

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY
FACULTY OF SCIENCE AND HUMANITIES
DEPARTMENT OF CHEMISTRY
B.Sc. Chemistry
CURRICULUM - REGULATIONS 2024

Category of courses and minimum credit requirement as per new guidelines of UGC for B.Sc. Chemistry programme are outlined below:

Sl. No.	Category of Courses	Credits	
		UG 3-Years	UG 4-Years
1.	Major (Core)	60	80
2.	Minor Stream	24	32
3.	Multidisciplinary	09	09
4.	Ability Enhancement Courses	08	08
5.	Skill Enhancement Courses	09	09
6.	Value Added Courses	06 - 08	06 - 08
7.	Internship	02 - 04	02 - 04
8.	Research Project / Dissertation	-	12
Total Credits		120	160

SEMESTER I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24TA101	பொதுத்தமிழ் (General Tamil)	3	0	0	3
	U24TA102	□□□□□□□□□□□□□□□□ (Foundational Tamil)				
2	U24EN102	English for Communication - I	3	0	0	3
3	U24MA101	Matrices and Differential Calculus	3	1	0	4
4	U24CH101	Chemical Bonding and Energy Dynamics	3	0	0	3
5	U24JM101	Basics of Media Culture and Society	3	0	0	3
6	U24EM101	Coding Techniques	3	0	0	3
Practical						
7	U24CH102	Quantitative and Qualitative Analysis Laboratory	0	0	4	2
8	U24EM102	Coding Techniques Laboratory	0	0	2	1
Total			18	1	6	22

SEMESTER II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24TA151	அறிவியல் தமிழ் (Scientific Tamil)	3	0	0	3
	U24TA152	□□□□ □□□□ (Beginners Tamil)				
2	U24EN152	English for Communication - II	3	0	0	3
3	U24PH151	Fundamentals of Physics	3	0	0	3
4	U24MA152	Vector Calculus	3	1	0	4
5	U24EM151	Programming in Practice	3	0	0	3
6	U24VA002	Universal Human Values	2	1	0	3
Practical						
7	U24PH152	Physics Laboratory	0	0	2	1
8	U24EM152	Programming in Practice Laboratory	0	0	2	1
9	U24EM103	Speech Communication Laboratory	0	0	2	1
Total			17	2	6	22

SEMESTER III

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24TA201	கணிணித்தமிழ் (Computing Tamil)	3	0	0	3
2	U24EN201	English for Communication - III	3	0	0	3
3	U24CH201	Functional Group Chemistry and Stereo Isomerism	3	1	0	4
4	U24CH202	Chemistry of Metals and Non - Metals	3	0	0	3
5	U24CH203	States of Matter and Chemical Equilibrium	3	0	0	3
6	U24CH204	Bioinorganic Chemistry	3	0	0	3
7	U24VA001	Environmental Studies	2	0	0	2
Practical						
8	U24CH205	Inorganic Preparations Laboratory	0	0	2	1
9	U24CH206	Physical Chemistry Laboratory	0	0	2	1
Total			20	1	4	23

SEMESTER IV

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24TA251	தொழில்நுட்பத்தமிழ் (Technical Tamil)	3	0	0	3
2	U24EN251	English for Communication - IV	3	0	0	3
3	U24CH251	Chemistry of Organic Derivatives	3	0	0	3
4	U24CH252	Principles of Metal - Ligand Bonding	3	0	0	3
5	U24CH253	Chemical Dynamics and Energetics	3	0	0	3
6	U24ED257	Emotional Intelligence	3	0	0	3
7	U24CH751	Ancient Tamil Medicinal System (Open Elective - I)	3	0	0	3
Practical						
8	U24CH254	Semi-Micro Organic Analysis Laboratory	0	0	2	1
9	U24CH255	Inorganic Analysis Laboratory	0	0	2	1
10	U24EM256	Internship	0	0	0	2
Total			21	0	4	25

