DEPARTMENT OF CHEMISTRY
SOUTH EAST MANIPUR COLLEGE
KOMLATHABI

Programme out Come/ Programme Specific Out Come/ Course Outcome

The Department of chemistry, South East Manipur College, Komlathabi offers undergraduate course in chemistry (Honours/General) in accordance to the prescribed curriculum of Manipur University.

The undergraduate (honours/general) course in chemistry is intended to introduce the fundamental aspects of all branches of chemistry i.e. (i) Inorganic chemistry (ii) Organic chemistry (iii) Physical chemistry. Students have learned about different sections of chemistry in this three years degree course which enables them to identify their area of chemical expertize.

Hence it provides basic foundation of their higher studies.

PROGRAMME OUTCOME :-

1. Students will demonstrate an understanding major concept in all disciplines of chemistry. They have developed laboratory skills, critical thinking and reasoning to address different aspects of chemistry.
2. Students will employ critical thinking and scientific method to design, carryout, record and analyze the result of chemical experiments and get an awareness of the impact of chemistry with green revolution on the environment, society and cultures outside the community.

PROGRAMME SPECIFIC OUTCOME :-

SEMESTER-I(Honours)

1. Students have the ability to explain atomic structure, periodic classification of elements, chemical bonding, quantitative and qualitative analysis.
2. Students get the knowledge of structure and bonding, mechanism of organic reactions, cycloalkanes and alkenes, cycloalkenes, dienes and alkynes.
3. Gaseous (i, ii), liquid state, solid state have been taught. They can understand what we have taught.

SEMESTER- II(Honours)

1. As getting the knowledge of theories, they do not have doubt that acids and bases, oxidation or reduction, non- aqueous solvents and s-block elements.
2. Students get the knowledge of stereo chemistry of organic chemistry arenes and atomicity, alkyl halides, aryl halides and alcohols.
3. Discuss minutely the solutions, dil.solutions, colloids and surface chemistry and thermodynamics.

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SEMESTER-III(Honours)

1. Students get the satisfaction of teaching for the topic of metallurgy, p-block elements, general properties of d-block elements and coordination chemistry.

2. Students get the knowledge of phenols, ethers, aldehydes and ketones and organic compound of nitrogen.

3. Students have to explain thermo chemistry, chemical equilibrium, and chemical kinetics.

SEMESTER-IV (Honours)

1. They do not have any doubt for lanthanides, actinides and noble gases. They can explain properly.

2. Discuss minutely the topics- carboxylic acids with derivatives, organo metallic compounds. Student does not have any problems.

3. Students get the satisfaction of our evaluation of teaching for catalysis, ionic equilibria i,ii and phase equilibria i.

SEMESTER-V(Honours)

1. Students are having the ability to explain nuclear and radioactivity, compounds of non-transition elements, second and third transition element series, alloys and intermetallic compounds, UV- visible spectroscopy, IR spectroscopy, thermodynamic and kinetic aspects of metal complexes and environmental chemistry.

2. As getting the knowledge of topic-carbohydrates amino acids, fats peptides, oils, detergents, pericyclic reaction, synthetic dyes, steroids, terpenoids, alkaloids, and enzymes.

3. Students get the satisfaction of mathematics for chemist, atomic structure, quantum chemistry, photo chemistry, energetic, specific heat of solids, statistical thermodynamics, and interaction of molecules with electromagnetic radiation and conductance.

SEMESTER-VI(Honours)

1. Students have the ability for explanation of bonding in coordination compounds, magnetic properties of transition metal complexes, inorganic polymers, thermo analytical methods, organo metallic chemistry bioinorganic chemistry, inorganic rings, cages and non-stoichiometric compounds.

2. They don't have any doubt to explain organo sulphur compound, elimination reaction, organic synthesis via enolates, heterocyclic compounds, medicinal chemistry, chromatography, mass spectroscopy, nuclear magnetic resonance spectroscopy, electron paramagnetic resonance spectroscopy, green chemistry.

3. Students get the knowledge of computer application in chemistry, quantum chemistry , spectro scopy, rotational spectra of diatomic molecules, vibrational aspects of diatomic molecule, symmetry and point groups, electrochemistry I,ii, statistical thermodynamics ii, chemical kinetics and phase equilibria ii.

