FLUID FLOW OPERATIONS

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COURSE OUTLINE:

This course is structured as a MOOCS course for students or junior engineers studying chemical, mechanical or civil engineering. In this course, effort will be made to introduce students/engineers to fluid mechanics by making explanations easy to understand, including recent information and comparing the theories with actual phenomena. The following features will be included in the course:

1. Many illustrations, photographs and items of interest will be presented for easy understanding.
2. Assignments and exercises will be given at the ends of course lecture to test understanding of the chapter topic.
3. Special emphasis will be given on real multiphase flow phenomena with specific applications.

ABOUT INSTRUCTOR:

Dr. S. K. Majumder is a Professor at Chemical Engineering Department in Indian Institute of Technology Guwahati, India. He completed his Ph.D. in Chemical Engineering from Indian Institute of Technology Kharagpur. His research interests include multiphase flow and reactor development, hydrodynamics in multiphase flow, mineral processing, process intensifications and micro-nano bubble science and technology and its applications. He is a Fellow of Council of Engineering and Technology (India) and Fellow of the International Society for Research and Development, London. He is a recipient of various honours and awards like: Editor, Journal of Chemical Engineering Research Studies, Guest editor, American Journal of Fluid Dynamics, published by Scientific & Academic Publishing Co., USA, Editorial board member of Scientific Journal of Materials Science, IIME Award on beneficiation in year 2008 from Indian Institute of Mineral Engineers (IIME), Editorial board Member of the Journal of Science and Technology, Scientific and Academic Publishing, USA, Advisory board member of Excelling Tech Publishers (ETP), London, UK.

COURSE PLAN:

Week 01: Characteristics of a fluid
Week 02: Fluid statics
Week 03: Fundamentals of flow
Week 04: One-dimensional flow
Week 05: Flow of viscous fluid
Week 06: Flow in pipes
Week 07: Flow in a water channel
Week 08: Drag and lift
Week 09: Dimensional analysis and law of similarity
Week 10: Measurement of flow
Week 11: Multiphase flow pattern
Week 12: Applications of multiphase flow

COURSE DURATION: 12 weeks (18 Jan’21 - 09 Apr’21)
EXAM DATE: 25 April 2021

TYPE OF COURSE: Rerun | Core | UG/PG
INTENDED AUDIENCE: Chemical Engineering, Civil Engineering and Mechanical Engineering UG and PG students and Faculty

INDUSTRY SUPPORT: Chemical Industries, Flow reactor handling, Piping system, Metering fluent etc.