TEACHING PLAN FOR THE SESSION 2025-26: ODD SEMESTERS
DEPARTMENT OF CHEMISTRY
SALBARI COLLEGE

SEMESTER-I

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ1014 :: **PAPER TITLE:** FUNDAMENTALS OF CHEMISTRY-1

PAPER CREDIT: 3 (Theory) + 0 (Tutorial) +1 (Practical) = 4

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

Course Objective: This course aims at giving students the theoretical understanding about the basic constituents of matter – atoms, ions and molecules in terms of their electronic structure and reactivity. Structure and bonding in these are to be dealt with basic quantum chemistry treatment. Idea of basic organic chemistry and stereo-chemistry will be discussed. This course also contains states of matter- gaseous, liquid and solid sates along with ionic equilibria. Idea about molecular and crystal symmetry will also be provided.

Course Outcomes: On successful completion, the students would have clear understanding of the concepts related to atomic and molecular structure, chemical bonding, periodic properties. They will learn about basic organic chemistry and stereo-chemistry and states of matter-gaseous, liquid and solid sates along with ionic equilibria. The students will also be able to demonstrate about the molecular and crystal symmetry.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Remarks**
Unit 1: Atomic structure and periodicity of Elements	Dr. Karabi Roy	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Basic organic chemistry	Dr. Trishna Rajbongshi	7	15	
Unit 2: Stereochemistry	Dr. Dulu Brahma	8		
Unit 3: Gaseous state	Dr. Karabi Roy	15	15	

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DEPARTMENT OF CHEMISTRY
SALBARI COLLEGE

SEMESTER-I

SUBJECT: CHEMISTRY

PAPER CODE: CHMMIN1014 :: **PAPER TITLE:** CHEMISTRY-1

PAPER CREDIT: 3+0+1=4

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

Course Objectives: This course aims at giving students theoretical understanding about the atomic structure. Idea of basic organic chemistry and aliphatic hydrocarbons. This course contains basics of thermodynamics.

Course Outcomes: On successful completion, students would have clear understanding of the atomic structure, basic organic chemistry and aliphatic hydrocarbons and basics of thermodynamics.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Remarks**
Unit 1: Atomic structure	Dr. Karabi Roy	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Electronic displacements, Cleavage of bonds, Structure, shape and reactivity of organic molecules, Nucleophiles and electrophiles & Reactive intermediates.	Dr. Trishna Rajbongshi	8	15	
Unit 2: Alkanes, Alkenes, & Alkynes	Dr. Dulu Brahma	7		
Unit 3: Chemical thermodynamics	Dr. Karabi Roy	15	15	

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DEPARTMENT OF CHEMISTRY
SALBARI COLLEGE

SEMESTER-I

SUBJECT: CHEMISTRY

PAPER CODE: CHMSEC1013 :: **PAPER TITLE:** BASIC ANALYTICAL CHEMISTRY

PAPER CREDIT: 2+1+0=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

Course Objectives: To familiarize students with different micro and semi-micro analytical techniques and help develop the ability to use modern instrumental methods for chemical analysis of food, soil, air and water.

Course Outcomes: Upon completion of this course, students shall be able to explain the basic principles of chemical analysis, design/implement microscale and semi-micro experiments, record, interpret and analyse data following scientific methodology.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Introduction to analytical Chemistry and its interdisciplinary nature.	Dr. Dulu Brahma	8	8	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Analysis of soil	Dr. Trishna Rajbongshi	8	8	
Unit 3: Analysis of water	Dr. Karabi Roy	8	8	

TEACHING PLAN FOR THE SESSION 2025-26: ODD SEMESTERS
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SALBARI COLLEGE

SEMESTER-III

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ2014 :: **PAPER TITLE:** INORGANIC CHEMISTRY-1

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

***Course Objectives*:** This course starts with the periodic behaviour of s and p block elements related to their electronic structure and their reactivity is included to acquaint students with the principles governing their reactivity. Concepts of protonic and non-protonic acids and bases are introduced for students to appreciate different types of chemical reactions. This course further intends to apprise students about the variety of compounds of the main group elements including oxides, hydrides, nitrides, inter-halogens, noble gases and inorganic polymers.
As part of the accompanying lab course, experiments involving acid-base and redox titrations are included for the students to explore other varieties of redox titration.
***Course Outcomes*:** On successful completion of this course, students would be able to identify the variety of s and p block compounds and comprehend their preparation, structure, bonding, properties and uses. They will also be able to apply the concept of acids and bases in inorganic applications. Students will also be equipped with noble gases and inorganic polymer.
Experiments in this course will boost their quantitative estimation skills and precautions involved in titrations.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Chemistry of s and p block elements	Dr. Karabi Roy	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Acids and bases	Dr. Trishna Rajbongshi	6	6	
Unit 3: Noble Gases	Dr. Trishna Rajbongshi	6	6	
Unit 4: Inorganic polymers	Dr. Dulu Brahma	6	6	

