



INTRODUCTION TO PROCESS MODELING IN THE MEMBRANE SEPARATION PROCESS

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TYPE OF COURSE : Rerun | Elective | UG/PG

COURSE DURATION : 4 weeks (21 Feb' 22 - 18 Mar' 22)

EXAM DATE : 23 Apr 2022

PRE-REQUISITES : Elective course, Both UG and PG. It will be useful for students pursuing BE, ME, MS, BSc, MSc, PhD

INTENDED AUDIENCE : Nothing as such, just a basic understanding of physics, mathematics and chemistry is enough.

INDUSTRIES APPLICABLE TO : CSIR institutes and laboratories, water purification industries, membrane manufacturing industries.

COURSE OUTLINE :

Separation processes are integral unit operation in most of the modern chemical, pharmaceutical and other process plants. Among the separation processes, some are standard and conventional processes, like, distillation, absorption, adsorption, etc. These processes are quite common and the relevant technologies are well developed and well studied. On the other hand, newer separation processes, like, membrane based techniques are gaining importance in modern days plants. The present course is designed to understand the basic process modeling in this novel separation technique.

ABOUT INSTRUCTOR :

Prof. Sirshendu De is a Professor of the Department of Chemical Engineering at the Indian Institute of Technology Kharagpur. His research interests include membrane separations, transport processes and flow through micro-channels. He has over 200 international journal publications/peer reviewed articles, over 50 conference presentations (national and international). He is the holder of 15 patents (national and international), has authored 7 books and 4 of his developed technologies have been transferred to the industry.

COURSE PLAN :

Week 1: Fundamentals of Separation processes and introduction of membrane system.

Week 2: Modeling of osmotic pressure controlling membrane filtration

Week 3: Gel layer controlling and resistance in series modeling.

Week 4: Membrane module design and modeling of dialysis.