SEMESTER V

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24CH301	Industrial Organic Chemistry	3	0	0	3
2	U24CH302	Chemical Equilibria and Surface Phenomena	3	1	0	4
3	U24CH303	Analytical Chemistry	3	0	0	3
4	U24BT201	Biochemistry	3	0	0	3
5	U24CH7XX	Open Elective - II	3	0	0	3
6	U24CH9XX	Programme Elective - I	3	0	0	3
7	U24EM301	Community Engagement and Social Responsibility	1	0	2	2
Practical						
8	U24CH304	Semi - Micro Inorganic Analysis Laboratory	0	0	4	2
Audit Course						
9	U24AUXXX	Audit Course - I	--	--	--	--
Total			19	1	6	23

SEMESTER VI

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24CH351	Chemical Energy and Group Theory	3	0	0	3
2	U24CH352	Stereo Chemistry and Spectroscopy	3	0	0	3
3	U24CH353	Inorganic Solids and Radiation Chemistry	3	0	0	3
4	U24CH354	Polymer Chemistry	3	0	0	3
5	U24CH8XX	Online Course	3	0	0	3
6	U24CH9XX	Programme Elective - II	3	0	0	3
Practical						
7	U24CH355	Gravimetric Analysis Laboratory	0	0	4	2
8	U24CH356	Organic Compounds Analysis Laboratory	0	0	2	1
9	U24CH357	Capstone Project	0	0	8	4
Audit Course						
10	U24AUXXX	Audit Course - II	--	--	--	--
Total			18	0	14	25

SEMESTER VII

B.Sc. Chemistry (Honours)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24CH401	Coordination Compounds and Nano Chemistry	3	0	2	4
2	U24CH402	Organic Reactions and Photochemistry	3	0	2	4
3	U24CH403	Quantum Chemistry	3	1	0	4
4	U24CH404	Supramolecular Chemistry	3	1	0	4
5	U24CH405	Green Chemistry	3	1	0	4
Total			15	3	4	20

SEMESTER VIII

B.Sc. Chemistry (Honours)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24CH451	Physical Methods in Chemistry	3	1	0	4
2	U24CH452	Molecular modelling	3	1	0	4
Practical						
3	U24CH453	Project / Dissertation	0	0	24	12
Total			6	2	24	20

SEMESTER VII

B.Sc. Chemistry (Honours with Research)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24CH401	Coordination Compounds and Nano Chemistry	3	0	2	4
2	U24CH402	Organic Reactions and Photochemistry	3	0	2	4
3	U24CH404	Supramolecular Chemistry	3	1	0	4
4	U24CH406	IPR and Research Methodology	3	1	0	4
Research Project						
5	U24CH407	Applicative Research	0	0	8	4
Total			12	2	12	20

SEMESTER VIII

B.Sc. Chemistry (Honours with Research)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24CH454	Research / Dissertation (with SCOPUS / SCI Publication)	0	0	40	20
Total			0	0	40	20

Actual Credit allotment as per the guidelines of UGC / TANSCHÉ for the B.Sc. Chemistry programme are given below:

Sl. No.	Category of Courses	Credits		
		3 Years	4 Years (Honours)	4 Years (Honours with Research)
1.	Major (Core)	63	83	75
2.	Minor Stream	23	31	31
3.	Multidisciplinary	09	09	09
4.	Ability Enhancement Courses	24	24	24
5.	Skill Enhancement Courses	09	09	09
6.	Value Added Courses	08	08	08
7.	Internship	04	04	04
8.	Research Project / Dissertation	-	12	20
Total		140	180	180

Semester wise Credit distribution (In all Categories of Courses)

B.Sc. Chemistry - 3 Years

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI
1.	Major (Core)	63	-	-	12	11	15	25
2.	Minor Stream	23	9	8	3	-	3	-
3.	Multidisciplinary	09	3	-	-	3	3	-
4.	Ability Enhancement Courses	24	6	6	6	6	-	-
5.	Employability Enhancement Courses	09	4	5	-	-	-	-
6.	Value Added Courses	08	-	3	2	3	-	-
7.	Internship	04	-	-	-	2	2	-
8.	Project / Dissertation	-	-	-	-	-	-	-
Total		140	22	22	23	25	23	25

Semester wise Credit distribution (In all Categories of Courses)

