Course Outcomes

SEMESTER I
Course Code: **ENG-151**
Title of the Course: **Communicative English: Spoken And Written**
Number of Credits: Theory - 2

Course outcomes
1. Elicit and show respect for the views of others as well as be culturally sensitive.
2. Display emotional stability and self-confidence.
3. Apply critical thinking skills through decision-making and problem-solving.
4. Demonstrate effective written communication for an intended purpose and audience that follows genre/disciplinary conventions that reflect creation, organisation, precision and revision.

SEMESTER I
Course Code: **VAC-104**
Title of the Course: **Constitutional Values and Obligations**
Number of Credits: Theory - 2

Course outcomes
1. Understand the world, country, society and have awareness of ethical problems, social rights, values and responsibility to the self and to others.
2. Understand and follow changes in patterns of political behaviour, ideas and structures.
3. It will develop skills such as confidence in negotiation, public speaking, and a good understanding of political system.
4. It will fosters critical thinking skills. It encourages students to question assumptions, evaluate evidence, and think logically about complex issues. These skills are valuable in a variety of careers, from law and journalism to business and public service.

SEMESTER I
Course Code: **CHC 100**
Title of the Course: **Fundamentals of Chemistry**
Number of Credits: Theory - 3, Practical – 1

Course outcomes (Theory)
1. Identify the properties of liquids and gases.
2. Explain the applications of liquid and gas.
3. Elucidate the atomic structure based on Quantum Theory.
4. Identify the use of curved arrow notations inorganic reaction mechanisms.
5. Understand various methods of preparation and reactions of alkanes, alkenes and alkynes.

Course outcomes (Practical)

1. To acquire the knowledge and skill of basic volumetric and gravimetric estimations.
2. The students will be able to get hands-on experience on the purification techniques for organic compounds.
3. The students will be able to get hands on experience on the identification of chemical nature of organic compounds.

SEMESTER I

Course Code: **MIC-100**

Title of the Course: **Basics of Microbiology**

Number of Credits: Theory - 3, Practical – 1

Course outcomes

1. Understand different types of microorganisms and apply the knowledge of different classification systems for grouping microorganism.
2. Explain the cellular organisation of prokaryotic and eukaryotic cells.
3. Apply the techniques for obtaining and preserving pure cultures of bacteria.
4. Elaborate on physical and chemical methods of microbial control

SEMESTER I

Course Code: **MIC-141**

Title of the Course: **Techniques in Microbiology - Staining and Microscopy**

Number of Credits: Theory - 1, Practical - 2

Course outcomes

1. Perform staining and microscopy.
2. Operate different types of microscopes.
3. Observe various types of cells and cellular structures using different microscopes.
4. Analyse and interpret results of a range of staining techniques

SEMESTER III

Course Code: **MIC-200**

Title of the Course: **Microbial Biochemistry**

Number of Credits: Theory - 3, Practical – 1

Course outcomes

1. Identified structures of carbohydrates, proteins and lipids and explain their biological importance. 2. Explained structure and function of enzymes with reference to lock- and-key and induce-fit models.

3. Analyzed the factors affecting enzyme activity and apply the kinetics of enzymes such as Michaelis-Menten and LB plot.
4. Applied the techniques involved in biochemical methods for isolation and analysis of biomolecules

SEMESTER III
Course Code: **MIC-201**
Title of the Course: **Molecular Biology**
Number of Credits: Theory - 3, Practical - 1

Course outcomes
1. Understood the structure of nucleic acids and the processes of replication, transcription, and translation in prokaryotes and eukaryotes.
2. Explained the role of DNA, RNA, and proteins in life processes in microorganisms at molecular level.
3. Applied the techniques of molecular biology in replication, transcription, and translation in bacteria.
4. Designed the experiments to demonstrate effect of biomolecules on molecular processes in bacteria.

SEMESTER I
Course Code: **MAT-141**
Title of the Course: **Numerical Analysis using Python/SageMath**
Number of Credits: Theory - 1, Practical - 2

Course outcomes
1. Find the roots of algebraic and transcendental equations.
2. Apply Interpolation to solve real life problems.
3. Make use of the techniques of numerical differentiation and integration.
4. Determine the best line/quadratic curve/exponential curve to fit the given data. CO5. Utilize Python/SageMath software to aid mathematical pursuits.

SEMESTER I
Course Code: **MAT-142**
Title of the Course: **Statistical Methods Using R/SPSS/PSPP**
Number of Credits: Theory - 1, Practical - 2

Course outcomes
1. Calculate measures of central tendencies and variations.
2. Interpret correlation and regression.
3. Solve problems in Probability theory.
4. Demonstrate and Infer based on various statistical tests using statistical software.

