



PRINCIPLES OF ORGANIC SYNTHESIS

PROF. T PUNNIYAMURTHY

Department of Chemistry
IIT Guwahati

PRE-REQUISITES : BSc (Chemistry)

INTENDED AUDIENCE : M.Sc Students/faculty

INDUSTRIES APPLICABLE TO : Dr. Reddy's Laboratory, Syngenta, etc

COURSE OUTLINE :

The course has nine modules starting from the formation of acid-catalyzed carbon-carbon bond formation to application of the modern transition metal catalysis. Students of graduate and post graduate preparing for NET and GATE examination will find this course extremely useful.

ABOUT INSTRUCTOR :

Prof. T Punniyamurthy is Head of the Department of Chemistry at IIT Guwahati and obtained PhD in Chemistry from IIT Kanpur in 1995. He subsequently held postdoctoral positions at North Dakota State University, Kyushu University and Ecole Nationale Supérieure de Chimie de Montpellier prior to joining at Indian Institute of Technology, Guwahati in 2001. He is also visiting Professor at Oxford University, Kyushu University and the Scripps Research Institute San Diego. His research interests include C-H activation, stereoselective synthesis and heterocyclic chemistry. He has produced 21 PhD scholars and 30 M.Sc students with 130 publications having citations around 6300 and h-index 42. He is a recipient of UKIERI Research Fellowship, JSPS Bridge Fellowship, JSPS Invitation Fellowship, Fulbright Fellowship and CRSI Bronze medal. He is also an elected Fellow of the Indian Academy of Sciences, National Academy of Sciences and Royal Society of Chemistry.

COURSE PLAN :

Week 1: Formation of Aliphatic Carbon-Carbon Bonds: Base Catalyzed Reactions

Week 2: Formation of Aliphatic Carbon-Carbon Bonds: Acid Catalyzed Reactions

Week 3: Organometallic Reagents

Week 4: Formation of Aliphatic Carbon-Nitrogen Bonds

Week 5: Electrophilic Aromatic Substitution

Week 6: Nucleophilic Aromatic Substitution

Week 7: Aromatic Diazonium Salts

Week 8: Molecular Rearrangements

Week 9: Reagents Containing Phosphorus, Sulfur, Silicon, Boron or Tin

Week 10: Free-Radical Reactions

Week 11: Reagents Containing Phosphorus, Sulfur, Silicon, Boron or Tin (contd)

Week 12: Free-Radical Reactions (contd)