



Indian Institute of Technology Gandhinagar  
Reactions and Mechanisms in Organic Chemistry (CH 512)

Credits :	L T P C 3 0 0 4
Prerequisites (if any) :	Physical Organic Chemistry
Instructor Name	Chandrakumar Appayee
<b>Course contents:</b>  <b>Substitution, Elimination and Addition Reactions:</b> Aliphatic nucleophilic substitution and elimination reactions, Aromatic electrophilic, nucleophilic and radical substitution reactions, Thermal elimination reactions, Electrophilic, nucleophilic and free radical addition reactions, and Solvent effect on reactivity.  <b>Oxidation and Reduction:</b> oxidation of alcohols, ketones and aldehydes (transition metal oxidants, peroxides and peracids etc.), allylic oxidation, oxidation of C-C double bonds (epoxides formation, ozone, $\text{KMnO}_4$ , $\text{OsO}_4$ etc.). Catalytic hydrogenation of functional groups, Group III hydride donor reagents ( $\text{LiAlH}_4$ , $\text{NaBH}_4$ , DIBALH, $\text{B}_2\text{H}_6$ ), Group IV hydride donors (Silicon hydride and hydride transfer from Carbon).  <b>Functional Group Interconversion:</b> Conversion of alcohols to alkylating agents, Installation and removal of protective groups, and Interconversion of carboxylic acid derivatives.	
<b>Text Books:</b>  <i>Advanced Organic Chemistry, Parts A: structure and Mechanisms</i> (5 <sup>th</sup> Edition) Francis A. Carey, Richard J. Sundberg, Springer 2007.  <i>Advanced Organic Chemistry, Parts B: Reaction and Synthesis</i> (5 <sup>th</sup> Edition) Francis A. Carey, Richard J. Sundberg, Springer 2007.  <i>Greene's Protective Groups in Organic Synthesis</i> (4 <sup>th</sup> Edition) Peter G. M. Wuts, Theodora W. Greene, Wiley-Interscience 2006.  <i>Modern Methods of Organic Synthesis</i> (4 <sup>th</sup> Edition) W. Carruthers, Iain Coldham, Cambridge University Press 2004.	