NPRE 397 Spring 2025
Time-dependnet random ray dynamics project Due 2025.05.07

For NPRE 397, your total grade will be earned through multiple scientific and technical paper reviews as well as contribution to a comprehensive project. It is intended to tie together ideas regarding technical writing, neutron transport, and numerical methods.
The primary work will be to prepare a validation study of the Time Derivative Propogation (TDP) implementation in OpenMC's Random Ray mode. This study will involve running three transient scenarios (a step, a ramp, and a sinusoid), and comparing the results to point kinetics. Simulations will be run using local workstations, or if needed, cluster computing capabilities. Data from these simulations should be saved and put in appropriately structured directories along with Python scripts or Jupyter notebooks to generate figures.
The project will be assessed as independent research work, much like a journal article undergoes peer review. I will be looking for :

- Relevance
- Technical Detail
- Analytic Rigor
- Verifiability
- Clarity
- A Conclusion

This work will consist of four deliverables:

- a work plan,
- completion of the Stanford Writing in the Sciences MOOC,
- editorial reviews on at least two technical documents,
- and a coauthored report in the style of a conference or journal paper.

1. (10 points) **Work Plan: Due 2025.01.23**

   To help establish scope and milestones, the first step of the project will be a work plan. This plan, developed under supervision of Graduate Research Assistant Olek Yardas, will be delivered in the form of multiple GitHub issues with descriptions and deadlines describing the work you intend to do in the ARFC group. Start with completing the ARFC new member checklist.

   Please arrange at least one short meeting with Prof. Huff to discuss the project plan so that I can help you refine your schedule. I would be happy to provide feedback on a draft of your plan (once) before it is due.

2. (20 points) **Writing in the Sciences Self-Study: Due 2025.05.07** Watch the full set of videos hosted at Coursera.

3. (20 points) **Editorial Reviews: Due 2025.05.07** Complete at least two editorial reviews of ARFC technical writing in collaboration with colleages within the ARFC group.

4. (60 points) **Final Report: Due 2025.05.07** The final report, coauthored between Olek Yardas and Thomas Boehnert, will be submitted to a journal or conference for publication.