TEACHING PLAN FOR THE SESSION 2025-26: ODD SEMESTERS
DEPARTMENT OF CHEMISTRY
SALBARI COLLEGE

SEMESTER-III

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ2024 :: **PAPER TITLE:** PHYSICAL CHEMISTRY-1

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

***Course Objectives*:** In this course, chemical thermodynamics, and chemical equilibrium will be taught to the students. Experiment-based knowledge of properties of solutions like surface tension, viscosity, and pH-metry will be provided.

***Course Outcomes*:** In this course, the students will learn laws of thermodynamics, thermochemistry, thermodynamic functions, relations between thermodynamic properties, Gibbs Helmholtz equation, Maxwell relations, etc. Moreover, the students are expected to learn ionic equilibria, the acidic and basic nature of the solution, pH measurement, buffer solution, their applications, and related numerical calculation. They will also learn about the quantitative estimation of solutions. Students are expected to gather experimental knowledge of properties of solutions like surface tension, viscosity, and pH-metry.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Chemical Thermodynamics 1	Dr. Karabi Roy	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Chemical Thermodynamics 2	Dr. Trishna Rajbongshi	15	15	
Unit 3: Ionic Equilibria	Dr. Dulu Brahma	15	15	

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SEMESTER-III

SUBJECT: CHEMISTRY

PAPER CODE: CHMMIN2014 :: **PAPER TITLE:** CHEMISTRY-3

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

Course Objectives: This course aims at giving students theoretical understanding about the chemical bonding and aromatic hydrocarbon. This course contains also basics concept of liquid and solid.

Course Outcomes: On successful completion, students would have clear understanding of the chemical bonding of compounds, electrophilic aromatic substitution, properties of liquid and structure of solid. The students will also get idea of volumetric analysis.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Chemical Bonding	Dr. Karabi Roy	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Aromaticity and aromatic hydrocarbons	Dr. Dulu Brahma	15	15	
Unit 3: Liquids and solids	Dr. Trishna Rajbongshi	15	15	

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SEMESTER-V

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ3014 :: **PAPER TITLE:** INORGANIC CHEMISTRY-3

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

***Course Objectives*:** This course familiarizes students to the knowledge of lanthanides and actinides. Organometallic compounds are incorporated so as to apprise students about the importance of metal carbon bond to form complexes and their application as catalysts. Students are expected to learn factors leading to stability of organometallic compounds, their synthesis, reactivity and uses and catalytic behaviour. Bioinorganic chemistry is included in this course to aquatint studies on the useful and harmful aspects of metals in biological system.

Through the accompanying lab course, experiments related to gravimetric analysis, synthesis of coordination compounds and separation of metal ions using chromatography is included. This will broaden the experimental skills of the students where students will learn about various aspects of experiment design depending upon the requirements like synthesis, estimation or separation.

***Course Outcomes*:** By studying this course, the students will be expected to learn about the chemistry of lanthanides and actinides. Students will also learn about organometallic compounds, comprehend their bonding, stability, reactivity and uses. They will be familiar with the variety of catalysts based on organometallic compounds and their application in industry. The students will be familiar to the role of metals in biological system.

Through the experiments, students not only will be able to prepare, estimate or separate metal complexes/compounds but also will be able to design experiments independently which they would be able to apply if and when required.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Lanthanoids and actinoids	Dr. Trishna Rajbongshi	8	8	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Organometallic compounds	Dr. Trishna Rajbongshi	20	20	
Unit 3: Organometallic compounds in cataysis	Dr. Trishna Rajbongshi	8	8	
Unit 4: Bioinorganic chemistry	Dr. Trishna Rajbongshi	9	9	

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SEMESTER-V

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ3024 :: **PAPER TITLE:** ORGANIC CHEMISTRY-2

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

***Course Objectives*:** The students will be taught about nitrogen and sulphur compounds, alkaloids, terpenes, dyes, and carbohydrates. They will also be introduced to organic photochemistry and its processes.

