# NUCL 44900 – Senior Design Proposal

**Fall 2025 Syllabus**

Purdue University – School of Nuclear Engineering

## Course Information

- **Course number and title:** NUCL 44900 – Senior Design Proposal
- **CRN:** 54002
- **Meeting Time:** MWF 3:30–4:20 PM
- **Instructional Modality:** In-Person / Classroom
- **Class Location:** TBD
- **Pre-requisites:** NUCL 351, Senior Standing
- **Co-requisite:** NUCL 402

## Instructor Contact Information


- **Instructor:** Prof. Hitesh Bindra
- **Office Location:** LMBS Room 5266
- **Phone:** 765-496-2433
- **Email:** hbindra@purdue.edu
- **Office Hours:** TBD
- **Remote Contact:** Via Brightspace or Purdue email


## Course Description

Developing a proposal for an engineering design project. Topics include nuclear power plants, reactor components, materials, principles, operation, and safety analysis.

## Course Goals

(a) Develop a comprehensive proposal for a capstone design project considering design methods, engineering principles, mathematical tools, and ethical and professional responsibilities in global, economic, environmental, and societal contexts.

(b) Work effectively within a team, providing leadership, creating an inclusive environment, establishing goals, planning tasks, and meeting objectives.

*Important: Do not contact instructor to be on specific teams or projects. Instructor will collect information directly.*

## Learning Resources, Technology, and Texts

- No required textbook. Industry sponsors will provide reference materials.
- Class slides and notes posted on Brightspace.
- Sponsor-provided materials may be confidential. Students may be required to sign NDAs.

### References


1. A. Sesonske, *Nuclear Power Plant Design Analysis*, 1973. Available at: `https://www.osti.gov/biblio/4417437` or `https://inis.iaea.org/...`.
2. D. Ullman, *The Mechanical Design Process*.


## Learning Outcomes (ABET-Aligned)

- Ability to recognize ethical and professional responsibilities and assess impacts of engineering solutions.
- Ability to function effectively on diverse teams to achieve objectives.

## Assignments and Grading

### Components:

- Ethics Test – 15%
- Assessment Report (Individual) – 15%
- Progress Presentations (Group) – 20%
- Technical Report on Proposal (Group) – 25%
- Proposal Presentation (Group) – 25%

**Scale (Tentative):** A = 90–100%; B = 80–89%; C = 70–79%; D = 50–69%; F = <50%.

## Policies

### Late Work

One day late: 50% credit. Beyond one day: 0 credit (unless excused).

### Examinations

No written final exam. Final team proposal and ethics test serve as equivalents.

### Incompletes

Granted only under exceptional circumstances with written request before Dec 1.

## Tentative Schedule – Fall 2025

| Week | Date | Topics | Remarks |
|---|---|---|---|
| 1 | 08/25 | Course Overview | |
| 2 | 09/01 | No Class | |
| 3–7 | 09/08–10/06 | Industry Sponsor Proposal Presentations | |
| 8 | 10/13 | No Class | Teams formed |
| 9 | 10/20 | Ethics Test + Team Synergy | |
| 10–13 | 10/27–11/10 | Team Progress Presentations | |
| 14 | 11/17 | Industry Mentor Meetings | Draft Final Report Due |
| 15-16 | 11/24-12/01 | Practice Presentations | |
| 17–18 | 12/08–12/15(Tentative) | Final Presentations | Final Report Due |

## University Policies and Student Support

This course follows **Purdue Fall 2025 syllabus guidelines**, including:

- **Attendance:** Medically Excused Absence Policy for Students (MEAPS), bereavement, military service, jury duty, parenting leave.
- **Academic Integrity:** Violations will result in penalties, including referral to OSRR.
- **Diversity & Inclusion:** Respectful classroom environment required.
- **Accessibility:** Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone at 765-494-1247.
- **Mental Health:** CAPS (765-494-6995) and WellTrack resources available.
- **Emergency Preparedness:** See `https://www.purdue.edu/ehps/emergency_preparedness/`.

## Use of AI Tools and Copyright Notice

Artificial Intelligence (AI) tools can be useful resources for brainstorming, checking grammar, or improving clarity of writing. However, students must use such tools responsibly and in accordance with Purdue University's academic integrity and copyright policies.

- **Do not share or upload copyrighted course materials to AI tools or other third-party websites.** This includes but is not limited to course notes, PowerPoint slides, homework assignments, assessments, exams, and any instructor-generated content.
- While faculty and instructors do not hold copyright over *facts or ideas*, they do hold copyright over the *expression, explanation, and presentation* of those facts and ideas. Instructor-generated content (slides, notes, assessments, etc.) is protected by copyright and must not

be distributed or uploaded outside Brightspace.

- Any use of AI tools to generate work submitted in this course must be consistent with the course learning objectives and the Purdue Honor Pledge. If in doubt, consult with the instructor before using AI tools for assignments.
- Uploading Purdue materials to any third-party service without permission, whether AI-oriented or not, is considered a violation of copyright policy and may also constitute academic misconduct.

## Disclaimer

This syllabus is subject to change. Updates will be communicated via Brightspace and class announcements.