COURSE DETAIL

TRANSFER PROCESSESS 2: HEAT TRANSFER FLUID MECHANICS 2
Country United Kingdom - England
Host Institution Imperial College London
Program(s) English Universities,Imperial College London
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Chemical Engineering
UCEAP Course Number 122
UCEAP Course Suffix
UCEAP Official Title TRANSFER PROCESSESS 2: HEAT TRANSFER FLUID MECHANICS 2
UCEAP Transcript Title TRANSFER PROCESS 2
UCEAP Quarter Units 3.00
UCEAP Semester Units 2.00

Course Description
In this course, students integrate knowledge of reaction engineering and chemical engineering with process dynamics and control, and apply this to the design of a reactor for chemical conversion with an appropriate control structure. Students explore the control systems simulations package, Simulink, and gain proficiency in the use of MATLAB for real reaction rate equations and numerical integration. Simulink enables the study of dynamic effects on control of the reactor designed in this project. At the end of the course the students are able to derive the continuity equation for an arbitrary control volume, derive the Reynolds transport theorem and use it to derive the conservation of mass equation for general fluid flows, understand the concept of stress tensor, derive the conservation of momentum equation for general fluid flows, non-dimensionalize the equations of motion, continuity and Navier-Stokes in different flow settings, and solve these equations for different flow settings to obtain quantities of interest such as velocity profiles and volumetric flow rates.

Language(s) of Instruction
English

Host Institution Course Number
CE2-02-1

Host Institution Course Title
TRANSFER PROCESSESS 2: HEAT TRANSFER FLUID MECHANICS 2

Host Institution Course Details

Host Institution Campus
Imperial College

Host Institution Faculty

Host Institution Degree

Host Institution Department
Chemical Engineering

Course Last Reviewed

Print