**NUCE 502: ADVANCED THERMAL HYDRAULIC ANALYSIS**

**Spring 2017**

**Course Description:** This course acquaints students with knowledge on advanced two-phase flow models and two-phase flow phenomena pertinent to many engineering applications including nuclear reactors. Some of the major topics include: two-fluid model, steady-state and transient thermal analysis of fuel pin; two-phase flow instability; two-phase flow regimes and regime transition criteria; flooding and entrainment phenomena; and interfacial area transport equation.

**Prerequisites:** NucE501.

**Instructor:** Dr. Seungjin Kim, 230 Reber Building, University Park, PA 16802  
(T) (814) 867-1783; Email: skim@psu.edu  
Office Hours: Tuesday, 9:30AM-11:30AM, or by appointments. Will take phone calls from distance learning students.

**Teaching Assistant:** TBA

**Technical Support:** Missy Stark, Email: masdo@engr.psu.edu  
(T) (814) 865-7645.


**Policies:**

- **Homework:**
  - Due one week from the day assigned (before midnight), unless specified otherwise.
  - No late homework is accepted, unless a request for an extension has been made to the instructor *in advance before the due day* for any extenuating circumstances.
  - Homework can be submitted in the classroom, via mail, via email, or via ANGEL Homework Drop Box. Only PDF format is acceptable for an electronic submission.

- **Exams:**
  - Three exams will be given (2 Midterm & 1 Final Exam).
  - No make-up exam is allowed, unless a request for change in exam date has been made to the instructor *at least one week in advance before the scheduled exam date* for any extenuating circumstances.
  - Anybody who earns an A grade after the second exam (accounting for HW and exams) may opt out of the Final Exam with an A grade.
  - The final grade will be calculated based on two best exams out of three.
  - Should one decides not to take the final exam without earning A grade after the second exam, the grade will be calculated based on THREE exams (instead of two) with ZERO final exam score.
  - For distance learning students: The exam will be performed under the supervision of a proctor. A proctor needs to sign a form available in the “Proctor Information” in NucE 502 CANVAS site as soon as possible.
• **Grade Proportion**
  o **Exams**: 35% each for two best exams out of three (23.33% each in case all three exams need to be accounted for).
  o **Homework**: 30%.
  o The grade will be partitioned into A, B, C, D and F. Ranges of grades are:

<table>
<thead>
<tr>
<th>Final Avg. Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90 ≤ Avg.</td>
<td>A</td>
</tr>
<tr>
<td>80 ≤ Avg. &lt; 90</td>
<td>B</td>
</tr>
<tr>
<td>70 ≤ Avg. &lt; 80</td>
<td>C</td>
</tr>
<tr>
<td>55 ≤ Avg. &lt; 70</td>
<td>D</td>
</tr>
<tr>
<td>Avg. &lt; 55</td>
<td>F</td>
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• **Academic Integrity**: See attached letter