B.Sc. (Honours) Chemistry - 4 Years

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI	VII	VIII
1.	Major (Core)	83	-	-	12	11	15	25	12	8
2.	Minor Stream	31	9	8	3	-	3	-	8	-
3.	Multidisciplinary	09	3	-	-	3	3	-	-	-
4.	Ability Enhancement Courses	24	6	6	6	6	-	-	-	-
5.	Skill Enhancement Courses	09	4	5	-	-	-	-	-	-
6.	Value Added Courses	08	-	3	2	3	-	-	-	-
7.	Internship	04	-	-	-	2	2	-	-	-
8.	Project / Dissertation	12	-	-	-	-	-	-	-	12
Total		180	22	22	23	25	23	25	20	20

Semester wise Credit distribution (in all categories of courses)

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

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI	VII	VIII
1.	Major (Core)	75	-	-	12	11	15	25	12	-
2.	Minor Stream	31	9	8	3	-	3	-	8	-
3.	Multidisciplinary	09	3	-	-	3	3	-	-	-
4.	Ability Enhancement Courses	24	6	6	6	6	-	-	-	-
5.	Skill Enhancement Courses	09	4	5	-	-	-	-	-	-
6.	Value Added Courses	08	-	3	2	3	-	-	-	-
7.	Internship	04	-	-	-	2	2	-	-	-
8.	Project / Dissertation	20	-	-	-	-	-	-	-	20
Total Credits		180	22	22	23	25	23	25	20	20

The number of credits in each semester is summarized as follows:

Course	I	II	III	IV	V	VI	VII	VIII
B.Sc. Chemistry	22	22	23	25	23	25	20	20

Suggested List of Courses for Programme Elective - I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24CH901	Agricultural Chemistry	3	0	0	3
2	U24CH902	Food Chemistry	3	0	0	3
3	U24CH903	Forensic Science	3	0	0	3
4	U24CH904	Clinical Chemistry	3	0	0	3
5	U24CH905	Material Chemistry	3	0	0	3
6	U24CH906	Pesticide Chemistry	3	0	0	3

Suggested List of Courses for Programme Elective - II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24CH951	Industrial Chemistry	3	0	0	3
2	U24CH952	Renewable Energy	3	0	0	3
3	U24CH953	Phyto Chemistry	3	0	0	3
4	U24CH954	Pharmaceutical Chemistry	3	0	0	3
5	U24CH955	Green Chemistry	3	0	0	3

List of Courses under each Category**Major (Core)**

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24CH201	Functional Group Chemistry and Stereo Isomerism	3	1	0	4
2	U24CH202	Chemistry of Metals and Non-Metals	3	0	0	3
3	U24CH203	States of Matter and Chemical Equilibrium	3	0	0	3

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
4	U24CH205	Inorganic Preparations Laboratory	0	0	2	1
5	U24CH206	Physical Chemistry Laboratory	0	0	2	1
6	U24CH251	Chemistry of Organic Derivatives	3	0	0	3
7	U24CH252	Principles of Metal - Ligand Bonding	3	0	0	3
8	U24CH253	Chemical Dynamics and Energetics	3	0	0	3
9	U24CH254	Semi-Micro Organic Analysis Laboratory	0	0	2	1
10	U24CH255	Inorganic Analysis Laboratory	0	0	2	1
11	U24CH301	Industrial Organic Chemistry	3	0	0	3
12	U24CH302	Chemical Equilibria and Surface Phenomena	3	1	0	4
13	U24CH303	Analytical Chemistry	3	0	0	3
14	U24CH9XX	Programme Elective - I	3	0	0	3
15	U24CH304	Semi-Micro Inorganic Analysis Laboratory	0	0	4	2
16	U24CH351	Chemical Energy and Group Theory	3	0	0	3
17	U24CH352	Stereo Chemistry and Spectroscopy	3	0	0	3
18	U24CH353	Inorganic Solids and Radiation Chemistry	3	0	0	3
19	U24CH354	Polymer Chemistry	3	0	0	3
20	U24CH8XX	Online Courses	3	0	0	3
21	U24CH9XX	Programme Elective - II	3	0	0	3
22	U24CH355	Gravimetric Analysis Laboratory	0	0	4	2
23	U24CH356	Organic Compounds Analysis Laboratory	0	0	2	1
24	U24CH357	Capstone Project	0	0	8	4
Total			42	2	26	63

