

NUCL 450: DESIGN IN NUCLEAR ENGINEERING

Spring 2019

Mon., Wed.: 11:30-1:20PM @ 134 GRIS

Course Outcome: Application of the design process to the project design topics identified in NUCL 44900. The design process usually includes, but not limited to, mathematical modeling in design, neutronic, thermal-hydraulics and safety studies, risk assessment, economics, policy and regulation, environmental impact.

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Text / References: Class Notes and handouts

Requirements:

- Attendance is mandatory. Absence due to extenuating circumstances needs to be notified to the instructors prior to absence and requires approval by the instructors.
- Individual Bi-weekly Progress Report (WPR): Each student will submit a one-page bi-weekly progress report detailing personal accomplishments/efforts for the period in a preformatted report template. The report must be submitted in electronic file in PDF.
- Biweekly Technical Presentation on Project Progress: Each team (i.e. all team members) will make 10-minute biweekly professional technical oral presentation describing the progress, accomplishments, problems-to-be solved for their design project topic.
- Monthly Progress Report (MPR): Each team will submit a monthly progress report that provides detailed discussion, analysis and conclusions about their design project status. The report must be submitted in electronic file in PDF.
- Midterm Technical Report: Each team will submit one midterm technical report. The report must be submitted in electronic file in PDF. It is due no later than March 27, 2019 (Earlier due day can be set upon sponsor's request).
- Final Technical Report: Each team will submit a comprehensive final technical report. The report must be submitted in electronic file in PDF. It is due no later than April 26, 2019 (Earlier due day can be set upon sponsor's request).
- Final Technical Poster: Each team will submit a summary technical poster that presents their design's attributes, capabilities and supporting analysis to prospective users of the design.
- Final Technical Presentation: Each team will make a 20-min. final technical presentation on their design.

Grading Criteria:

- Grading will be based on both individual and group performances:
 - Biweekly progress report (Individual): 10%
 - Monthly progress report (Group): 10%
 - Biweekly technical presentation (Group): 10%
 - Midterm design report (Group): 15%
 - Comprehensive final design report (Group): 25%
 - Final presentation (Group): 15%
 - Poster: 10% (Group)
 - Customer satisfaction survey by sponsors (Group): 5%
- Grade Proportion
 - A: 90-100%; B: 80-89%, C: 70-79%, D: 50-69%, F: Below 50%

Academic Integrity

<http://www.purdue.edu/odos/osrr/academic-integrity/index.html>

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

Purdue Honors Pledge.

"As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue." <https://www.purdue.edu/provost/teachinglearning/honor-pledge.html>

Diversity & Inclusion

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. Purdue's nondiscrimination policy can be found at:

http://www.purdue.edu/purdue/ea_eou_statement.html.

CAPS Information

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business

Campus Emergency: *In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Here are ways to get information about changes in this course.* (i) Check on messages in for this course in Blackboard (ii) Instructors emails

EMERGENCY PREPAREDNESS

As we begin this semester I want to take a few minutes and discuss emergency preparedness. Purdue University is a very safe campus and there is a low probability that a serious incident will occur here at Purdue. However, just as we receive a "safety briefing" each time we get on an aircraft, we want to emphasize our emergency procedures for evacuation and shelter in place incidents. Our preparedness will be critical IF an unexpected event occurs!

Emergency preparedness is your personal responsibility. Purdue University is actively preparing for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus. Let's review the following procedures:

- For any emergency call 911.

- There are nearly 300 Emergency Telephone Systems throughout campus that connect directly to the Purdue Police Department (PUPD). If you feel threatened or need help, push the button and you will be connected to the PUPD.
- If we hear a fire alarm we will immediately evacuate the building and proceed **to East end of the Main Aisle of Stewart Center on the First Floor (Near the doors that go outside to the Memorial Union)**.
 - **Do not use the elevator.**
 - Go over evacuation route...see specific Building Emergency Plan.
- If we are notified of a Shelter in Place requirement for a tornado warning we will shelter in the lowest level of this building away from windows and doors. Our preferred location is **Grissom 103 (Large Classroom) or Grissom Hall B047**.
- If we are notified of a Shelter in Place requirement for a hazardous materials release we will shelter in our classroom shutting any open doors and windows.
- If we are notified of a Shelter in Place requirement for a civil disturbance such as a shooting we will shelter in a room that is securable preferably without windows. Our preferred location is **Grissom 103 (Large Classroom) or Grissom Hall B047**.