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V SEMESTER (GENERAL)

P.O.1

Students get the knowledge of nuclear chemistry and radioactivity, compounds of non-transition elements, alloy and inter mettalic compounds, spectroscopy, Environmental chemistry.

P.O.2

Carbohydrates, amino acids, peptides, proteins and enzymes, pericyclic reactions, alkaloids, have been taught, they can understand what we have given.

P.O.3

Students are having the ability to explain quantum chemistry I, photochemistry, macromolecules, conductance.

VI SEMESTER (GENERAL)

P.O.4

Students are having to explain the topics- bonding in coordination compounds, inorganic polymers, bioinorganic chemistry, organomettalic chemistry, metallurgy.

P.O.5

Elimination reactions, organic synthesis via. enolates, heterocyclic compounds, medicinal chemistry have been taught. Students can understand these topics.

P.O.6

Students get the satisfaction of teaching for the topics are quantum chemistry II, spectroscopy, surfactants, symmetry and point groups.

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CHEMISTRY PRACTICAL (H)

P.O

Students have developed laboratory skill, critical thinking and reasoning to address different aspects of chemistry. They have done their practical as regarding the syllabus of Manipur University as giving follows-

P.O.1 Semester I (H)

Semmimicro anslysis (4 radicals), Qunatitative analysis (Iodometry, dichromatometry), Volumetric estimation (one metal).

P.O.2 Semester II (H)

Determination of melting point, determination of boiling point, mixed melting point determination, distillation, crystallization, crystallization using charcoal.

P.O.3 Semester III (H)

Surface tension measurement, viscosity measurement, P^H measurements.

P.O.4 Semester IV (H)

-To determine hardness of water using EDTA

-To estimate nickel using DMG

-To estimate calcium content in chalk as calcium oxalate by per manganometry.

-To estimate reducing suger by titration with standard Fehling solution/ Benidict's solution.

-To determine the equivalent weight of the given acid sample by direct titration method with alkali.

-To determine the saponification value of the given fat or oil sample.

-To estimate protein in the given sample by Folin Lowry method/ biuret method.

- To estimate a reducing suger by colorimetric method.

-To determine the concentration of a given by using Lambert-Beer's law.

To determine the amount of iodine from a given sample (salt) by titration.

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V SEMESTER (H)

P.O.5 INORGANIC CHEMISTRY

i. Preparation of Inorganic complexes.

ii. Estimation of two constituents from a binary mixture (one volumetrically and one gravimetrically)

iii. Semimicro analysis

VI SEMESTER (H)

P.O.6 ORGANIC CHEMISTRY

i. Qualitative Analysis

ii. Organic properties

PHYSICAL CHEMISTRY

1. To study changes in conductance in the following systems:-
   (a) Strong acid-srong base
   (b) Weak acid-strong base and
   (c) Mixture of strong acid and weak acid-strong base
2. Study the Kinetics of the following reactions:
   (a) Acid hydrolysis of methyl acetate with hydrochloric acid, volumetrically or conductometrically.
   (b) Saponification of ethyl acetate
3. Verification of Lambert-Beer's Law.
4. Determination of Pk (indicator) for phenolphthalein or methyl red.
5. Study the formation of a complex between ferric and thiocyanate (or salicylate) ions.

CHEMISTRY PRACTICAL

V SEMESTER (GENERAL)

P.O.7 A. Organic Experiments

Identification of given organic compounds and detection of elements, nitrogen, sulphur, halogens.

B. Physical Experiments

i. Verification of Lambert-Beer's Law and determination of the Concentration of a given solution.

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ii. Determination of the Concentration / amount of oxalic acid by conductrometric titration with solution sodium hydroxide.

iii. Determination of Critical Solution Temperature (CST) for phenol-water system.

iv. Determination of Critical Micelle Concentration (CMC) of sodium lauryl sulphate from the measurement of conductivities at different concentrations.

P.O.8 A. Organic Experiments

Preparation of organic compounds involving benzoylation, bromination and nitrogen.

B. Inorganic Experiments

i. Preparation of Inorganic complexes

(a) Sodium tris (oxalate) ferrate (III)

(b) Nickel Dimethylglyoxime $[Ni(DMG)_2]$

(c) Copper tetraamine complex $[Cu(NH_3)_4]SO_4$.

(d) Cis or trans-bis (oxalate) diaquachromate

ii. Oxidation-Reduction Titration (permanganometry titration)

Estimation of ferrous or ferric iron.

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