

Department of Applied Chemistry and Basic Sciences (Course Outline for Chemistry Honors' Programme)

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Certificate In Introductory Chemistry							
SEMESTER-I							
Major-1	CHEM-111	Fundamentals of Inorganic Chemistry-I	4-0-0	4	50	50	100
Major-2	MATH-111	Fundamental Mathematics	6-0-0	6	50	50	100
Major-3	PHYS-111	Mechanics	4-0-0	4	50	50	100
Major-1 Practical	CHEM-111P	Fundamentals of Inorganic Chemistry-I-Lab	0-0-2	2	50	50	100
Major-3 Practical	PHYS-111P	Mechanics-Lab	0-0-2	2	50	50	100
Minor Elective-1	PHYS-112	Mathematical Physics	4-0-0	4	50	50	100
Vocational Minor		SEC-1 (Choose from the list)	3-0-0	3	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-1	Basic Communication and Skills	3-0-0	3	50	50	100
Total Credit				25			

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Certificate In Introductory Chemistry							
SEMESTER-II							
Major-1	CHEM-121	Fundamentals of Organic Chemistry-I	4-0-0	4	50	50	100
Major-2	MATH-121	Geometry	6-0-0	6	50	50	100
Major-3	PHYS-121	Electricity and Magnetism	4-0-0	4	50	50	100
Major-1 Practical	CHEM-121P	Fundamentals of Organic Chemistry-I Lab	0-0-2	2	50	50	100
Major-3 Practical	PHYS-121P	Electricity and Magnetism-Lab	0-0-2	2	50	50	100
Vocational Minor		SEC-2 (Choose from the list)	3-0-0	3	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-2	Environment Studies	3-0-0	3	50	50	100
Total Credit				21			
Exit Option with “Undergraduate Certificate” (<i>Certificate in Introductory Chemistry</i>) after the first year or two semesters with the completion of the course equivalent to minimum 40 credits. Along with entry option to third semester after exit.							

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Diploma In Chemical Sciences							
SEMESTER-III							
Major-1	CHEM-231	Physical Chemistry-I	4-0-0	4	50	50	100
Major-2	MATH-231	Calculus	6-0-0	6	50	50	100
Major-3	PHYS-231	Thermodynamics	4-0-0	4	50	50	100
Major-1 Practical	CHEM-231P	Physical Chemistry –I Lab	0-0-2	2	50	50	100
Major-3 Practical	PHYS-231P	Thermodynamics-Lab	0-0-2	2	50	50	100
Vocational Minor		SEC-3 (Choose from the list)	3-0-0	3	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-3	Management Paradigms from Bhagavad Gita	3-0-0	3	50	50	100
Total Credit				21			

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Diploma In Chemical Sciences							
SEMESTER-IV							
Major-1	CHEM-241	Inorganic Chemistry II	4-0-0	4	50	50	100
Major-2	MATH-241	Differential Equation	6-0-0	6	50	50	100
Major-3	PHYS-241	Geometrical Optics	4-0-0	4	50	50	100
Major-1 Practical	CHEM-241P	Inorganic Chemistry II-Lab	0-0-2	2	50	50	100
Major-3 Practical	PHYS-241P	Geometrical Optics-Lab	0-0-2	2	50	50	100
Minor Elective-1	MATH-242		4-0-0	4	50	50	100
Vocational Minor		SEC-4 (Choose from the list)	3-0-0	3	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-4	Vedic Science/ Vedic Mathematics	3-0-0	3	50	50	100
Total Credit				25			
<i>Exit Option with "Undergraduate Diploma" (Diploma In Chemical Sciences) after the two years or four semesters with the completion of the course equivalent to minimum 80 credits. Along with entry option to fifth semester after exit.</i>							

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Degree in Bachelor of Science							
SEMESTER-V							
Major-1	CHEM-351	Organic Chemistry II	4-0-0	4	50	50	100
Major-2	CHEM-352	Instrumental Methods Of Chemical Analysis	4-0-0	4	50	50	100
Major-3	MATH-351	Abstract Algebra	5-0-0	5	50	50	100
Major-4	MATH -352	Linear Algebra	5-0-0	5	50	50	100
Major-1 Practical	CHEM-351P	Organic Chemistry II Lab	0-0-1	1	50	50	100
Major-2 Practical	CHEM-352P	Instrumental Methods Of Chemical Analysis-Lab	0-0-1	1	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-5	Meditation/PDP Through Applied Physiology of Ram Charit Manas Sports/Photography/Publication and creative writing/creative arts/NCC	3-0-0	3	50	50	100
Total Credit				20			