SEMESTER III
Course Code: **MAT-241**
Title of the Course: **Technical Typesetting Using LaTeX**
Number of Credits: Theory - 1, Practical - 2

Course outcomes
1. Create and typeset a LaTeX document.
2. Build documents containing Mathematics.
3. Experiment with pictures and graphics in LaTeX.
4. Prepare impressive beamer presentations and typeset question papers using the exam class.

SEMESTER IV
Course Code: **MIC 205**
Title of the Course: **Basic Biostatistics**
Number of Credits: Theory - 2

Course outcomes
1. Understand the meaning of data and its types.
2. Understand the different tools for data analysis.
3. Apply and use appropriate tool for data processing.
4. Interpret statistical information.

SEMESTER II
Course Code: **CSC-132**
Title of the Course: **Computer Applications**
Number of Credits: Theory - 3

Course outcomes
1. Understand the essential of Information Technology Concepts.
2. Develop practical skills in data capture, analysis and presentation, report formatting.
3. Use a range of current, standard, Office Productivity software applications.
4. Apply the basic concepts of a word processing package, electronic spreadsheet and PowerPoint tool.

SEMESTER I
Course Code: **CSC-131**
Title of the Course: **Emerging Trends in Computer**
Number of Credits: Theory - 3

Course outcomes
1. Remember different emerging technologies.
2. Define emerging trends in Computer Science.
3. Select appropriate technology for a given task.
4. Identify necessary inputs for applications of emerging technologies

SEMESTER III
Course Code: **CSC-231**
Title of the Course: **Web Designing**
Number of Credits: Theory - 3

Course outcomes
1. Recall and list key web design terminology, principles, and tools.
2. Explain the functionalities and purposes of different web development technologies like HTML, CSS, and JavaScript.
3. Apply different types features and functionalities of static and dynamic sites, content management systems, and e-commerce platforms.
4. Analyse existing websites based on UX principles and accessibility guidelines.

SEMESTER II
Course Code: **VAC-112**
Title of the Course: **Green Energy Systems**
Number of Credits: Theory - 2

Course outcomes
1. Explain the importance of solar energy collection and storage.
2. Apply the principles of wind energy and biomass energy.
3. Analyse knowledge of geothermal and ocean energy.
4. Learn about energy efficient systems.
5. Discuss the concepts of green manufacturing systems.

SEMESTER II
Course Code: **VAC-116**
Title of the Course: **Life Skills**
Number of Credits: Theory - 2

Course outcomes
1. Explain the importance of Life Skills: Emotional, Social, Critical thinking, and Creative thinking.
2. Understand the connection between emotional, social and thinking skills.
3. Use life skills in their own personal lives as well as in their profession.
4. Develop their critical and creative thinking skills.

SEMESTER I
Course Code: **BOT-111**
Title of the Course: **Plants in Everyday Life**
Number of Credits: Theory - 4

Course outcomes
1. Recall various economically and medicinally important plant species used in day-to-day life.
2. Explain the uses of economically important plants and illustrate the processing of various plant parts.
3. Analyse the utilization of various plant resources in day-to-day life.
4. Apply theoretical knowledge in utilization, and report generation of economical and medicinal plants. Create awareness on conservation of medicinal plants and use of natural plant products as alternatives to synthetic products.

SEMESTER IV
Course Code: **BOT-222**
Title of the Course: **Ecotourism**
Number of Credits: Theory - 2, Practical - 2

Course outcomes
1. Understand the concepts and principles of ecotourism.
2. Identify the potential areas to be utilized for recreational activities in ecotourism generating entrepreneurial opportunities.
3. Analyze the problems associated with ecotourism and design a sustainable solution.
4. Create opportunities for locals to develop ecotourism areas and conservation of natural resources

SEMESTER III
Course Code: **BOT-212**
Title of the Course: **Soil and Water Analysis**
Number of Credits: Theory - 3, Practical - 1

Course outcomes
1. Recall the tools and techniques employed in sampling of soil and water.
2. Understand the properties of soil and water and methods of their analysis.
3. Analyze the parameters influencing soil and water quality and its effect on plant growth and human welfare.
4. Develop skills in testing of soil and water and interpretation of results

SEMESTER III
Course Code: **BOT-241**
Title of the Course: **Herbal Technology**
Number of Credits: Theory - 1, Practical - 2

Course outcomes
1. Recall the importance of medicinal and aromatic plants for preparation of herbal medicines.
2. Describe the methods for preparation of crude herbal extracts and drug evaluation.
3. Apply the acquired knowledge and skills to prepare herbal products.
4. Analyse the use of herbal plants for preparation of cosmeceuticals and nutraceuticals.

SEMESTER II
Course Code: **BOT-141**
Title of the Course: **Nursery and Gardening**
Number of Credits: Theory - 3, Practical - 1

Course outcomes
1. Explain the objective and scope of a plant nursery and garden.
2. Describe the different types of gardens and their features.
3. Analyze the different routine operations in nursery management and gardening.
4. Develop skills in designing a plant nursery and different types of gardens, routine operations in gardening and nursery management, cultivation practices for entrepreneurial opportunities.

