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<tr><td>Level</td><td colspan="6">Level - 04</td></tr>
<tr><td>Course Synopsis Course Code</td><td colspan="6">CYU4303</td></tr>
<tr><td>Course Title</td><td colspan="6">Organic Chemistry I</td></tr>
<tr><td>Credit value</td><td colspan="6">03</td></tr>
<tr><td>Core/Optional</td><td colspan="6">Core and optional</td></tr>
<tr><td>Prerequisites</td><td colspan="6">Pass OR Valid OCAM in CYU3300, CYU3201 and CYU3302</td></tr>
<tr><td rowspan="2">Hourly breakdown</td><td colspan="2">Theory</td><td>Practical hours</td><td>Independent Learning</td><td>Assessments</td><td>Total hrs</td></tr>
<tr><td>25 Sessions x 02 hrs = 50 hrs</td><td>3 DS x 04 hrs = 12 hrs</td><td>N/A</td><td>25 Sessions x 03 hrs + 11 hrs online = 86 hrs</td><td>2 CA x 01 hrs = 02 hrs</td><td>150 hrs</td></tr>
<tr><td>Course Aim/s.</td><td colspan="6">Develop an understanding of basic concepts of stereochemistry, develop the ability in solving problems associated with E/Z and R/S nomenclature of stereoisomers, develop the ability in solving problems involving specific rotation and optical purity of enantiomers, develop understanding of structure reactivity relationships of organic molecules, develop the ability to understand the kinetics, stereochemical course and solvent effects of S_N reactions ,develop the ability to write mechanisms of S_N1, S_N2, E1, E2 and addition reactions, develop an understanding of reactivities of aliphatic compounds containing various functional groups, develop an understanding chemistry of conjugated dienes and benzenoid compounds and develop ability in predicting aromaticity of unsaturated cyclic compounds according to Huckel's rule.</td></tr>
<tr><td>PLOs addressed by course</td><td colspan="6">PLO1: Knowledge: Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the BSc degree.
PLO4: Individual Work, Team Work and Leadership: Function effectively as an individual, and as a team member, sharing work and experiences, leading and managing assigned tasks to completion on time, demonstrating leadership to address situations in diverse and multi-disciplinary environments in day to day life.
PLO5: Creativity and Problem Solving: Identify problems and argue out and analyze such problems using qualitative and/or quantitative practical approaches in scientific methodology to provide valid conclusions
PLO8: Vision for Life: Identify where one wants to be and develop long term goals maintaining competency to conduct scientific investigations and proceed to undertake further studies.
PLO9: Lifelong Learning: Foresee new trends and recognize their impact, and update knowledge and develop new skills to meet future changes and challenges.</td></tr>
<tr><td>05)Course Learning Outcomes (CLO)</td><td colspan="6">CLO 1: Describe the concepts of stereochemistry and isomerism in organic molecules. (PLO 01, 04 & 05)
CLO 2: Represent chiral molecules by Fischer Projection Formulae. (PLO 01, 04, & 05)
CLO 3 Explain optical activity of compounds with many chiral centres. (PLO 01, 04 & 05)
CLO 4: Relate properties of some chiral molecules with their stereochemistry. (PLO 01, 04 & 05)
CLO 5: Explain different reactions in terms of the mechanism (PLO 01, 04 & 05)
CLO 6:Write mechanisms of nucleophilic substitution reactions (S_N1 and S_N2) and elimination reactions (E1 and E2) giving examples (PLO 01, 04 & 05)
CLO 7: Write mechanism of electrophilic addition reaction giving examples. (PLO 01, 04, 05 & 06)
CLO 8: Explain the relationship between structure and reactivity of aliphatic compounds containing various functional groups. (PLO 01, 04 & 05)
CLO 9: Describe chemistry of aliphatic compounds in terms of their reactivity. (PLO 01, 04 & 05)
CLO 10: Identify interrelationships between aliphatic compounds via preparative methods and chemical reactions. (PLO 01, 04 & 05)</td></tr>
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<tr><td></td><td colspan="2">CLO 11: Explain the chemistry of conjugated dienes and differentiate that with non-conjugated dienes. (PLO 01, 04 & 05)
CLO 12: Distinguish between aromatic, non-aromatic and anti-aromatic compounds (PLO 01, 04 & 05)
CLO 13: Explain the reactions of benzene and substituted benzene and their reaction mechanisms (Electrophilic substitution and nucleophilic substitution, S_E and S_N) (PLO 01, 04 & 05)
CLO 14: Illustrate preparative methods of substituted benzenes using readily available starting materials (PLO 01, 04 & 05)</td></tr>
<tr><td>Content

(Main topics, sub topics)</td><td colspan="2">Stereochemistry
Isomerism (constitutional and stereoisomers), enantiomers and chirality, Optical activity: Laboratory detection of chirality, Molecular symmetry, stereoisomerism and optical activity, Importance of chirality in life
Organic Reaction Mechanisms
Structure, properties and reactivity of organic compounds, Nucleophilic substitution reactions: mechanism, Solvent effects and rearrangements in nucleophilic substitution reactions, The scope of nucleophilic substitution reactions, Elimination reactions, Addition reactions with carbon – carbon multiple bonds
Structure Reactivity Relationships of Aliphatic compounds
Chemistry of ethers and epoxides, aldehydes and ketones: structure, properties and nucleophilic addition reactions, Aldehydes and ketones: reactions due to acidity of alpha -H atoms, oxidation and reduction, Chemistry of carboxylic acids and their derivatives, Reactions of carboxylic acid derivatives, Chemistry of amines
Chemistry of Conjugated Dienes and Benzenoid Compounds
Chemistry of dienes, Benzene and substituted benzene compounds: structure and nomenclature, Aromaticity and Huckel's rule, Electrophilic substitution reactions of benzene, electrophilic aromatic substitution reactions of substituted benzene, Nucleophilic aromatic substitution reactions, Addition reactions of benzene and reactions at the side chain of substituted benzene derivatives, Phenols and aryl ethers, Arenediazonium salts</td></tr>
<tr><td>Teaching Learning methods (TL)</td><td colspan="2">Self-learning:
• Instructional material (IL)
• Online activities (OL)
Compulsory contact sessions:
• Assessments: MCQs (MCQ), structured essay (SEQ)
Non-compulsory contact sessions:
• Day school (DS)</td></tr>
<tr><td rowspan="2">Assessment strategy</td><td>Overall Continuous Assessment Mark (OCAM): 40%</td><td>Final Assessment: 60%</td></tr>
<tr><td>Continuous Assessment (CA); (60% Best NBT + 40% Other NBT) (02 hrs)</td><td>Final Evaluation

Theory: 100% (02 hrs)</td></tr>
<tr><td>Recommended

Readings:</td><td colspan="2">1. Bruice, Yurkanis P., (2006), Organic Chemistry, New Delhi Dorling Kindersley
2. Solomons, Graham T. W., Fryhle, Craig B., (2008), Organic Chemistry, Wiley India
3. McMurry J., (1984), Organic Chemistry, Brooks/Cole.
4. Carey, Francis A., (2000), Organic Chemistry, McGraw-Hill Higher Education.
5. Jerry March, (1992), Advanced Organic Chemistry: Reactions, mechanisms and structure, John Wiley.</td></tr>
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