CHOICE BASED CREDIT SYSTEM

Curriculum of M.Sc. in Chemistry

[Effective from the Academic Session 2020-2021]

JIS UNIVERSITY,
81, Nilgunj Road, Agarpara
Kolkata -700109

COURSE OBJECTIVE

To provide an in depth understanding of frontier areas in different branches of chemistry to nurture problem solving skills and motivate them towards innovation which has societal impacts. This course will offer the hand-on experience in various modern instrumentation techniques so that students take up the global industrial challenges. To hone practical skills, analytical skills, and research aptitude in order to prepare the students for careers in higher studies, research and development, academia and industries. To nurture professional excellence, soft skills, moral values and ethics leading to leadership qualities.

COURSE OUTCOME

Upon completion of the M.Sc. Chemistry program, the students will be able to demonstrate the acquired knowledge and understanding in different emerging area of the chemical sciences and interdisciplinary areas which have profound applications in different areas. They will be able to synthesize, purify, characterize, analyze, interpret and communicate the acquired results with reasonable conclusion. They will gain ample knowledge in reaction mechanisms, to analyze complex chemical structures with the help of UV, FTIR, NMR, HRMS; separation techniques, drug designing, polymer chemistry and nanomaterials. To inculcate a habit of learning continuously through use of advanced ICT technique and other available techniques/books/journals for personal academic growth as well as for increasing employability opportunity.

MINIMUM ELIGIBILITY CRITERIA

- Candidate must have secured 45% marks in B.Sc. and possess Chemistry as one of the subject in B.Sc. for general candidate. For reservation category the marks is 40% in B.Sc.

PROCESS OF ADMISSION

- Based on the performance of JIS University online entrance test along with % of marks and the guidelines prescribed by the University

CREDIT DISTRIBUTION ACROSS THE COURSE				
Course Type	**Total Papers**	**Credit**		**Credit**
		Theory	**Practical**	
CORE COURSES (CC)	15	8 × 4 = 32	6 × 2 = 12 1 × 6 = 6	32 + 18 = 50
SPECIAL PAPERS	4	3 × 4 = 12	1 × 4 = 4	12 + 4 = 16
ELECTIVE PAPERS	3	3 × 2 = 6	0	6
CBCS	2	8	0	8
			Total Credit	**80**
NON-CGPA				
AECC	8	1 × 8 = 8		8
			Grand Total Credit	**88**

Abbreviations Used:

CC = CORE COURSES
CBCS = GENERAL ELECTIVES
AECC = ABILITY ENHANCEMENT COMPULSORY COURSES
NON-CGPA = NON CREDIT COURSES

CREDIT AND MARKS DISTRIBUTION ACROSS THE COURSE		
SEMESTER	**CGPA CREDIT**	**MARKS**
I	22	550
II	22	550
III	18	450
IV	18	450
TOTAL	**80**	**2000**
SEMESTER	**NON CGPA CREDIT**	**MARKS**
I	2	50
II	2	50
III	2	50
IV	2	50
TOTAL	**8**	**200**

SEMESTER WISE CREDIT/MARKS DISTRIBUTION SEMESTER I								
COURSE TYPE	**SUBJECT CODE**	**SUBJECT NAME**	**L**	**T**	**P**	**CREDIT**	**CONTACT HOURS**	**MARKS DISTRIBUTION**
CC 1	PCH1001	INORGANIC CHEMISTRY-I	**3**	**1**	**0**	4	4	100
CC 2	PCH1002	ORGANIC CHEMISTRY-I	**3**	**1**	**0**	4	4	100
CC 3	PCH1003	PHYSICAL CHEMISTRY-I	**3**	**1**	**0**	4	4	100
CC 4	PCH1101	INORGANIC CHEMISTRY LAB-I	**0**	**0**	**2**	2	4	50
CC 5	PCH1102	ORGANIC CHEMISTRY LAB-I	**0**	**0**	**2**	2	4	50
CC 6	PCH1103	PHYSICAL CHEMISTRY LAB-I	**0**	**0**	**2**	2	4	50
CBCS 1	****	****	**3**	**1**	**0**	4	4	100
		TOTAL	**12**	**4**	**6**	**22**	**28**	**550**
NON-CGPA								
AECC-1	PCH1501	SEMINAR & OTHER ACTIVITIES	**0**	**0**	**1**	1	1	**25**
AECC-2	PCH 1502	SKILLX & NSS	**0**	**0**	**1**	1	1	**25**
		TOTAL	**12**	**4**	**8**	**24**	**30**	**600**