SEMESTER IV
Course Code: **MIC-202**
Title of the Course: **Cell Biology**
Number of Credits: Theory - 3, Practical - 1

Course outcomes
1. Demonstrate a comprehensive understanding of the fundamental concepts, structures, and functions of cells and their organelles.
2. Utilize laboratory techniques and methodologies effectively to conduct experiments, analyze results, and draw evidence-based conclusions.
3. Gain in depth knowledge of different types of cancers and their occurrence.
4. Understand the concept of protein sorting and transport in eukaryotic cells.

SEMESTER IV
Course Code: **MIC-203**
Title of the Course: **Microbial Physiology**
Number of Credits: Theory - 3, Practical - 1

Course outcomes
1. Gain knowledge of energy transfers and biomolecular transformations.
2. Comprehend metabolic pathways of carbohydrate, protein and lipid metabolism.
3. Understand the distinct groups of phototrophic microorganisms and the differences between anoxygenic and oxygenic photosynthesis.
4. Apply the techniques to understand the physiology of microorganisms.

SEMESTER IV
Course Code: **MIC-204**
Title of the Course: **Microbial Genetics**
Number of Credits: Theory - 3, Practical - 1

Course outcomes
1. Understand the mechanism of gene expression and regulation in prokaryotes.
2. Learn of the discovery of the various mechanisms of gene transfer and understood the mechanisms and applications of horizontal gene transfer.
3. Comprehend the molecular mechanisms of genetic recombination.
4. Describe various types of mutations, determined their in microbial genetics and detect mutants in a population.

SEMESTER I
Course Code: **VAC-102**
Title of the Course: **Environmental Practices in Goa**
Number of Credits: Theory - 2

Course outcomes
1. Develop respect for rich Heritage of Goa and also work towards protection of Nature.
2. Promote and inculcate intrinsic values toward Biodiversity by replacing human-centered approach with bio-centric values.

SEMESTER I
Course Code: **ICD-111**
Title of the Course: **General Industrial Chemistry**
Number of Credits: Theory - 4

Course outcomes
1. Study nomenclature and learn generic names, trade names & proper names of different industrially important compounds.
2. Understand basic unit operations carried out in industries such as distillation, evaporation, mixing and crystallization and understand the instrumentation.
3. Understand about statutory limits of pollutants, the solid waste management and Industrial safety with respect to chemical hazards.
4. Understand principles, working and applications of basic analytical instruments.

SEMESTER II
Course Code: **ENG-152**
Title of the Course: **Digital Content Creation in English**
Number of Credits: Theory - 2

Course outcomes
1. Create and deliver individual presentations using a variety of digital software.
2. Compose and present a digital story.
3. Identify and distinguish between different genres of writing.
4. Write a book/ film review.
5. Interpret graphic data to arrive at an informed conclusion

SEMESTER III
Course Code: **KON-251**
Title of the Course: संभाशण कौशल्य **(Communication Skills)**
Number of Credits: Theory - 2

Course outcomes
1. वद्यिार्थ्यांक शाब्दीक, अशाब्दीक आनी लखीत संभाशणाचे म्हत्व कळटलें.
2. वद्यिार्थी संभाशणाची साबार कौशल्यां शकितले.
3. संभाशण कौशल्य एक कला म्हण आपणावन त्या मळार काम करपाक शकतले.
4. परणिामकारक संभाशण करपाक वद्यिार्थी तयार जातले.

SEMESTER IV
Course Code: **KON-252**
Title of the Course: कोंकणी भाशेचें मुळावें गन्यिान **(Basic Knowledge of Konkani)**
Number of Credits: Theory - 2

Course outcomes
1. वद्यिार्थ्यांक कोंकणी भाशेचें मुळावें गन्यिान मेळटा.
2. कोंकणी भाशेची मौखीक आनी लखीत कौशल्यां आत्मसात जाता.
3. दसिपट्टे जर्णिंत कोंकणी भाशेचो प्रभावी वापर करपाक कळटा.
4. कोंकणी भाशेच्या व्याकरणा वशिी म्हायती मेळटा.

SEMESTER III

Course Code: **CHC 200**

Title of the Course: **Concepts in Inorganic and Physical Chemistry**

Number of Credits: Theory - 3, Practical - 1

Course outcomes (Theory)

1. Understand the origin of the periodic table and study various periodic properties and their trends.
2. Learn the postulates of Valence Bond Theory, Molecular Orbital Theory and Valence Shell Electron Pair Repulsion Theory and study the general characteristics of covalent and ionic compounds through theories of bonding.
3. Study the structures of cubic crystals and the laws governing them.
4. Introduce colligative properties and study the distribution law.

