**NucE 408 – Radiation Shielding**

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**Coverage**  
Radiation sources in reactor systems; attenuation of gamma rays and neutrons; point kernel methods; deep penetration theories; methods for dose computation.

**Textbook**  

**Reference**  
To be announced as needed

**Prerequisite**  
NucE 301: Fundamentals of Reactor Physics

**Outline**

1. Introductory concepts in shielding
2. Characterization of radiation fields:  
   a. Independent variables  
   b. Dependent variables
3. Interaction of radiation with matter:  
   a. Cross sections for photons  
   b. Cross sections for neutrons
4. Sources of radiation:  
   a. Photon sources  
   b. Neutron sources
5. Response functions for photons and neutrons
6. Basic dose calculations  
   a. Simple configurations  
   b. Point kernel method  
   c. Geometric factors
7. Special techniques for computing gamma dose
8. Special techniques for computing neutron dose
9. Overview of advanced numerical methods for shielding applications

**Grading**

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<tr>
<td>Homework Assignments*</td>
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* Late Homework Policy:  
  - Up to **one week** past due date ⇒ Grade reduced by 50%
  - No credit for homework submitted more than one week past the due date