

CURRICULUM FRAMEWORK
BSc Chemistry (Honours with Research)

REGULATION YEAR: 2022

SEMESTER I

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
FC	PHY 103	Introduction to Physics	3	0	0	3	3
	PHY 103L	Introduction to Physics Laboratory	0	0	2	2	1
FC	CHE 115	Introduction to Chemistry	3	1	0	4	4
FC	BIO 114	A Primer to Biology	3	0	0	3	3
	BIO 114L	Practical Biology	0	0	2	2	1
FC	MAT 104	Introduction to Mathematics	4	0	0	4	4
FC	CSC 108	Introduction to Computer Science and Programming Using C	3	0	0	3	3
	CSC 108L	Introduction to Computer Science and Programming Using C Lab	0	0	2	2	1
SEC	ISES 101*	Industry Specific Employability Skills-I	3	0	0	3	1
Total			19	1	6	26	21

SEMESTER II

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
FC	ENV 100	Environmental Sciences	4	0	0	4	4
FC	EGL 100	Introduction to Communicative English	4	0	0	4	4
CC1	CHE113	Physical Chemistry I	4	0	0	4	4
CC2	CHE114	Inorganic Chemistry I	4	0	0	4	4
OE1		Open Elective-I	3	0	0	3	3

SEC	ISES 102*	Industry Specific Employability Skills- II	3	0	0	3	1
SEC	RM 101	Introduction to Research Methods	1	0	0	1	1
SEC	ENTR100	Exploratory Learning & Discovery	0	0	2	2	1
Total			23	0	2	25	22

SEMESTER III

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
CC3	CHE121	Inorganic Chemistry II	4	0	0	4	4
CC4	CHE122	Organic Chemistry – I	4	0	0	4	4
CE1	CHE123	Polymer Materials	4	0	0	4	4
Minor1		Minor-1	4	0	0	4	4
DCP1	CHE113L	Physical Chemistry Practical – I	0	0	4	4	2
DCP2	CHE114L	Inorganic Chemistry Practical – I	0	0	4	4	2
SEC	ISES 211*	Industry-Specific Employability Skills- III	3	0	0	3	1
SEC	TLC 103	Teaching and Learning for Higher Education	1	0	0	1	1
SEC	IRH 301	Internationalization for Career Advancement-I	1	0	0	1	1
Total			21	0	8	29	23

SEMESTER IV

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
CC5	CHE212	Organic Chemistry II	4	0	0	4	4
CC6	CHE221	Physical Chemistry II	4	0	0	4	4
CE2	CHE315	Advanced Materials	4	0	0	4	4
Minor2		Minor 2	4	0	0	4	4
DCP3	CHE212L	Organic Chemistry Practical– I	0	0	4	4	2

DCP4	CHE121L	Inorganic Chemistry Practical – II	0	0	4	4	2
SEC	ISES 212*	Industry Specific Employability-IV	3	0	0	3	1
SEC	ENTR300	Dream & Discover	0	0	2	2	1
SEC	IRH 302	Internationalization for Career Advancement-II	1	0	0	1	1
Total			20	0	10	30	23

SEMESTER V

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
CC7	CHE313	Physical Chemistry III	4	0	0	4	4
CC8	CHE222	Organic Chemistry III	4	0	0	4	4
CE3	CHE223	Pericyclic and photochemistry	4	0	0	4	4
Minor3		Minor-III	4	0	0	4	4
DCP5	CHE322L	Organic Chemistry II	0	0	4	4	2
DCP6	CHE221L	Physical Chemistry II	0	0	4	4	2
OE2		Open Elective-II	3	0	0	3	3
Total			19	0	8	27	23

SEMESTER VI

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
CC9	CHE 312	Analytical Chemistry	4	0	0	4	4
CC10	CHE321	Physical Chemistry IV	4	0	0	4	4
CE4	CHE211	Spectroscopic Methods	4	0	0	4	4
Research Project I	CHE320R	Research Project I	0	0	12	12	6
Minor4	-	Minor-IV	4	0	0	4	4
Total			16	0	12	28	22

SEMESTER VII

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
CE5	CHE314	Supervised Learning	4	0	0	4	4
CE6	CHE324	Molecular Modelling and Drug Design	4	0	0	4	4
CE7	CHE325	Structural Methods	4	0	0	4	4
Research project II	CHE410R	Research Project II	0	0	20	20	10
TOTAL			12	0	20	32	22

SEMESTER VIII

Course Category	Course Code	Course Name	L	T	P	L+T+P	C
Research Project III	CHE420R	Research Project III	0	0	32	32	16
TOTAL			0	0	32	32	16

