

SCHEME AND SYLLABUS

FOR

**Learning Outcomes based Curriculum Framework
(LOCF)**

For

B. Sc. Chemistry Honours (Revised)



DEPARTMENT OF CHEMISTRY

SCHOOL OF PHYSICAL SCIENCES

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (CG)

To be implemented from 2021-22 (Revised)

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Semester wise Theory Papers and Practical

B.Sc. Hon's (Chemistry): LOCF 2021-2022

Department of Chemistry, School of Physical Sciences

Course Opted	Course Code	Name of the course	Credit	Hour/week	Internal Assess	End Sem Exam
Semester I						
CC-I Theory	CYUATT1	Inorganic Chemistry-I	3	3	30	70
CC-I Practical	CYUALT1	Inorganic Chemistry Practical-I	2	4	30	70
CC-II Theory	CYUATT2	Organic Chemistry-I	3	3	30	70
CC-II Practical	CYUALT2	Organic Chemistry Practical-I	2	4	30	70
AEC-I Theory	CYUATAI	Select one from the Pool of AEC Courses offered	2	2	30	70
SEC-I Theory	CYUATLI	Select one from the Pool of SEC Courses offered	2	2	30	70
GEC-I Theory	CYUATG1	1A Physics-I, 1B Mathematics-I, 1C Zoology-I 1D Botany-I, 1E Anthropology-I, 1F Biotechnology-I, 1G Forensic Science-I	3	3	30	70
GEC-I Practical	CYUALG1	Generic Elective- Practical-I	2	4	30	70
Additional Credit Course I	CYUATC1	Select one from the Pool of Value added Courses offered				
TOTAL			19	25	240	560
Semester II						
CC-III Theory	CYUBTT1	Physical Chemistry-I	3	3	30	70
CC-III Practical	CYUBLT1	Physical Chemistry Practical-I	2	4	30	70
CC-IV Theory	CYUBTT2	Organic Chemistry-II	3	3	30	70
CC-IV Practical	CYUBLT2	Organic Chemistry Practical-II	2	4	30	70
AEC-II Theory	CYUBTAI	Select one from the Pool of AEC Courses offered	2	2	30	70
SEC-II Theory	CYUBTLI	Select one from the Pool of SEC Courses offered	2	2	30	70
GEC-II Theory	CYUBTG1	2A Physics-I, 2B Mathematics-I, 2C Zoology-I 2D Botany-I, 2E Anthropology-I, 2F Biotechnology-I, 2G Forensic Science-I	3	3	30	70
GEC-II Practical	CYUBLG1	Generic Elective- Practical-II	2	4	30	70
Additional Credit Course II	CYUBTC1	Select one from the Pool of Value added Courses offered				
Total			19	25	240	560
Semester III						
CC-V Theory	CYUCTT1	Physical Chemistry-II	3	3	30	70
CC-V Practical	CYUCLT1	Physical Chemistry Practical-II	2	4	30	70
CC-VI Theory	CYUCTT2	Organic Chemistry-III	3	3	30	70
CC-VI Practical	CYUCLT2	Organic Chemistry Practical-III	2	4	30	70
CC-VII Theory	CYUCTT3	Molecular Spectroscopy & Photochemistry	3	3	30	70
CC-VII Practical	CYUCLT3	Spectroscopy Practical	2	4	30	70
AEC-III Theory	CYUCTAI	Select one from the Pool of AEC Courses offered	2	2	30	70
GEC-III Theory	CYUCTG1	3A Physics-I, 3B Mathematics-I, 3C Zoology-I 3D Botany-I, 3E Anthropology-I, 3F Biotechnology-I, 3G Forensic Science-I	3	3	30	70
GEC-III Practical	CYUCLG1	Generic Elective- Practical-III	2	4	30	70
Additional Credit Course III	CYUCTC1	Select one from the Pool of Value added Courses offered				
Total			22	30	270	630
Semester IV						
CC-VIII Theory	CYUDTT1	Physical Chemistry-III	3	3	30	70
CC-VIII Practical	CYUDLT1	Physical Chemistry practical-III	2	4	30	70
CC-IX Theory	CYUDTT2	Inorganic Chemistry-II	3	3	30	70
CC-IX Practical	CYUDLT2	Inorganic Chemistry practical-II	2	4	30	70
CC-X Theory	CYUDTT3	Introduction to Quantum Chemistry	3	3	30	70
CC-X Practical	CYUDLT3	Quantum Chemistry Practical	2	4	30	70

