



## NEP-BASED CBCS PROGRAMME

### B.Sc. Chemistry (Honors/Honors with Research) and M.Sc. Chemistry (Research)

#### NOTES ON COURSE STRUCTURE:

- The institute offers several courses under open elective and students have choice to opt those courses with the same credit (as per the following course structure) in same level. For example, one course has been suggested in course structure for the Minor & Multidisciplinary course, however student can opt other courses of their choice from available open electives.
- Students who take enough designated courses as per UGC guidelines (see above Table 1) in a discipline other than their major will qualify for a "minor" in that discipline.
- Students will get a dual degree of B.Sc. Chemistry (Honors) or B.Sc. Chemistry (Honors with Research) & M.Sc. Chemistry (Research) after completing the 5th year if required eligibility is fulfilled.

#### FIRST (1<sup>ST</sup>) YEAR

Semester	Course Category	Course Code	Course Name	L	T	P	Credit
<b>FIRST (1<sup>ST</sup>) SEMESTER</b>							
	Major	CH121	Basic Chemistry-I	3	0	0	3
	Minor	PH109	Physics I	4	0	0	4
	Multidisciplinary	ED103	Statistical Method-I	3	0	0	3
	Skill Enhancement	CH122	Laboratory Techniques for Chemists	1	0	2	3
	Ability Enhancement	MT132	Communication Skill - I	2	0	0	1.5
	Value Added	MC 101/4	NCC/NSS/PT-Games/Cr Arts	0	0	2	1
	Major	CH123	Basic Chemistry Lab-I	0	0	4	2
	Minor	PH110	Physics Lab	0	0	4	2
	Multidisciplinary	ED104	Statistical Method-I Lab	0	0	3	1.5
<b>Total Credit in First Semester</b>							<b>21</b>
<b>SECOND (2<sup>ND</sup>) SEMESTER</b>							
	Major	CH124	Basic Chemistry-II	3	0	0	3
	Minor	MA108R1	Mathematics-III	5	1	0	6
	Multidisciplinary	BE210	Thermodynamics of Chemical & Biological Systems	3	0	0	3
	Skill Enhancement	CH125	Software Skill in Chemistry	1	0	2	3
	Ability Enhancement	CE101	Env. Science	2	0	0	2
	Value Added	MC 101/4	NCC/NSS/PT-Games/Cr Arts	0	0	2	1
	Major	CH126	Basic Chemistry Lab-II	0	0	4	2
	Vocational Summer Internship	CH127	Chemical Analysis & Instrumentation	1	0	3	4
<b>Total Credit in the Second Semester</b>							<b>24</b>
<b>Total Credit in First Year 45 (Certificate only for Taking Exit)</b>							



**NEP-BASED CBCS PROGRAMME**  
**B.Sc. Chemistry (Honors/Honors with Research) and M.Sc. Chemistry (Research)**

**SECOND (2<sup>ND</sup>) YEAR**

Semester	Course Category	Course Code	Course Name	L	T	P	Credit
<b>THIRD (3<sup>RD</sup>) SEMESTER</b>							
	Major	CH221	Basic Chemistry-III	3	0	0	3
	Major	CH222	Basic Chemistry-IV	3	0	0	3
	Minor	ED107	Probability-I	3	1	0	4
	Multidisciplinary	BE205	Basics of Bioinformatics	3	0	0	3
	Skill Enhancement	CL217	Chemical Process Calculations	2	1	0	3
	Ability Enhancement	MT132	Communication Skill - II	2	0	0	1.5
	Value Added	MC 101/4	NCC/NSS/PT-Games/Cr Arts	0	0	2	1
	Major	CH223	Basic Chemistry Lab-III	0	0	4	2
	Major	CH224	Basic Chemistry Lab-IV	0	0	4	2
<b>Total Credit in Third Semester</b>							<b>22.5</b>
<b>FOURTH (4<sup>TH</sup>) SEMESTER</b>							
	Major	CH225	Basic Chemistry-V	3	0	0	3
	Major	CH226	Basic Chemistry-VI	3	0	0	3
	Minor	MA207R1	Mathematics IV	5	1	0	6
	Ability Enhancement	MT417/M T418	Foreign-Language French/German	3	0	0	3
	Value Added	MC 101/4	NCC/NSS/PT-Games/Cr Arts	0	0	2	1
	Major	CH227	Basic Chemistry Lab-V	0	0	4	2
	Major	CH228	Basic Chemistry Lab-VI	0	0	4	2
<b>Total Credit in Forth Semester</b>							<b>20</b>
<b>Total Credit in Second Year: 42.5 (Diploma for Exit Students with 87.5 credit in 2 years)</b>							