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Additional Major (Core) for 4 years B.Sc. (Honours) Chemistry						
25	U24CH401	Coordination Compounds and Nano Chemistry	3	0	2	4
26	U24CH402	Organic Reactions and Photochemistry	3	0	2	4
27	U24CH403	Quantum Chemistry	3	1	0	4
28	U24CH451	Physical Methods in Chemistry	3	1	0	4
29	U24CH452	Molecular modelling	3	1	0	4
Total			15	3	4	20
Additional Major (Core) for 4 years B.Sc. (Honours with Research) Chemistry						
30	U24CH401	Coordination Compounds and Nano Chemistry	3	0	2	4
31	U24CH402	Organic Reactions and Photochemistry	3	0	2	4
32	U24CH407	Applicative Research	0	0	8	4
Total			6	0	12	12

Minor (Core)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24MA101	Matrices and Differential Calculus	3	1	0	4
2	U24CH101	Chemical Bonding and Energy Dynamics	3	0	0	3
3	U24CH102	Quantitative and Qualitative Analysis Laboratory	0	0	4	2
4	U24PH151	Fundamentals of Physics	3	0	0	3
5	U24MA152	Vector Calculus	3	1	0	4
6	U24PH152	Physics Laboratory	0	0	2	1
7	U24CH204	Bioinorganic Chemistry	3	0	0	3

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24MA101	Matrices and Differential Calculus	3	1	0	4
8	U24BT201	Biochemistry	3	0	0	3
Total			18	2	6	23
Additional Minor (Core) for 4 years B.Sc. Chemistry (Honours)						
9	U24CH404	Supramolecular Chemistry	3	1	0	4
10	U24CH405	Green Chemistry	3	1	0	4
Total			6	2	0	8
Additional Minor (Core) for 4 years B.Sc. Chemistry (Honours with Research)						
11	U24CH404	Supramolecular Chemistry	3	1	0	4
12	U24CH406	IPR and Research Methodology	3	1	0	4
Total			6	2	0	8

Multidisciplinary

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24JM101	Basics of Media Culture and Society	3	0	0	3
2	U24ED257	Emotional Intelligence	3	0	0	3
3	U24CH7XX	Open Elective – II	3	0	0	3
Total			9	0	0	9

Ability Enhancement Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24TA101	பொதுத்தமிழ் (General Tamil)	3	0	0	3
	U24TA102	□□□□□□□□□□□□□□□□ (Foundational Tamil)				
2	U24EN102	English for Communication – I	3	0	0	3
3	U24TA151	அறிவியல் தமிழ் (Scientific Tamil)	3	0	0	3
	U24TA152	□□□□ □□□□□ (Beginners Tamil)				
4	U24EN152	English for Communication – II	3	0	0	3
5	U24TA201	கணினித்தமிழ் (Computing Tamil)	3	0	0	3
6	U24EN201	English for Communication – III	3	0	0	3
7	U24TA251	தொழில்நுட்பத்தமிழ் (Technical Tamil)	3	0	0	3
8	U24EN251	English for Communication – IV	3	0	0	3
Total			24	0	0	24

Skill Enhancement Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EM101	Coding Techniques	3	0	0	3
2	U24EM102	Coding Techniques Laboratory	0	0	2	1
3	U24EM151	Programming in Practice	3	0	0	3
4	U24EM152	Programming in Practice Laboratory	0	0	2	1
5	U24EM103	Speech Communication Laboratory	0	0	2	1

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Total			6	0	6	9

Value Added Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24VA002	Universal Human Values	2	1	0	3
2	U24VA001	Environmental Studies	2	0	0	2
3	U24CH751	Ancient Tamil Medicinal System (Open Elective - I)	3	0	0	3
Total			7	1	0	8

Internship

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EM256	Internship	0	0	0	2
2	U24EM301	Community Engagement and Social Responsibility	1	0	2	2
Total			1	0	2	4

Research Project / Dissertation (Honours)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24CH453	Project / Dissertation	0	0	24	12
Total			0	0	24	12

Research Project / Dissertation (Honours with Research)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24CH454	Research / Dissertation (with SCOPUS / SCI Publication)	0	0	40	20
Total			0	0	40	20

Audit Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24AUXXX	Audit Course - I	0	0	0	0
2	U24AUXXX	Audit Course - II	0	0	0	0
Total			0	0	0	0