SEMESTER WISE CREDIT/MARKS DISTRIBUTION SEMESTER II								
COURSE TYPE	**SUBJECT CODE**	**SUBJECT NAME**	**L**	**T**	**P**	**CREDIT**	**CONTACT HOURS**	**MARKS DISTRIBUTION**
CC 7	PCH2001	INORGANIC CHEMISTRY-II	**3**	**1**	**0**	4	4	100
CC 8	PCH2002	ORGANIC CHEMISTRY-II	**3**	**1**	**0**	4	4	100
CC 9	PCH2003	PHYSICAL CHEMISTRY-II	**3**	**1**	**0**	4	4	100
CC 10	PCH2101	INORGANIC CHEMISTRY LAB-II	**0**	**0**	**2**	2	4	50
CC 11	PCH2102	ORGANIC CHEMISTRY LAB-II	**0**	**0**	**2**	2	4	50
CC 12	PCH2103	PHYSICAL CHEMISTRY LAB-II	**0**	**0**	**2**	2	4	50
CBCS 2	****	****	**3**	**1**	**0**	4	4	100
		TOTAL	**12**	**4**	**6**	**22**	**28**	**550**
NON-CGPA								
AECC-3	PCH 2501	SEMINAR & OTHER ACTIVITIES	**0**	**0**	**1**	1	1	**25**
AECC-4	PCH 2502	SKILLX & NSS	**0**	**0**	**1**	1	1	**25**
		TOTAL	**12**	**4**	**8**	**24**	**30**	**600**

SEMESTER WISE CREDIT/MARKS DISTRIBUTION SEMESTER III								
COURSE TYPE	**SUBJECT CODE**	**SUBJECT NAME**	**L**	**T**	**P**	**CREDIT**	**CONTACT HOURS**	**MARKS DISTRIBUTION**
CC 13	PCH3001	PRINCIPLES AND APPLICATIONS OF MOLECULAR SPECTROSCOPY	**3**	**1**	**0**	4	4	100
SPECIAL 1	PCH 3002/3003/ 3004	SPECIAL PAPER I: INORGANIC/ORGANIC/PHYSICAL	**3**	**1**	**0**	4	4	100
SPECIAL 2	PCH 3005/3006/ 3007	SPECIAL PAPER II: INORGANIC/ORGANIC/PHYSICAL	**3**	**1**	**0**	4	4	100
ELECTIVE 1	****	*****	**2**	**0**	**0**	2	2	50
SPECIAL 3	PCH 3101/3102 /3103	SPECIAL PAPER III: INORGANIC SPECIAL PRACTICAL/ORGANIC SPECIAL PRACTICAL /PHYSICAL SPECIAL PRACTICAL	**0**	**0**	**4**	4	12	100
		TOTAL	**11**	**3**	**4**	**18**	**26**	**450**
NON-CGPA								
AECC-5	PCH 3501	SEMINAR & OTHER ACTIVITIES	**0**	**0**	**1**	1	1	**25**
AECC-6	PCH 3502	SKILLX & NSS	**0**	**0**	**1**	1	1	**25**
		TOTAL	**11**	**3**	**6**	**20**	**28**	**500**

SEMESTER WISE CREDIT/MARKS DISTRIBUTION SEMESTER IV								
COURSE TYPE	**SUBJECT CODE**	**SUBJECT NAME**	**L**	**T**	**P**	**CREDIT**	**CONTACT HOURS**	**MARKS DISTRIBUTION**
CC 14	PCH4001	SPECTROSCOPY FOR STRUCTURE ELUCIDATION	**3**	**1**	**0**	4	4	100
SPECIAL 4	PCH 4002/4003/ 4004	SPECIAL PAPER IV: INORGANIC/ORGANIC/PHYSICAL	**3**	**1**	**0**	4	4	100
ELECTIVE 2	****	****	**2**	**0**	**0**	2	2	50
ELECTIVE 3	****	*****	**2**	**0**	**0**	2	2	50
CC 15	PCH4101	DISSERTATION	**0**	**0**	**6**	6	12	150
		TOTAL	**10**	**2**	**6**	**18**	**24**	**450**
NON-CGPA								
AECC-7	PCH 4501	SEMINAR & OTHER ACTIVITIES	**0**	**0**	**1**	1	1	**25**
AECC-8	PCH 4502	SKILLX & NSS	**0**	**0**	**1**	1	1	**25**
		TOTAL	**10**	**2**	**8**	**20**	**26**	**500**

SEMESTER III

- **SPECIALIZATION PAPER I**

PCH3002: Advanced Bioinorganic and Organometallics
PCH3003: Advanced Organic Synthesis I
PCH3004: Advanced Quantum Mechanics

- **SPECIALIZATION PAPER II**

PCH3005: Advanced Topics in Inorganic Chemistry I
PCH3006: Biochemistry, Pericyclic and Photochemistry
PCH3007: Solid State Chemistry

- **SPECIALIZATION PAPER III**

PCH3101: Inorganic Special Practical
PCH3102: Organic Special Practical
PCH3103: Physical Special Practical

- **ELECTIVE PAPER I**

PCH3008: Supramolecular Chemistry and Drug Design
PCH3009: Nuclear Chemistry

SEMESTER IV

- **SPECIALIZATION PAPER IV**

PCH4002: Advanced Topics in Inorganic Chemistry II
PCH4003: Advanced Organic Synthesis II
PCH4004: Electrochemistry and Statistical Mechanics

- **ELECTIVE PAPER II**

PCH4005: Polymer Chemistry
PCH4006: Advanced Spectroscopy

- **ELECTIVE PAPER III**

PCH4007: Materials Chemistry
PCH4008: Industrial Chemistry