



FLUID FLOW OPERATIONS

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COURSE DURATION : 12 weeks (24 Jan'22 - 15 Apr'22)
EXAM DATE : 24 April 2022
TYPE OF COURSE : Rerun | Core | UG
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.

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 :

Prof. 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 beneficitation 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 1** : Characteristics of a fluid
- Week 2** : Fluid statics
- Week 3** : Fundamentals of flow
- Week 4** : One-dimensional flow
- Week 5** : Flow of viscous fluid
- Week 6** : Losses in pipes
- Week 7** : Flow in a water channel
- Week 8** : Drag and lift and cavitation
- Week 9** : Dimensional analysis and law of similarity
- Week 10** : Compressible fluid flow
- Week 11** : Measurement of flow
- Week 12** : Multiphase flow phenomena and its application: