BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
INSTRUCTION DIVISION
SECOND SEMESTER 2015-2016

Course Handout Part II **Date: 05-01-2016**

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further details regarding the course.

Course No: CHEM F243
Course Title: **Organic Chemistry-II**
Instructor-in-charge: **Indresh Kumar**
Instructor: Prof. Dalip Kumar, Dr. Indresh Kumar

1. Scope and objective of the course: To familiarize the students with stereochemical concepts and their applications in organic synthesis, important functional group transformations and pericyclic reactions. Emphasis will be placed not only on the mechanistic and stereo-electronic features but also on the way in which they are utilized in target synthesis.

2. Text Book:

(a) E. L. Eliel, S. H. Wilen, L. N. Mander, Stereochemistry of Organic Compounds; John Wiley & Sons, 1st Ed., 2004 **(T1)**

(b) Michael B. Smith & Jerry March, March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure; John Wiley & Sons, 6th ed., 2007 **(T2)**

Reference Books:

(a) J. Clayden, N. Greeves, S. Warren, P. Wothers, Organic Chemistry, OUP, 1st ed., 2000. **(R1)**

(b) R. T. Morrison, R. Boyd and S. K. Bhattacharjee, Organic Chemistry, 7th edition. **(R2)**

(c) Francis A. Carey, Richard J. Sundberg**,** Advanced Organic Chemistry: Part A: Structure and Mechanisms, Springer; 5th edition, 2008, (**R3**).

3. Course Plan:

Lect. No.	Learning objectives	Topics to be Covered	Text book (topic no.)
1-2	Introduction Stereoisomers	Nature of stereoisomers, Enantiomers and Diastereomers	**T1**: Ch. 3, pg. 49-69.
3-4	Symmetry	Symmetry elements, symmetry operators, symmetry and molecular properties.	**T1**: Ch. 4, pg. 71-87, 92-97
5-7	Configuration	Relative and absolute configuration, relative configuration and notation, determination of relative configuration	**T1**: Ch. 5, pg. 101-112, 117-123, 126-128, 130-144
8-9	Chirality in molecules devoid of chiral centers-1	Introduction, nomenclature, allenes	**T1**: Ch. 14, pg. 1119-24, 1132
10-12	Chirality in molecules devoid of chiral centers -2	Alkylidenecycloalkanes, Spriranes, Biphenyl atropisomersism, Molecules with planar chirality	**T1**: Ch. 14, pg. 1133-50, 1166-76
13-14	Stereochemistry of alkenes	*Cis-trans* isomerism, determination of configuration of *cis-trans* isomers by chemical & physical methods	**T1**: Ch. 9, pg. 539-574

15-17	Conformation of acyclic molecules	Conformation of unsaturated acyclic and miscellaneous molecules	**T1**: Ch. 10, pg. 597-627
18-20	Conformations of cyclic molecules	Conformational aspects of the chemistry of six membered ring compounds	**T1**: Ch. 10, pg. 665-754
21-26	Reaction mechanism	Different reaction mechanisms involved in organic transformations such as SN1/SN2/SN'/SNi, neighboring group mechanism E1, E2, E1cB, addition to C=C double bond.	**T2** : Ch. 10: 293-369, Ch. 17: 982-1006, , Lecture notes
27-32	Asymmetric synthesis	Resolution and stereoselective synthesis	**R1** : Ch.16, 399-404, Ch.34, 881-904, Lecture notes
33-40	Pericyclic reactions	Types of pericyclic reactions (electrocyclic, cycloaddition & sigmatropic), correlation diagrams, FMO approach & PMO approach, Woodward-Hofmann rules	**R2**: Ch. 20 1032-1048, Lecture notes

4. Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Remarks
Mid-term test	90 min	30	16/3 2:00 -3:30 PM	**Closed Book**
Assignments/Quiz	-	25	Continuous	**Closed Book**
Comprehensive Examination	3 hrs	45	9/5 FN	**Partially Open Book**

5. Make-up(s) will be granted only for genuine reasons.
6. Chamber consultation hours: To be announced in the class.
7. Notices: All the notices pertaining to this course will be displayed on **Department of Chemistry, Notice Board only**.

Instructor-in-Charge
CHEM F243