**NEP-BASED CBCS PROGRAMME**  
**B.Sc. Chemistry (Honors/Honors with Research) and M.Sc. Chemistry (Research)**

**THIRD (3<sup>RD</sup>) YEAR**

Semester	Course Category	Course Code	Course Name	L	T	P	Credit
<b>FIFTH (5<sup>TH</sup>) SEMESTER</b>							
	Major	CH331	Physical Chemistry-I	3	1	0	4
	Major	CH332	Organic Chemistry-I	3	1	0	4
	Major	CH333	Inorganic Chemistry-I	3	1	0	4
	Minor		Open Elective	3	0	0	3
	Value Added	MT131	Understanding Harmony	3	0	0	3
	Major	CH334	Inorganic Chemistry Lab-I	0	0	4	2
<b>Total Credit in FIFTH Semester</b>							<b>20</b>
<b>SIXTH (6<sup>TH</sup>) SEMESTER</b>							
	Major	CH335	Physical Chemistry-II	3	1	0	4
	Major	CH336	Organic Chemistry-II	3	1	0	4
	Major	CH337	Inorganic Chemistry-II	3	1	0	4
	Minor		Open Elective	3	0	0	3
	Major	CH338	Physical Chemistry Lab-I	0	0	4	2
	Major	CH339	Organic Chemistry Lab-I	0	0	4	2
	Summer Internship	CH340	Summer Internship (Ins/Ind)				2
<b>Total Credit in the SIXTH Semester</b>							<b>21</b>
<b>Total Credit in Third Year: 41 (For Exit Students opting B.Sc. Chemistry: Total Credit= 87.5+41= 128.5)</b>							



## NEP-BASED CBCS PROGRAMME

### B.Sc. Chemistry (Honors/Honors with Research) and M.Sc. Chemistry (Research)

#### FOURTH (4<sup>TH</sup>) YEAR

Semester	Course Category	Course Code	Course Name	L	T	P	Credit
<b>SEVENTH (7<sup>TH</sup>) SEMESTER</b>							
	Major	CH421	Advanced Physical Chemistry-I	3	0	0	3
	Major	CH422	Advanced Organic Chemistry-I	3	0	0	3
	Major	CH423	Advanced Inorganic Chemistry-I	3	0	0	3
	Major	CH424	Theoretical and Computational Lab	0	0	4	2
	Minor	ED211	Linear Statistical Models and Regression Analysis	3	0	0	3
	Value added	MT204	Constitution of India	2	0	0	0
	Minor	ED212	Linear Statistical Models and Regression Analysis Lab	0	0	2	1
	@Research Dissertation	CH425	Research Thesis Dissertation-I				6
<b>Total Credit in the 7<sup>th</sup> Semester</b>							<b>21</b>
<b>EIGHTH (8<sup>TH</sup>) SEMESTER</b>							
	Major	CH426	Advanced Physical Chemistry-II	3	1	0	4
	Major	CH427	Advanced Organic Chemistry-II	3	1	0	4
	Major	CH428	Advanced Inorganic Chemistry-II	3	1	0	4
	Major	CH429	Separation & Purification Lab	0	0	2	2
	@Research Dissertation	CH430	Research Thesis Dissertation-II				6
<b>Total Credit in the 8<sup>th</sup> Semester</b>							<b>20</b>
<b>128.5 + 41 = 169.5</b>							

@NOTE: Honors students not undertaking research will do 12 Credit Courses in place of a research dissertation, and courses can be taken as per Annexure-I.

#### ANNEXURE-I for B.Sc. Hons. Students:

Semesters	Code No.	Name of the Courses	Prerequisites	L	T	P	C	
SEM-VII	4	CH431	Analytical Chemistry	Intermediate Chemistry	3	1	0	4
		CH432	Analytical Chemistry Lab	Intermediate Chemistry	0	0	4	2
SEM-VIII	4	CH433	Polymer Chemistry	Intermediate Chemistry	3	1	0	4
		CH434	Polymer Chemistry Lab	Intermediate Chemistry	0	0	4	2



**NEP-BASED CBCS PROGRAMME**  
**B.Sc. Chemistry (Honors/Honors with Research) and M.Sc. Chemistry (Research)**

**FIFTH (5<sup>TH</sup>) YEAR**

Semester	Course Category	Course Code	Course Name	L	T	P	Credit
<b>NINTH (9<sup>TH</sup>) SEMESTER</b>							
	Major	CH521	Spectroscopic Analysis of Molecular Structures	3	1	0	4
	SEC	CH522	Problem-Solving Skills in Chemical Science	3	3	0	6
	Major	CH523	Advanced Characterization Lab	0	0	4	2
	Research Dissertation	CH524	Research Thesis Dissertation-I				8
<b>Total Credit in the 9<sup>th</sup> Semester</b>							<b>20</b>
<b>TENTH (10<sup>TH</sup>) SEMESTER</b>							
	Major (Specialization)	CH525-530	Physical/Organic/Inorganic (Annexure-II)	3	1	0	4
	Research Dissertation	CH531	Research Thesis Dissertation-II				16
<b>Total Credit in the 10<sup>th</sup> Semester</b>							<b>20</b>
<b>Total Credit after 5<sup>th</sup> Year = 169.5+40 = 209.5</b>							

**ANNEXURE-II for M.Sc. Research with Specialization:**

		Physical					
<b>SEM-X</b>	CH525	Advanced Electrochemistry	B.Sc. Chemistry	3	1	0	4
	CH526	Chemical Applications of Group Theory	B.Sc. Chemistry	3	1	0	4
		<b>Organic</b>					
<b>SEM-X</b>	CH527	Advanced Organic Synthesis	B.Sc. Chemistry	3	1	0	4
	CH528	Selected Topics in Organic Chemistry	B.Sc. Chemistry	3	1	0	4
		<b>Inorganic</b>					
<b>SEM-X</b>	CH529	Solid State & Bioinorganic Chemistry	B.Sc. Chemistry	3	1	0	4
	CH530	Selected Topics in Inorganic Chemistry	B.Sc. Chemistry	3	1	0	4