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Degree in Bachelor of Science							
SEMESTER-V							
Major-1	CHEM-351	Organic Chemistry II	4-0-0	4	50	50	100
Major-2	CHEM-352	Instrumental Methods Of Chemical Analysis	4-0-0	4	50	50	100
Major-3	PHYS-361	Modern Physics	4-0-0	4	50	50	100
Major-4	PHYS-362	Digital and Analog Electronics	4-0-0	4	50	50	100
Major-1 Practical	CHEM-351P	Organic Chemistry II Lab	0-0-1	1	50	50	100
Major-2 Practical	CHEM-352P	Instrumental Methods Of Chemical Analysis-Lab	0-0-1	1	50	50	100
Major-3 Practical	PHYS-361P	Modern Physics-Lab	0-0-1	1	50	50	100
Major-4 Practical	PHYS-362P	Digital and Analog Electronics-Lab	0-0-1	1	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-5	Meditation/PDP Through Applied Physiology of Ram Charit Manas Sports/Photography/Publication and creative writing/creative arts/NCC	3-0-0	3	50	50	100
Total Credit				20			

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Degree in Bachelor of Science							
SEMESTER-VI							
Major-1	CHEM-361	Physical Chemistry II	4-0-0	4	50	50	100
Major-2	CHEM-362	Organometallic Compounds And Bioinorganic Chemistry	4-0-0	4	50	50	100
Major-3	MATH-351	Analysis	5-0-0	5	50	50	100
Major-4	MATH -352	Numerical	5-0-0	5	50	50	100
Major-1 Practical	CHEM-361P	Physical Chemistry II Lab	0-0-1	1	50	50	100
Major-2 Practical	CHEM-362P	Organometallic Compounds And Bioinorganic Chemistry- Lab	0-0-1	1	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-6	Essence of Indian Traditional Knowledge / Vivekananda Studies/ Sports/Photography/Publication and creative writing/creative arts/NCC	3-0-0	3	50	50	100
Total Credit				20			

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
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Degree in Bachelor of Science

SEMESTER-VI

Major-1	CHEM-361	Physical Chemistry II	4-0-0	4	50	50	100
Major-2	CHEM-362	Organometallic Compounds And Bioinorganic Chemistry	4-0-0	4	50	50	100
Major-3	PHYS-351	Physical Optics	4-0-0	4	50	50	100
Major-4	PHYS -352	Basic Electronics	4-0-0	4	50	50	100
Major-1 Practical	CHEM-361P	Physical Chemistry II Lab	0-0-1	1	50	50	100
Major-2 Practical	CHEM-362P	Organometallic Compounds And Bioinorganic Chemistry- Lab	0-0-1	1	50	50	100
Major-3 Practical	PHYS-361P	Modern Physics-Lab	0-0-1	1	50	50	100
Major-4 Practical	PHYS-362P	Digital and Analog Electronics-Lab	0-0-1	1	50	50	100
Co-Curricular Value additional Course/ Qualifying/Non Remedial	VAC-6	Essence of Indian Traditional Knowledge / Vivekananda Studies/ Sports/Photography/Publication and creative writing/creative arts/NCC	3-0-0	3	50	50	100
Total Credit				20			

Exit Option with “Bachelor’s Degree (Bachelor of Science)” after the three years or six semesters with the completion of the course equivalent to minimum 120 credits. Along with entry option to fourth year or seventh semester for those students meeting a minimum CGPA of 7.5 in Bachelor’s Degree Examination (BDE).

Type of Course	Course Code	Title of the Course	L-T-P /Week	No. of Credits	University Exam	Internal Assessment	Total
Bachelor's Degree (Honors/Research)							
SEMESTER-VII							
Major-1	CHEM-471	Advanced Inorganic Chemistry	6-0-0	6	50	50	100
Major-2	CHEM-472	Advanced Organic Chemistry	4-0-0	4	50	50	100
Major-3	CHEM-473	Molecular Chemistry	4-0-0	4	50	50	100
Major-2 Practical	CHEM-472P	Advanced Organic Chemistry -Lab	0-0-2	2	50	50	100
Major-3 Practical	CHEM-473P	Molecular Chemistry Lab	0-0-2	2	50	50	100
Major-3	MICR-472	Research Methodology	4-0-0	4	50	50	100
Research Project	CHEM-474	Project-I/ Industrial Training	4-0-0	4	50	50	100
Total Credit				26			

Type of Course	Course Code	Title of the Course	L-T- P /Week	No. of Credits	University Exam	Internal Assessment	Total
Bachelor's Degree (Honors/Research)							
SEMESTER-VIII							
Major-1	CHEM-481	Advanced Physical Chemistry	4-0-0	4	50	50	100
Major-2	CHEM-482	Analytical Chemistry	4-0-0	4	50	50	100
Major-3	CHEM-483	Intellectual Property Rights (IPR)	6-0-0	6	50	50	100
Major-1 Practical	CHEM-481P	Advanced Physical Chemistry-Lab	0-0-2	2	50	50	100
Major-2 Practical	CHEM-482P	Analytical Chemistry-Lab	0-0-2	2	50	50	100
Research Project	CHEM-484	Project-II /Industrial Training	4-0-0	4	50	50	100
Major-4	BIOT-483	Research Publication and Ethics	4-0-0	4	50	50	100
Total Credit				26			
<i>Award of Bachelor's Degree (Honors/Research) or Bachelor of Science in Discipline with Research after the four years or eight semesters with the completion of the course equivalent to minimum 160 credits.</i>							

TOTAL CREDITS = 184 (For four years)