BS Chemistry Semester-IV					
Programme	**BS Chemistry**	**Course Code**	**CHEM-232**	**Credit Hours**	**2**
Course Title	**Stereochemistry**		**Course type**	**Major**	

Course Introduction

The course is designed to provide an adequate knowledge about stereochemistry and its applications. The students will gain knowledge about the stereochemical behavior of organic molecules.

Stereoisomers: Basic introduction, Different types of projections to represent stereoisomer, types of stereoisomer, conformational isomers, Rotation around a single bond and the concept of conformational analysis in ethane, propane, butane, pentane, cyclo-pentane, cyclo-hexane, mono & di substituted cyclohexane and cis/trans decalin system.Optical isomers: Optical activity ,Optical isomerism up to three chiral carbon atoms, enantiomers and diasteromers, racemates, racemization and resolution of racemates, epimerization, stereoisomerism of cyclic diphenyls. enantiotopic and diasteriotopic protons,procharality, R/S and D/L system of nomenclature for optical isomers with more than one asymmetric carbon.Geometrical isomers: Cis/Trans nomenclature, Z and E conventions, determination of configuration, geometrical isomerism in open chain and cyclic compounds.

Learning Outcomes

On the completion of the course, the students will:

1. Understand the key concepts of stereochemistry
2. Familiarize with conformational, configrational and geometrical isomers,their projections and nomenclature.
3. It will help in familiarization with concept of conformational, configrational and geometrical isomers,their projections and nomenclature.

	Course Content	Assignments/Readings
Week 1	Stereochemistry Stereoisomers Basic introduction	Literature survey
	Different types of projections to represent stereoisomer	
Week 2	Types of stereoisomers	Draw flow sheet of classification
	Conformational isomers	Practice problems
Week 3	Rotation around a single bond	
	The concept of conformational analysis in ethane.	
Week 4	The concept of conformational analysis in propane and butane.	
	The concept of conformational analysis in pentane and cyclopentane.	
Week 5	The concept of conformational analysis in cyclohexane .	
	The concept of conformational analysis in mono and di-substituted cyclohexane.	
Week 6	The concept of conformational analysis in cis/trans decalin system.	
	Optical isomers Optical activity	Literature survey
	Optical isomerism up to three chiral carbon atoms	

Week 7	Enantiomers and diastereomers	
Week 8	**Mid-Term Week**	
Week 9	Racemates, racemization and resolution of racemates	
	Epimerization Stereoisomerism of cyclic diphenyls	
Week 10	Enantiotopic and diasteriotopic protons	
	Procharality	
Week 11	R/S system of nomenclature for optical isomers with more than one asymmetric carbon.	Practice problems
	D/L system of nomenclature for optical isomers with more than one asymmetric carbon.	Practice problems
Week 12	Geometrical isomers Cis/Trans nomenclature	Practice problems
	Cis/Trans nomenclature	Practice problems
Week 13	Z and E conventions	
	Z and E conventions	
Week 14	Determination of configuration	
	Geometrical isomerism in open chain compounds.	
Week 15	Geometrical isomerism in cyclic compounds.	Literature survey
	Geometrical isomerism in open cyclic compounds.	
Week 16	**Final-Term Week**	

Textbooks and Reading Material

1. L.G. Wade, Organic Chemistry,8th Ed.,Pearson,2012.
2. T.W.Graham solomons and Graig B.Fryhle,Organic chemistry,10th Ed.,John wiley and sons,2011.
3. J.G.Smith,Organic chemistry,3rd Ed,McGraw Hill companies,2012.
4. C.K. Ingold, "Structure and mechanism in organic chemsitry", C.B.S.
5. Morison and Boyd, "Organic Chemistry", 6th Edition, Prentice Hall.
6. Brown and Foote,Organic chemistry,6th.,Pearsons Publishers 2011.

Teaching Learning Strategies

1. Lectures
2. Group Discussion
3. Laboratory work/Numerical problem sets
4. Seminar/ Workshop

Assignments: Types and Number with Calendar

Practice questions from the exercises from the recommended textbook.
Literature review based assignment relevant to the course will also be given during the course