***Course Outcomes*:** At the end of the course, the students will learn about the preparation and important reactions of nitrogen and sulphur compounds. They will also learn about the occurrence, classification, properties and related aspects of alkaloids, terpenes, dyes, and carbohydrates. After attending this course, the students will be able to understand and demonstrate the basic concepts of organic photochemistry and related processes. After studying the lab course of this paper, students will be able to estimate and determine the amount of glycine, proteins, saponification value and iodine number of oil/fat, and they will also be able to do isolation and characterization of DNA from natural products.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Nitrogen and sulphur containing functional groups	Dr. Dulu Brahma	12	12	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Molecular rearrangement	Dr. Dulu Brahma	10	10	
Unit 3: Heterocyclic chemistry	Dr. Dulu Brahma	8	8	
Unit 4: Dyes	Dr. Dulu Brahma	5	5	
Unit 5: Chromatographic techniques	Dr. Karabi Roy	5	5	

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DEPARTMENT OF CHEMISTRY
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SEMESTER-V

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ3034 :: **PAPER TITLE:** PHYSICAL CHEMISTRY-3

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

***Course Objectives*:** The aim of this course is to teach students the important topics of physical chemistry viz. chemical kinetics, electrochemistry and quantum chemistry. Moreover, the students will be trained to handle UV-Visible spectrometers and colorimeters used in various experimental purposes.

***Course Outcomes*:** The students are expected to learn chemical kinetics and its application. They will also learn the rate laws of chemical transformation, experimental methods of rate law determination, steady state approximation, etc. in the chemical kinetics unit. After attending this course, the students will be able to understand electrochemistry and various laws related to it. They will learn about theoretical chemistry i.e. quantum chemistry. After studying the lab course of this paper, students will be able the handle UV-Visible spectrometers and colorimeters for various experimental purposes.

Unit & Topic (as per Syllabus)	Assigned Teacher for the topic	No. of Lectures allowed / Teacher	Total lectures allowed as per prescribed Syllabus	Course outcomes
Unit 1: Chemical kinetics-1	Dr. Karabi Roy	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Electrochemistry	Dr. Karabi Roy	10	10	
Unit 3: Quantum chemistry-1	Dr. Karabi Roy	20	20	

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SEMESTER-V

SUBJECT: CHEMISTRY

PAPER CODE: CHMMAJ3044 :: **PAPER TITLE:** COMPUTERS IN CHEMISTRY

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

***Course Objectives*:** This course intends to make learners familiar with the basics of computer language, computer programming, handling of experimental data, curve fitting, etc. to analyse experimental results. This basic knowledge will help the students to perform and interpret the results of various chemistry practical.

***Course Outcomes*:** After the completion of this course, it will help the student to interpret laboratory data, curve fitting of experimental work, and also to perform quantum mechanical calculations for various molecular models.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Introduction to computers	Dr. Karabi Roy	20	20	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Numerical methods	Dr. Trishna Rajbongshi	15	15	
Unit 3: Basic programming Applications in chemistry	Dr. Dulu Brahma	15	15	

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DEPARTMENT OF CHEMISTRY
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SEMESTER-V

SUBJECT: CHEMISTRY

PAPER CODE: CHMMIN3014 :: **PAPER TITLE:** CHEMISTRY-5

PAPER CREDIT: 3+0+1=3

TOTAL MARKS: 100 (THEORY: 50 PRACTICAL: 20, INTERNAL ASSESMENT: 30)

Course Objectives: This course aims at giving the students theoretical knowledge about the d-block elements and coordination chemistry; preparation and reactions of alcohols, phenols and ethers; and chemical and ionic equilibrium.

Course Outcomes: On successful completion, students would have clear understanding of the properties of d- block elements and its bonding in complexes; preparation, physical and chemical properties of alcohols, phenols and ethers; and equilibrium. From the laboratory course, the students will get idea on the determination of solubility and paper chromatography to separate sugar from a mixture.

Unit & Topic (as per Syllabus)	**Assigned Teacher for the topic**	**No. of Lectures allowed / Teacher**	**Total lectures allowed as per prescribed Syllabus**	**Course outcomes**
Unit 1: Coordination chemistry	Dr. Trishna Rajbongshi	15	15	Unfinished topics (if any) will have to be covered in remedial classes by the concerned faculties.
Unit 2: Alchols, phenols, ethers and epoxides	Dr. Dulu Brahma	15	15	
Unit 3: Equilibria	Dr. Karabi Roy	15	15	

N.B. All the practical classes will be conducted as per daily routine.