



FUNDAMENTALS OF CONVECTIVE HEAT TRANSFER

PROF. AMARESH DALAL

Department of Mechanical Engineering
IIT Guwahati

PRE-REQUISITES : Fundamental knowledge of Mathematics, Heat Conduction and Fluid Mechanics should be sufficient

INTENDED AUDIENCE : Postgraduate and undergraduate students of Mechanical Engineering and similar branches; Faculty members associated with Mechanical Engineering; Practicing engineers associated with fluid and thermal industries.

INDUSTRIES SUPPORT : BHEL, NTPC, Eaton

COURSE OUTLINE :

Convective heat transfer is one of the most important areas of engineering sciences. It is major mode of heat transfer during flowing fluid and it is the most common mode of heat transfer used in industry.

ABOUT INSTRUCTOR :

Prof. Amaresh Dalal is currently Professor in the Department of Mechanical Engineering of the Indian Institute of Technology Guwahati. He received his Ph.D. degree from Indian Institute of Technology Kanpur in 2009 and he was Post-doctoral Research Associate at Purdue University from Sep 2008 - Dec 2009.

COURSE PLAN :

Week 1: Introduction

Week 2: Preliminary Concept

Week 3: Convective heat transfer in external flows - I

Week 4: Convective heat transfer in external flows - II

Week 5: Convective heat transfer in internal flows - I

Week 6: Convective heat transfer in internal flows - II

Week 7: Convective heat transfer in internal flows - III

Week 8: External natural convection

Week 9: Internal natural convection

Week 10: Numerical solution of Navier-Stokes and energy equation

Week 11: Turbulent flow and heat transfer

Week 12: Boiling and condensation