Total Credits: 172

*ISES 3 Lectures-1 Credit

Department Core Courses (CC):

S. No	Course Code	Course Name	Semester
1	CHE113	Physical Chemistry – I Atomic Structure and States of Matters	2
2	CHE221	Physical Chemistry – II Chemical Thermodynamics and Chemical Kinetics	4
3	CHE313	Physical Chemistry – III Chemistry of Solution	5
4	CHE321	Physical Chemistry – IV Interfacial Chemistry and Quantum Chemistry	6

5	CHE114	Inorganic Chemistry – I	Concepts in Inorganic Chemistry	2
6	CHE121	Inorganic Chemistry –II	Chemistry of Elements	3
7	CHE122	Organic Chemistry –I	Principles of Organic Chemistry and Hydrocarbons	3
8	CHE212	Organic Chemistry – II	Organic Halides and Oxygen Containing Functional Groups	4
9	CHE222	Organic Chemistry –III	Nitrogen Containing Functional Groups and Heterocyclic Compounds	5
10	CHE312	Analytical Chemistry	Introduction to Analytical Methods and Analysis	6

List of foundation courses

	Course Name	Semester
Foundation course	Introduction to Physics (FC)	1
	Introduction to Physics Laboratory	1
Foundation course	Introduction to Chemistry (FC)	1
Foundation course	A Primer to Biology	1
	Practical Biology	1
Foundation course	Introduction to Mathematics (FC)	1
Foundation course	Introduction to Computer Science and Programming Using C	1
	Introduction to Computer Science and Programming Using C Lab	
Foundation course	Introduction to Environmental Sciences (FC)	2
Foundation course	Communicative English (FC)	2

Choices in Choosing open electives:

Students can choose any minor courses from the following departments:

- a) Physics
- b) Mathematics

- c) Computer Science
 d) Biology

List of department electives offered:

S. No	Course Code	Course Name	Semester
1	CHE123	Polymer Materials	3
2	CHE315	Advanced Materials	4
3	CHE223	Pericyclic and Photochemistry	5
4	CHE211	Spectroscopic Methods	6
5	CHE314	Supervised Learning	7
6	CHE324	Molecular Modeling and Drug Design	7
7	CHE325	Structural Methods	7

List of minor courses:

S. No	Course Code	Course Name	Semester
1	CHE122	Organic Chemistry I	3
2	CHE114	Inorganic Chemistry I	4
3	CHE324	Molecular Modeling and Drug Design	5
4	CHE312	Analytical Chemistry	6

Open electives from our department to other departments

S. No	Course Code	Course Name
1	CHE202	Renewable Energy
2	CHE201	Fundamental of Nanoscience

List of courses which has Pre-Requisite / Co-Requisite / Both

Sl. No	Course Code & Name	Pre-Requisite Course Code & Name
1	CHE420R-Research Project	CHE314- Supervised Learning
2	CHE121-Inorganic Chemistry-II	CHE114-Inorganic Chemistry-I
3	CHE212-Organic Chemistry-II	CHE122-Organic Chemistry-I
4	CHE221-Physical Chemistry-II	CHE113-Physical Chemistry-I
5	CHE222-Organic Chemistry-III	CHE212-Organic Chemistry-II
6	CHE313-Physical Chemistry-III	CHE221-Physical Chemistry-II
7	CHE321-Physical Chemistry-IV	CHE313-Physical Chemistry-III

B.Sc. Chemistry (Honours with Research) (4 Years Course)

SUMMARY									
COURSE ITEM TITLE	NO. OF COURSES (CREDITS IN BRACKET)-SEMESTER WISE								
	I	II	III	IV	V	VI	VII	VIII	TOTAL
Foundation Course	5(4)	2(4)	-	-	-	-	-	-	7(28)
Department Core	-	2(4)	2(4)	2(4)	2(4)	2(4)	-	-	10(40)
Department Core Practical	-	-	2(2)	2(2)	2(2)	-	-	-	6(12)
Core Electives	-	-	1(4)	1(4)	1(4)	1(4)	3(4)	-	7(28)
Minor	-	-	1(4)	1(4)	1(4)	1(4)	-	-	4(16)
SEC	1(1)	3(1)	3(1)	3(1)	-	-	-	-	10 (10)
Open elective	-	1(3)	-	-	1(3)	-	-	-	2(6)
Research Projects	-	-	-	-	-	1(6)	1(10)	1(16)	3(32)
NUMBER OF CREDITS (SEMESTER-WISE)	21	22	23	23	23	22	22	16	172

TOTAL NUMBER OF CREDITS	172
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