PD624  
Two Phase Flow and Heat Transfer

Day One

Module 1: Review of Fundamentals  
- Introduction and Review of Single Phase Flow  
- Laminar Flow  
- Turbulent Flow  
- Flow patterns

Module 2: Phase Change Principles and Fundamentals of Boiling (Chapter 3)  
- Two-component Two-phase flows  
- Flow patterns  
- Flow effects  
- Two-phase flow through orifices  
- Cavitation  
- Waterhammer with Phase changes

Module 3: Principles and Fundamentals of Boiling (Chapter 2)  
- Thermodynamics of Phase Change  
- The Boiling Curve  
- Bubble Dynamics  
- Boiling from External Surfaces: Nucleate Boiling  
- Boiling from External Surfaces: Film Boiling  
- Condensation

Day Two

Module 4: Two-Phase Flow in Pipes with Heat Transfer (Chapter 4)  
- One-component Two-Phase Flow Pressure Drop Fundaments  
- Computational Models for Two-Phase Flow in Pipes  
- Two-Phase Multiplier for Homogeneous Flow  
- Exercises with Homogeneous Computer Model  
- Two-Phase Multiplier for Separated Flow  
- Heat Transfer in Internal Two-Phase Flow  
- Friction Pressure Loss in Subcooled Nucleate Boiling

Module 5: Special Topics in Two-Phase Flow and Heat Transfer  
- Critical Heat Flux (CHF) in Internal Two-Phase Flow (Chapter 5)  
- Flow Instability in Internal Two-Phase Flow (Chapter 6)  
- Class Discussion of Experiences with Two-Phase Flow