



CHEMICAL PROCESS TECHNOLOGY

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INTENDED AUDIENCE : Undergraduates from Chemical Engineering

INDUSTRY SUPPORT : All the Oil and Gas Major Industries; Bulk and Intermediate; and the Fine Chemicals will be aligned with this course. Moreover the concept of Biorefinery and Sustainable Development for all the Processes shall be discussed.

COURSE OUTLINE :

The course shall bring out concepts forming the basis of the Chemical Process Industry and to give a solid background for innovative process development. It shall discuss the actual industrial processes that presents opportunities and challenges for chemical engineers for the development of these processes. Some of these processes still exhibit open challenges. Our goal is to help students and in developing a vision on chemical processes taking into account the microscale ((bio)chemistry, physics), the mesoscale (reactor, separation units), and the macroscale (the process) domains. Hence the knowledge of these will be helpful for outgoing undergraduates for employment opportunities.

ABOUT INSTRUCTOR :

Prof. Tamal Banerjee earned his Doctorate degree from Indian Institute of Technology Kanpur in the year 2006. Subsequently, he joined the Indian Institute of Technology Guwahati and is currently a Full Professor at the Department of Chemical Engineering from 2017. He has published over 120 papers in reputed peer reviewed Journals. In 2011, he was awarded the Indo-US Fellowship in Engineering Sciences. He has also authored two books each in CRC Press and Elsevier which discusses experiments and molecular modelling aspect of Ionic Liquids as an extractive agent. Prof. Banerjee's research focuses on the use of Ionic Liquids and Deep Eutectic Solvents as green solvents concerning both energy generation and environment mitigation. His group uses both ab-initio methods and Molecular Dynamics methods to predict thermodynamic and transport properties. The properties of interests are primarily in predicting activity coefficients for phase diagrams using Continuum Solvation Model such as COSMO (CONductor like Screening MOdel). His other interests lie in the Reactive Force Field simulations of both renewable (alcohols) and non-renewable (coal and chemical hydrides) energy sources. Recently his group have started evaluating Deep Eutectic Solvents as potential electrolytes and thermal fluids for supercapacitors and solar desalination respectively. He has also initiated thermodynamic pathways using biocompatible gels comprising of Polysaccharide or DES based precursors for drug delivery.

COURSE PLAN :