemistry	3	0	0	3	3
5	YYE54*	Open Elective-2	3	0	0	3	3

6	CYS551	Chemical Kinetics, Surface Chemistry and Conductometry	0	0	3	1.5	3
7	CYS552	Quantitative Estimation of Metal ions in Mixture	0	0	4	2	4
8	CYS553	Quantitative Analysis of Organic Samples	0	0	3	1.5	3
9	XES581	Co-curricular Activities- V (optional)	0	0	0	0	0
		TOTAL	**15**	**3**	**10**	**23**	**28**

		Semester - VI					
Sl. No	**Code**	**Subject**	**L**	**T**	**S**	**C**	**H**
1	CYC601	Basics of Photochemistry, Spectroscopy, Group Theory and Data Analysis	3	1	0	4	4
2	CYC602	Coordination Chemistry	3	1	0	4	4
3	CYC603	Reagents in Organic Synthesis	3	1	0	4	4
4	CYE61*	Departmental Elective-1	3	0	0	3	3
5	XEC631	Economics and Management Accountancy	3	0	0	3	3
6	CYS651	Potentiometric and colorimetric analysis	0	0	3	1.5	3
7	CYS652	Analysis of Ores and Alloys	0	0	4	2	4
8	CYS653	Single Step Synthesis of Organic Compounds	0	0	4	2	4
9	CYS654	Comprehensive Viva - I	0	0	0	1	0
10	XES681	Co-curricular Activities - VI (Optional)	0	0	0	0	0
		TOTAL	**15**	**3**	**11**	**24.5**	**29**

		Semester - VII					

Sl. No	Code	Subject	L	T	S	C	H
	MSC731	Principles of Management	3	0	0	3	3
1	CYC701	Quantum Chemistry and spectroscopy	3	1	0	4	4
2	CYC702	Inorganic Reaction Mechanisms and Magnetochemistry	3	1	0	4	4
3	CYC703	Concept of Organic Synthesis and Asymmetric Synthesis	3	1	0	4	4
4	CYC704	Mathematical and Computational Chemistry	3	0	0	3	3
6	CYS751	Spectrophotochemical Analysis	0	0	3	1.5	3
7	CYS752	Spectrophotometric Estimation of Cations and Anions	0	0	3	1.5	3
8	CYS753	Separation and Identification of Organic Compounds from Binary Mixture	0	0	4	2	4
		TOTAL	**15**	**3**	**10**	**23**	**28**

Semester - VIII

Sl. No	Code	Subject	L	T	S	C	H
1	CYC801	Chemical, Statistical Thermodynamics and Electrochemistry	3	1	0	4	4
2	CYC802	Organometallic compounds and Bioinorganic Chemistry	3	1	0	4	4
3	CYC803	Pericyclic Reactions and Organic Photochemistry	3	1	0	4	4

4	CYE81*	Departmental Elective- 2	3	0	0	3	3
5	CYS851	Advanced Physical Chemistry Practical	0	0	4	2	4
6	CYS852	Synthesis and Characterisation of Complex Compounds	0	0	3	1.5	3
7	CYS853	Chromatographic Separation of Organic Compounds	0	0	3	1.5	3
		TOTAL	**12**	**3**	**10**	**20**	**25**

		Semester - IX					
Sl. No	**Code**	**Subject**	**L**	**T**	**S**	**C**	**H**
1	CYE9**	Special Subject-1	3	1	0	4	4
2	CYE9**	Special Subject-2	3	1	0	4	4
3	CYE9**	Special Subject-3	3	1	0	4	4
4	CYE9**	Special Subject-4	3	1	0	4	4
5	CYS95*	Special Subject Practical	0	0	3	1.5	3
6	CYS954	Project- I	0	0	3	1	3
7	CYS955	Vocational Training/Summer Internship/Term Paper	0	0	0	1	0
8	CYS956	Comprehensive Viva - II	0	0	0	1.5	0
		TOTAL	**12**	**4**	**6**	**21**	**22**

		Semester - X					

Sl. No	Code	Subject	L	T	S	C	H
1	CYS1051	Project – II/Internship	0	0	30	10	30
2	CYS1052	Seminar & Viva voce	0	0	0	2	0
		TOTAL	**0**	**0**	**30**	**12**	**30**

Credit unit of the Program:

SEMESTER	I+II	III	IV	V	VI	VII
CREDIT UNIT	44	22	23.5	23	24.5	23

BASKETS OF DEPARTMENTAL ELECTIVES:

Elective-1	
CYE611	Analytical and environmental chemistry
CYE612	Chromatographic separation and Instrumental methods of analysis

Elective-2	
CYE811	Advanced Natural Products and Medicinal chemistry
CYE812	Spectroscopic methods of chemical analysis

Special subjects:

For Physical Chemistry specialisation:

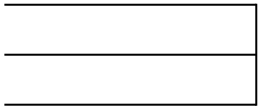
CYE911	Advanced quantum chemistry and application of group theory
CYE912	Non-Equilibrium Thermodynamics and Biophysical chemistry
CYE913	Material chemistry and advanced spectroscopy
CYE914	Surface Chemistry, Electrode kinetics and corrosion science
CYS951	Advanced Physical Chemistry-II Laboratory

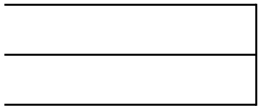
For Inorganic Chemistry specialisation:

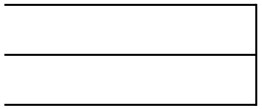
CYE921	Advanced Green chemistry and Analytical Chemistry
CYE922	Synthetic methodology for metal complexes and coordination aggregates
CYE923	Small Molecule Activation and Nuclear Chemistry
CYE924	Group theory, applied electrochemistry and X-ray structure analysis
CYS952	Environmental sample analysis

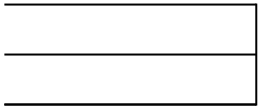
For Organic Chemistry specialisation:

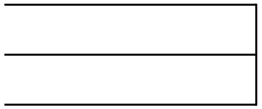
CYE931	Application of some important reactions in synthetic organic chemistry
CYE932	Natural Products and Drug design
CYE933	Bioorganic chemistry
CYE934	Advanced Stereochemistry and structure-reactivity correlation
CYS953	Multi Step Synthesis and characterization of Organic Compounds

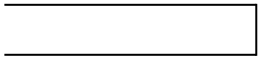


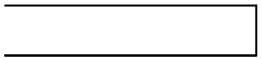












TOTAL
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