GIRRAJ GOVERNMENT COLLEGE (A), NIZAMABAD

Department of Chemistry
BOS

SYLLABUS

M.Sc. (ORGANIC CHEMISTRY)

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UG CHEMISTRY

I to IV SEMESTER SYLLABUS

https://drive.google.com/file/d/1-F8db-cmvsXe83x-X0Mam_niXtbjrflg/view?usp=sharing

V,VI SEMESTER SYLLABUS

https://drive.google.com/file/d/1-Hc1hbbGHBkdiGJhJb7Jls1l6waqFVQ5/view?usp=sharing

Programme Outcomes

- Knowledge,Understanding,Application,Skills,Appreciation of Chemistry
- Systematic Scientific Thinking
- Environment Protection through Green Chemistry
- Inculcation of Scientific Temper

Programme Specific Outcomes

- Theory & Practicals
- Knowledge of Reactions
- Problem Solving
- Skill Enhancement
- Research Attitude

COURSE OUTCOMES

Programme: B.Sc Chemistry

SEMESTER – I, Paper – I

UNIT	Course Outcome
I – Organic Chemistry	At the end of the course students will be able to : →Learn to draw the molecular orbital energy diagrams →Understand the structure, synthesis of compounds of p-block elements
II – Organic Chemistry	→Study of bond polarization – effects – applications →Learn the reaction mechanism of aromatic hydrocarbons
III – Physical Chemistry	→Have an idea about the classical mechanics →Derive the relation between critical and Vanderwaal's constant →Understand the structural differences between solids, liquids and gases →Differentiate between the ideal and Non-ideal solutions
IV – General Chemistry	→Learn the chemistry behind the cation and anion analysis →Able to draw the conformational isomers of different compounds →Derive Bragg's Equation

SEMESTER – II, Paper – II

UNIT	Course Outcome
I – Organic Chemistry	At the end of the course students will be able to : →Learn the structure, hybridization of oxides, oxyacids of p-block elements → Know the anomalous behavior of He (II) →Understand the characteristic properties of d-block elements
II – Organic Chemistry	→Learn the reaction mechanisms of reactions involved in halogen compounds, Hydroxy compounds and carbon compounds
III – Physical Chemistry	→Understand the electrical transport concept, determination of transport numbers. →Solve the problems related to cell EMF
IV – General Chemistry	→Differentiate between Volumetric analysis and Gravimetric analysis →Learn the symmetry of Chiral molecules →Draw the R,S-Configuration →Solve the problems of colligative properties

SEMESTER – III, Paper – III

UNIT	Course Outcome
I – Organic Chemistry	At the end of the course students will be able to : →Learn the Chemistry of Lanthanides and actinides → Learn the concept of symmetry elements in molecules →Learn the characteristics of a solvent used in chemical reactions
II – Organic Chemistry	→Understand the reaction mechanisms of important reactions of Alcohols, ethers, Carbonyl Compounds
III – Physical Chemistry	→Study the phase diagram of various systems →Understand the applications of colloids and adsorption
IV – General Chemistry	→Know about the general applications of nano materials →Understand the stereochemistry of carbon compounds →Learn about the conformational analysis of organic molecules

SEMESTER – IV, Paper – IV

UNIT	Course Outcome
I – Organic Chemistry	At the end of the course students will be able to : →Learn Werner's diagrams of complexes, Application of VBT and isomerism in coordination compounds → Know about the 18 electron rule
II – Organic Chemistry	→Learn the reaction mechanism of important reactions of carboxylic acids, Nitro hydrocarbons
III – Physical Chemistry	→Solve the problems of Cell EMF →Calculate the thermodynamics quantities of cell reaction
IV – General Chemistry	→Know different types of peri cyclic reactions →Gain the knowledge of different terms used in synthesis of molecule. →Differentiate between stereo selective and stereo specific reactions.

SEMESTER – V, Paper – V

UNIT	Course Outcome
I – Organic Chemistry	At the end of the course students will be able to : →Understand the Splitting patterns of d-orbitals → Know about the magnetic properties and electronic spectra of metal complexes →Apply the wade's rules
II – Organic Chemistry	→Learn the reactions of Amines →Know the importance of Hetero cyclic as drugs
III – Physical Chemistry	→Solve the problems of different order of reactions →Understand the effect of temperature on reaction rate
IV – General Chemistry	→Get exposed to different spectroscopy techniques →Learn the laws of Photochemistry, Quantum efficiency

SEMESTER – V, Paper – VII

UNIT	Course Outcome
I – Chromatography Techniques	At the end of the course students will be able to : →Learn about different chromatographic techniques and their applications in research
II – Spectro Photometry & Colorimetry	→Understand the importance of Spectro photometry in present research applications
III – Electro analytical methods	→Learn about potentiometry, Voltametry, different types of conductivities

SEMESTER – VI, Paper – VI

UNIT	Course Outcome
I – Organic Chemistry	At the end of the course students will be able to : →Differentiate labile and inert complexes → Learn applications of Transeffect →Understand the biological significance of essential elements →Understand the concept of pearson theory
II – Organic Chemistry	→Draw the structure of Glucose, Fructose and do the inter conversions of mono saccharides →Learn the synthesis of amino acids, structure of proteins
III – Physical Chemistry	→Learn laws of Thermodynamics →Derive the expressions related to maximum work of isothermal reversible process →Solve the problems
IV – General Chemistry	→Learn about the proton magnetic resonance spectroscopy, mass spectroscopy – principle and applications →Learn about entropy, Carnot's cycle, Gibb's Equation, Maxwell's relations

SEMESTER – VI, Paper – VII

UNIT	Course Outcome
I – Introduction Terminology & Enzymes	At the end of the course students will be able to : →Learn about different types of diseases → Know the different terms used in medicinal Chemistry →Understand the absorption of drugs across the membrane →Learn the mechanism and factors affecting enzyme action.
II – Receptors synthesis Therapeutic activity of drugs	→Know the mechanism of drug action →Learn the synthesis and therapeutic activity of drugs →Identify the drugs to treat metabolic disorders, drugs acting on nervous system
III – Molecular messengers and Health promoting drugs	→ Learn about the hormones and neurotransmitters →Know about the deficiency disorders of Vitamins and Micronutrients.