Course outcomes (Practical)

1. Explain the trend of periodic properties of elements, geometry of molecules, and stability of ionic solids.
2. Construct and interpret the molecular orbital diagram of homonuclear and heteronuclear molecules.
3. Predict the colligative properties of different systems.
4. Calculate the distribution coefficient of binary systems.
5. Prepare normal and molar solutions of a substance.
6. Calculate the amount of substance in given solutions.
7. Carry out volumetric and gravimetric experiments for the estimation of unknown substances.
8. Deduce the lattice parameters of crystalline solids.

Course Code: **CHC 201**

Title of the Course: **Concepts in Organic and Analytical Chemistry**

Number of Credits: Theory - 3, Practical - 1

Course outcomes (Theory)

1. Understand the preparation of aromatic compounds, organic halides, alcohols, phenols and carbonyl compounds.
2. Study the reactions of aromatic compounds, organic halides, alcohols, phenols and carbonyl compounds.
3. Understand scope and importance of analytical chemistry and interpret steps involved in chemical analysis.
4. Study concepts of data analysis for determining central tendency and dispersion.
5. Study classical methods of analysis inclusive of principles and instrumentation of UV – Visible spectrophotometry and solvent extraction.

Course outcomes (Practical)

1. Write the mechanism for substitution reactions of alkyl and aryl halides.
2. Write reactions for preparation and reactivity effects in case of alcohols, phenols, aldehydes, ketones and benzene.
3. Explain the Scope and importance of analytical chemistry and principles involved in Classical methods of analysis, UV-Visible spectrophotometric and Solvent extraction.
4. Synthesize simple organic compounds.
5. Analyse and identify organic compounds using classical qualitative analysis.
6. Solve numericals based on statistical data obtained from experimental results.
7. Compare different methods of quantitative and qualitative analysis.
8. Perform extraction and separation of chemical mixtures

Course Code: **CHC 202**
Title of the Course: **Organic Chemistry I**
Number of Credits: Theory - 3, Practical - 1

Course outcomes (Theory)

1. Understand the preparation and reactions of carboxylic acids and amines.
2. Apply knowledge of UV-Visible spectroscopy in calculating absorption values.
3. Understand stereochemistry of organic compounds.

Course outcomes (Practical)

1. Explain the preparation and reactions of carboxylic acids and amines.
2. Identify conjugation and calculate λmax of organic compounds.
3. Draw stereoisomers of organic compounds.
4. Assign E/Z and R/S configuration to organic compounds.
5. Estimate the organic compounds.
6. Acquire hands on training in organic chemistry preparation methods.
7. Analyse and identify organic compounds using classical qualitative analysis.
8. Apply theoretical knowledge in understanding laboratory skills.

Course Code: **CHC 203**
Title of the Course: **Inorganic Chemistry I**
Number of Credits: Theory - 3, Practical - 1

Course outcomes (Theory)

1. Understand the theoretical aspects related to inorganic qualitative analysis.
2. Study the comparative chemistry of s, p and d block elements.
3. Learn the chemistry of coordination compounds and understand their role in the biological systems.
4. Study the properties, structure and bonding in noble gases compounds.

Course outcomes (Practical)

1. Explain the principles underlying inorganic qualitative analysis.
2. Explain the characteristics of s, p and d-block elements and postulates of Werner's theory of coordination compounds.
3. Write IUPAC nomenclature and identify different types of isomers of coordination compounds.
4. Describe the structure and bonding in noble gas compounds.
5. Perform a qualitative analysis of inorganic mixtures.
6. Prepare coordination compounds of transition elements.
7. Determine unknown concentration of analytes using volumetric and gravimetric procedures.

Course Code: **CHC 204**
Title of the Course: **Physical Chemistry I**
Number of Credits: Theory - 3, Practical - 1

Course outcomes (Theory)

1. Study the laws of thermodynamics and various state functions.
2. Understand rates of chemical reactions of zero, first and second order.
3. Introduce the composition of nucleus and study the applications of radioisotopes.
4. Know the photo-physical processes and their significance.

Course outcomes (Theory)

1. Calculate and explain various thermodynamic parameters of chemical reactions.
2. Differentiate between different nuclear counters.
3. Estimate quantum yields of photochemical reactions.
4. Compare the strength of the acids.
5. Determine graphically order of reaction and estimate the energy of activation.
6. Estimate the stability constant of various complexes.

Course Code: **CHC 205**
Title of the Course: **Pharmaceutical Chemistry**
Number of Credits: Theory - 3, Practical - 1

Course outcomes

1. Explain the terminologies in pharmaceutical chemistry.
2. Write the structures of selected drugs.
3. Write the mechanism of action of drugs.
4. Present structure activity relationship analysis of drugs.