Purdue University
School of Nuclear Engineering

NUCL 552   T TH

Instructor: M. Ishii
Office: NUCL 112C  Tel: 494-4587
Office Hours: T Th

Text Book: N. Todreas & M. Kazimi, Nuclear Systems I
M. Ishii and T. Hibiki, Thermo-fluid Dynamics of Two-phase Flow

References: E. E. Lewis, Nuclear Power Reactor Safety
L. S. Tong & J. Weisman, Thermal Analysis of Pressurized Water Reactors

Course Content:

1. Neutron Chain Reaction
2. Nuclear Reactor Systems
3. Safety Characteristics
4. Safety Assessment
5. Reactor Licensing
6. Introduction to Vector Calculus
7. Formulation of Thermal-Hydraulic Problems
8. Physical Laws and Balance Equations
9. Constitutive Relation and Closure Relation
10. Single Phase Thermal-Hydraulics
11. Fuel Thermal Transient and Melting
12. Two-Phase Flow Formulation
   - Homogeneous Flow
   - Drift Flux Model
   - Two-Fluid Model
13. Two-Phase Thermal-Hydraulics


14. Special Topics Important for Reactor Safety

Grading Basis (Tentative)

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
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<tr>
<td>Midterm Exam</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
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- **Homework**
  Assignments will be due at the time stated when work is assigned, unless otherwise specified. Late homework will not be accepted for grade; however, all homeworks should be submitted before the end of the semester.

- **Midterm and Final Exam** will be closed book and notes.

- **An A will be given if the total score is ≥85%.** If the total grade is less than 50%, the grade will be F. The other grades will be determined after considering the class distribution.