AEC-IV Theory	CYUDTA1	Select one from the Pool of AEC Courses offered	2	2	30	70
GEC-IV Theory	CYUDTGI	4A Physics-I, 4B Mathematics-I, 4C Zoology-I, 4D Botany-I, 4E Anthropology-I, 4F Biotechnology-I, 4G Forensic Science-I	3	3	30	70
GEC-IV Practical	CYUDLGI	Generic Elective- Practical-IV	2	4	30	70
Additional Credit Course IV	CYUDTCI	Select one from the Pool of Value added Courses offered				
Total			22	30	270	630
Summer Internship*	CYUDLFI		6*	90	30	70
Semester V						
CC-XI Theory	CYUETT1	Inorganic Chemistry-III	3	3	30	70
CC-XI Practical	CYUFLT1	Inorganic Chemistry Practical-III	2	4	30	70
CC-XII Theory	CYUETT2	Analytical Chemistry	3	3	30	70
CC-XII Practical	CYUFLT2	Analytical Chemistry Practical	2	4	30	70
AEC-V Theory	CYUETA1	Select one from the Pool of AEC Courses offered	2	2	30	70
DSE-I Theory	CYUETD1	Select one from the Pool of DSE Courses offered	3	3	30	70
DSE-I Practical	CYUELD1	Select one from the Pool of DSE Courses offered	2	4	30	70
DSE-II Theory	CYUETD2	Select one from the Pool of DSE Courses offered	3	3	30	70
DSE-II Practical	CYUELD2	Select one from the Pool of DSE Courses offered	2	4	30	70
Additional Credit Course V	CYUETCI	Select one from the Pool of Value added Courses offered				
TOTAL			22	30	270	630
Semester VI						
CC-XIII Theory	CYUFTT1	Green Chemistry	3	3	30	70
CC-XIII Practical	CYUFLT1	Green Chemistry Practical	2	4	30	70
CC-XIV Theory	CYUFTT2	Materials Chemistry	3	3	30	70
CC-XIV Practical	CYUFLT2	Materials Chemistry Practical	2	4	30	70
DSE-III Theory	CYUFTD1	Select one from the Pool of DSE Courses offered	3	3	30	70
DSE-III Practical	CYUFLD1	Select one from the Pool of DSE Courses offered	2	4	30	70
Seminar	CYUFSS1	Followed by report submission and seminar	2	4	30	70
Dissertation/Project	CYUFL	Followed by report submission, presentation and Viva-Voce.	7	14	30	70
Additional Credit Course VI	CYUFTCI	Select one from the Pool of Value added Courses offered				
MOOC's**						
			2-5	2-5		
TOTAL			24	34	240	560
TOTAL CREDITS AND MARKS			134			

As per UGC LOCF guidelines, University / departments have liberty to offer GEC and SEC courses offered by any department to students of other departments.

The No. of GE course is four. One GEC course is compulsory in first 4 semesters each. In present scheme it is proposed to have minimum two GEC courses (from one subject) in first two semester after which student shall change two GEC for another subject in IIIrd and IVth semester, so that all the student can have exposure of one additional subject.

* May be offered during summer. Summer Internship: duration will be 2-4 weeks (minimum 90 working hours).

** MOOC's courses may be offered at least one time during entire PG programme for the any of Core Course, Generic elective, Discipline specific elective, AEC course, Skill enhancement course available on MOOC's platform time to time. If any such course related to your subject is not available on MOOC's platform, department may continue with regular courses.

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Abbreviations:

CC= Course code;

AEC= Ability Enhancement Course;

GEC= Generic Elective Course;

SEC= Skill Enhancement Course;

DSE= Discipline Specific Elective Course.

CHEMISTRY-DSE I-IV (ELECTIVES) (CREDIT: 05 EACH)

1. Medicinal Chemistry
2. Electrochemistry
3. Polymer Chemistry
4. Environmental Chemistry
5. Advanced Material Chemistry
6. Advanced Analytical Chemistry
7. Nuclear & Radiation Chemistry
8. Organic Spectroscopy
9. Heterocyclic Chemistry
10. Biochemistry
11. Organometallics and Bioinorganic Chemistry
12. Introduction to Nanochemistry & Applications

SKILL ENHANCEMENT COURSE (ANY FOUR) (CREDIT: 02 EACH)

1. Science Communication and Popularization
2. Biofertilizer
3. Personality Development
4. Computer Applications in Chemistry
5. Herbal Science & Technology
6. Fermentation Science & Technology
7. Environment Impact Analysis
8. IT Skill for Chemist
9. IPR and business skill for chemist
10. Analytical Clinical Biochemistry
11. Mushroom Culture Technology

ABILITY ENHANCEMENT COURSE (AEC) offered by Department of Chemistry (CREDIT: 02 EACH)

1. Chemistry in Everyday life
2. History of Indian Science
3. English for communication
4. Intellectual Property Rights
5. Good Laboratory Practices
6. Introduction to Forensic Science & Technology
7. Technology
8. Renewable Energies (Solar & Biogas)
9. Cheminformatics
10. Water remediation and conservation studies
11. Research methodology
12. Chemistry of food, nutrition and preservation

VALUE ADDED COURSES (Optional)

1. Fuel Chemistry (Course Coordinator- Dr. S. S. Thakur and Prof. G. K. Patra)
2. Cosmetic Formulation (Course Coordinator- Dr. S. Banerjee)
3. Polymer Chemistry (Course Coordinator- Dr. A. Srivastava)
4. Eco-Friendly Lubricants – Chemistry And Application (Course Coordinator- Dr. B. L. Sahu and Dr. B. Mondal)
5. Efficient Technologies for Food Processing and Shelf Life Extension (Course Coordinator- Dr. Niraj Kumari and Dr. A. Srivastva)

NAME OF THE GENERIC ELECTIVE OFFERED BY DEPARTMENT OF CHEMISTRY
(CREDIT: 05)

SEMESTER-I

GE Theory-I: Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons

GE PRACTICAL – I

SEMESTER-II

GE Theory-II: Kinetic Theory of Gases, Chemical Energetics, Equilibria & Functional Group Organic Chemistry

GE PRACTICAL – II

SEMESTER-III

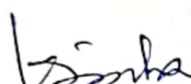
GE Theory-III: Solid, Solutions, Phase Equilibrium & Chemical kinetics, Conductance, Periodic Properties and Chemistry of s-, p-, and d- block elements


GE PRACTICAL – III


SEMESTER-IV


GE Theory-IV: Analytical Chemistry, Co-ordination compounds, Organometallics and Molecules of life

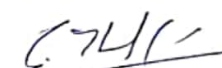
GE PRACTICAL - IV


Prof. C. R. Sinha
(External Expert)


Dr. V. K. Rai
(Member)


Dr. A. K. Singh
(Member)


Prof. G. K. Patra
(Member)


Dr. S. S. Thakur
(HOD)