

# SWARNIM STARTUP & INNOVATION UNIVERSITY

## SWARNIM SCIENCE COLLEGE

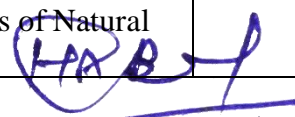
### VALUE ADDED COURSE (VAC)

#### Comprehensive Chemical Biology Course - VACCB

Duration: **30 Hours (15 Sessions, 2 Hours Each)**

Session	Topic	Content	Duration
Session 1	Introduction to Chemical Biology	Overview of Chemical Biology, Definition, Importance, Interdisciplinary Nature	2 hours
Session 2	Chemical Foundations in Biology	Basic Chemistry Concepts, Chemical Bonds, Molecular Interactions in Biological Systems	2 hours
Session 3	Biomolecular Structure and Function	Structure of Biomolecules (Proteins, Nucleic Acids, Carbohydrates, Lipids), Function in Cells	2 hours
Session 4	Chemical Tools in Biological Research	Techniques and Tools (Spectroscopy, Mass Spectrometry, NMR, X-ray Crystallography)	2 hours
Session 5	Chemical Modulation of Biological Pathways	Targeted Drug Design, Enzyme Inhibitors, Receptor Ligands, Chemical Probes	2 hours
Session 6	Synthetic Biology and Chemical Biology	Basics of Synthetic Biology, Chemical Synthesis of Biological Molecules, Applications	2 hours
Session 7	Chemical Genomics	Chemical Approaches to Study Genomes, Chemical Genetics, Genome-Wide Screens	2 hours
Session 8	Bioinformatics in Chemical Biology	Data Analysis and Visualization, Computational Tools, Integrating Chemical and Biological Data	2 hours
Session 9	Chemical Biology of Metabolism	Metabolic Pathways, Metabolite Analysis, Metabolic Engineering	2 hours
Session 10	Chemical Biology of Signaling	Cellular Signaling Pathways, Chemical Modulation of Signal Transduction, Signal Transduction Drugs	2 hours
Session 11	Chemical Biology of Disease	Chemical Approaches to Disease Mechanisms, Drug Discovery and Development, Targeted Therapies	2 hours
Session 12	Chemical Proteomics	Protein-Protein Interactions, Post-Translational Modifications, Chemical Tools for Proteomics	2 hours
Session 13	Chemical Synthesis of Natural Products	Natural Product Chemistry, Synthesis Strategies, Biological Activities of Natural Products	2 hours



  
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Session 14	Ethics and Safety in Chemical Biology	Ethical Considerations, Safety Protocols, Regulatory Issues, Responsible Conduct in Research	2 hours
Session 15	Theoretical Advances in Chemical Biology	Recent Developments, Future Trends, Integration of Chemical Biology with Other Fields	2 hours

### Assessment

- **Participation:** Active involvement in discussions, interactive sessions, and group projects.



  
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