



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari Science College  
Semester-1 (B.Sc)

**Subject:** Basic Organic Chemistry-BSCCM11302

**Type of course:** Major

**Prerequisite:** To provide students with the fundamental knowledge but the structure, properties, and reactions of organic compounds, which are the building blocks of life.

**Rationale:** By understanding the principles of organic chemistry, Students can gain a deeper understanding of how living things work.

**Teaching and Examination Scheme:**

| Teaching Scheme |   |   | Credits | Examination Marks |           |     |       |     | Total Marks |
|-----------------|---|---|---------|-------------------|-----------|-----|-------|-----|-------------|
| CI              | T | P |         | C                 | SEE       |     | CCE   |     |             |
|                 |   |   | Theory  |                   | Practical | MSE | LWA/V | ALA |             |
| 3               | 0 | 2 | 4       | 75                | 25        | 30  | 20    | 50  | 200         |

*Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; MSE- Mid Semester Examination; LWA - Lab Work Assessment; V – Viva voce; CCE-Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.*

3 Credits \* 25 Marks = 75 Marks (each credit carries 25 Marks) Theory  
 1 Credits \* 25 Marks = 25 Marks (each credit carries 25 Marks) Practical  
 SEE 100 Marks will be converted in to 50 Marks  
 CCE 100 Marks will be converted in to 50 Marks  
 It is compulsory to pass in each individual component.



**Continuous Assessment:**

| Sr. No | Active Learning Activities   | Marks |
|--------|--|-------|
| 1      | <b>Industrial Area Analysis</b><br>Faculty will assign the area and students will analyze and prepare a report in 100 words and upload it to Moodle.                       | 10    |
| 2      | <b>Quiz</b><br>Faculty will assign 10 MCQs per unit.   | 10    |
| 3      | <b>Prepare MSDS Sheet</b><br>Faculty will assign the chemical name and a group of students will prepare a MSDS sheet (Material safety Data Sheet) and upload it to Moodle. | 10    |
| 4      | <b>Prepare Poster</b><br>Faculty will provide Chemical structure and name for the poster and students will prepare and upload it to Moodle.                                | 10    |
| 5      | <b>Attendance</b>  | 10    |
| Total  |  | 50    |

**Course Content:**

| Unit No | Course content  | Hrs | % Weightage |
|---------|---|-----|-------------|
| 1       | <b>Chapter-1: IUPAC nomenclature:</b> <ul style="list-style-type: none"> <li>▪ IUPAC nomenclature of mono and Bi-functional group.</li> <li>▪ Aliphatic, alicyclic and aromatic organic compounds such as alkanes, alkenes, alkynes.</li> <li>▪ Aliphatic, alicyclic and aromatic organic compounds such as alkylhalides, nitro, alcohols.</li> <li>▪ Aliphatic, alicyclic and aromatic organic compounds such as aldehydes, ketones, carboxylic acids, esters, amines, nitriles, ethers and amides.</li> </ul> | 14  | 25%         |



|   |   |    |     |
|---|---|----|-----|
|   | <p><b>Chapter-2 Reactions and mechanism</b></p> <ul style="list-style-type: none"> <li>▪ Introduction of reactions and mechanism.</li> <li>▪ Introduction to reagent and reactant.</li> <li>▪ Fission of covalent bond.</li> <li>▪ Nucleophilic reagent and electrophilic reagent.</li> <li>▪ Classification of organic reactions, study of substitution reaction addition reaction, elimination reaction.</li> <li>▪ Mechanism of SN and SN reactions, mechanism of E1 and E2 reactions.</li> <li>▪ Mechanism of electrophilic aromatic substitution reactions e.g., nitration, sulphonation, halogenation, alkylation.</li> </ul> |    |     |
| 2 | <p><b>Chapter-3: Photochemistry</b></p> <ul style="list-style-type: none"> <li>▪ Definition-comparison between thermal and photochemical reactions.</li> <li>▪ Laws of photochemistry-Beer Lambert's law-Grothus Draper law-Einstein's law.</li> <li>▪ Quantum yield-low and high quantum yield-determination of quantum yield.</li> <li>▪ Fluorescence, phosphorescence.</li> <li>▪ Examples of photosensitization.</li> </ul>   | 6  | 25% |
| 3 | <p><b>Chapter-4 Carbohydrates.</b></p> <ul style="list-style-type: none"> <li>▪ Old and modern concept of carbohydrates with definitions.</li> <li>▪ Classification of carbohydrates.</li> <li>▪ Various Chemical reactions of glucose and fructose.</li> <li>▪ Determination of constitution and configuration of glucose and fructose.</li> <li>▪ Conversion of glucose into fructose and fructose into glucose.</li> <li>▪ Ascending and descending reactions for monosaccharides.</li> </ul>  | 15 | 25% |
| 4 | <p><b>Chapter-5: Stereochemistry</b></p> <ul style="list-style-type: none"> <li>▪ Definition of stereochemistry.</li> <li>▪ Definition of isomerism, classification of isomerism.</li> <li>▪ Definition of optical isomerism, optical isomerism of compounds containing one and two asymmetric</li> </ul>   | 10 | 25% |





|    |  |       |    |
|----|--|-------|----|
| 4  | To Analysis given organic compound- m-Dinitrobenzene | 1-4   | 2  |
| 5  | To Analysis given organic compound- Urea             | 1-4   | 2  |
| 6  | To Analysis given organic compound- Acetanilide      | 1-4   | 2  |
| 7  | To Analysis given organic compound- Cinnamic Acid    | 1-4   | 2  |
| 8  | To Analysis given organic compound- Naphthelene      | 1-4   | 2  |
| 9  | To Analysis given organic compound- Aniline          | 1-4   | 2  |
| 10 | To Analysis given organic compound- Nitrobenzene     | 1-4   | 2  |
| 11 | To Analysis given organic compound- Phthalic Acid    | 1-4   | 2  |
| 12 | To Analysis given organic compound- Acetone          | 1-4   | 2  |
| 13 | To Analysis given organic compound- Ethyl acetate    | 1-4   | 2  |
| 14 | To Analysis given organic compound- Thiourea         | 1-4   | 2  |
| 15 | To Analysis given organic compound- Chloroform       | 1-4   | 2  |
|    |  | Total | 30 |

#### Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.



**Reference Books:**

- [1] Reaction Mechanism and Reagents in Organic Chem., - G.R.Chatwal; Himalaya Pub. House.
- [2] Organic qualitative analysis by Mann sunder.
- [3] Vogel's Textbook of practical organic chemistry, 5th Edition by B. S. Furniss ET. Al
- [4] Comprehensive practical organic chemistry, V. K. Ahuwalia
- [5] Organic Chemistry vol-I, - I.L.Finar ; Longman Scientific & Technical publication
- [6] Organic Chemistry vol-II, - I.L.Finar ; Longman Scientific & Technical publication