COURSE OUTCOMES

PROGRAMME: M.Sc (ORGANIC CHEMISTRY)

SEMESTER – I

Paper	Course Outcomes
CH 101 T – Inorganic Chemistry	At the end of the course student will be able to: → Learn concept of Symmetry elements in molecules. →Find out the point group of inorganic molecules →To know the preparation and properties of transition metal carbonyls →To understand the splitting of d-orbitals and bonding in metal complexes.
CH102 T – Organic Chemistry	→Determination of configuration in E,Z-isomers →Learn about the electrophilic addition, elimination reactions →Determination of amino acid sequence in polypeptides by end group analysis and structure elucidation of sucrose →Importance of heterocyclic compounds as drug
CH103 T – Physical Chemistry	→Learn about the laws of thermodynamics and thermodynamics relations. →Applications of EMF measurements, concept of activity and activity coefficients in electrolytic solutions →Know different theories of reaction rates
CH104 T – Analytical Techniques and Spectroscopy	→Learn about the different chromatographic techniques →HNMR of organic molecules and metal complexes →Learn about microwave spectroscopy, Vibrational and Raman Spectroscopy and it's applications →Electronic Spectra, types of electronic transitions Beer's law applications.

SEMESTER – II

Paper	Course Outcomes
CH 201 T – Inorganic Chemistry	At the end of the course student will be able to: →Concept of ligand substitution reactions and electron transfer reactions →Learn the effect of weak cubic crystal fields on S, P, D, F terms. →Know the preparation of metal clusters →Get the knowledge of metal ions in biological systems.
CH202 T – Organic Chemistry	→Learn the conformational isomerism and concept of dynamic stereochemistry →Concept of nucleophilic aromatic substitution, Electrophilic substitutions →Gain the knowledge about different reactive intermediate and molecular rearrangements →Structure determination and synthesis of natural products.
CH203 T – Physical Chemistry	→Study of Photochemistry reactions, application of photochemical reaction →Comparison of classical and quantum mechanical particles →Study of electronic properties of metals, insulation and semiconductors.
CH204 T – Analytical Techniques and Spectroscopy	→Learn about the different analytical techniques, solid state NMR Spectroscopy, Mass spectroscopy, Photo electron and ENR Spectroscopy – Principle, instrumentation techniques.

SEMESTER – III

Paper	Course Outcomes
CH (OC) 301 T- Conformational Analysis, Asymmetric Synthesis and Bio molecules	At the end of the course student will be able to: →Learn about the Conformational structures of cyclic systems. →Understand the strategies in Asymmetric synthesis. →Study of enzymes, nucleic acids and lipids.
CH (OC) 302 T - Modern organic synthesis	→Study of different synthetic reagents. →Learn the new synthetic reactions →Gain the knowledge of new techniques and concepts in organic synthesis.
CH (OC) 303 T - Organic Spectroscopy and Pericyclic reactions	→Application of ^{13}C NMR Spectroscopy →Understood the 2D-NME techniques and applications →Learn the Pericyclic reactions, classifications →To solve the problems based on FMO approach.
CH (OC) 304 T - Photochemistry, Synthetic strategies and Green Chemistry	→Synthetic strategies – Terminology and retro synthetic approach →Principles of green chemistry and alternative approaches

SEMESTER – IV

Paper	Course Outcomes
CH (OC) 401 T - Drug design and Drug Discovery	At the end of the course student will be able to: →Learn about the principles of drug design and drug discovery. →Quantitative structure and activity relationship studies. →Study the combinatorial chemistry.
CH (OC) 402 T - Drug synthesis and mechanism of action	→Understand the action of drug on metabolic process, cell wall and on specific enzymes →Learn how the drugs act on genetic material and on immune system →Study the different types of receptors and how drugs act on them.
CH (OC) 403 T - Advanced Heterocyclic Chemistry	→Know more about the synthesis and reactivity of non aromatic heterocyclic larger ring hetero cycles.
CH (OC) 404 T - Advanced Natural Products	→Learn about the biosynthesis, stereo chemistry structure determination and spectral methods of natural products.

BOS Meeting Links

2016-17

https://drive.google.com/file/d/1-n0C6bT87yhWEG4eT93sCF6SAyhtaYfI/view?usp=sharing

2018-19

https://drive.google.com/file/d/1-kC_PgbeG6kT75hi1sexKct-hMN2ocQ6/view?usp=sharing

2019-20

https://drive.google.com/file/d/1-e5WJXe4ZHCDY8MBO9P1nmSWpx49y7iZ/view?usp=sharing

2020-21

https://drive.google.com/file/d/1-YcU7Q-RZVUhaHVauDMwW0R2IMLTXYKB/view?usp=sharing

2021-22

https://drive.google.com/file/d/1-YKnotAKyTdPuvk7tRm5h8zln0VxQNA_/view?usp=sharing