NOTE: Each building will have different evacuation & shelter locations. The specific Building Emergency Plan will provide specific locations and procedures

Please see the document (BEP GRID plan.pdf) in blackboard on **GRISSOM HALL BUILDING EMERGENCY PLAN**



EMERGENCY PREPAREDNESS SYLLABUS ATTACHMENT

EMERGENCY NOTIFICATION PROCEDURES are based on a simple concept if you hear a fire alarm inside, proceed outside. If you hear a siren outside, proceed inside.

- **Indoor Fire Alarms** mean to stop class or research and immediately **evacuate** the building.
 - Proceed to your Emergency Assembly Area away from building doors. **Remain outside** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.
- **All Hazards Outdoor Emergency Warning Sirens** mean to immediately seek shelter (**Shelter in Place**) in a safe location within the closest building.
 - Shelter in place means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, a civil disturbance including a shooting or release of hazardous materials in the outside air. Once safely inside, find out more details about the emergency*. **Remain in place** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

**In both cases, you should seek additional clarifying information by all means possible. Purdue Home page, email alert, TV, radio, etc. review the Purdue Emergency Warning Notification System multi-communication layers at*

http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html

EMERGENCY RESPONSE PROCEDURES:

- Review the **Emergency Procedures Guidelines**
https://www.purdue.edu/emergency_preparedness/flipchart/index.html
- Review the **Building Emergency Plan** (available from the building deputy) for:
 - evacuation routes, exit points, and emergency assembly area
 - when and how to evacuate the building.
 - shelter in place procedures and locations
 - additional building specific procedures and requirements.

EMERGENCY PREPAREDNESS AWARENESS VIDEOS

- "Shots Fired on Campus: When Lightning Strikes," is a 20-minute active shooter awareness video that illustrates what to look for and how to prepare and react to this type of incident. See:
<http://www.purdue.edu/securePurdue/news/2010/emergency-preparedness-shots-fired-on-campus-video.cfm> (Link is also located on the EP website)

MORE INFORMATION

Reference the Emergency Preparedness web site for additional information:
http://www.purdue.edu/emergency_preparedness

Schedule for NUCL450 - Spring 2019 -			
Week No.	Date	Topics	Remarks
1	01/07	Course Overview	Kim / Revankar
	01/09	Group meeting with mentors: Discussion on projects	All with Mentors
2	01/14	Project progress meeting	All
	01/16	Group meeting with mentors: Discussion on projects	All with Mentors
3	01/21	Martin Luther King Jr. Day - University Holiday	No Class
	01/23	Group meeting with mentors: Discussion on projects: DUE first individual WPR	All with Mentors
4	01/28	First Bi-weekly Team Presentations – Update on the project plans / schedules	All
	01/30	Group meeting with mentors: Discussion on projects: Due first MPR	All with Mentors
5	02/04	Project progress meeting	All
	02/06	Group meeting with mentors: Discussion on projects: DUE individual WPR	All with Mentors
6	02/11	Bi-weekly Team Presentations	All
	02/13	Group meeting with mentors: Discussion on projects	All with Mentors
7	02/18	Project progress meeting	All
	02/20	Group meeting with mentors: Discussion on projects: DUE individual WPR	All with Mentors
8	02/25	Bi-weekly Team Presentations	All
	02/27	Group meeting with mentors: Discussion on projects: DUE Last MPR	All with Mentors
9	03/04	Project progress meeting	All
	03/06	Group meeting with mentors: Discussion on projects: DUE individual WPR	All with Mentors
10	03/11-03/15	<i>Spring Break</i>	No Class

11	03/18	Bi-weekly Team Presentations	All
	03/20	Group meeting with mentors: Discussion on projects	All with Mentors
12	03/25	Project progress meeting	All
	03/27	Group meeting with mentors: Discussion on projects: *DUE Midterm Report	All with Mentors
13	04/01	Bi-weekly Team Presentations	All
	04/03	Group meeting with mentors: Discussion on projects: DUE Last individual WPR	All with Mentors
14	04/08	Discussion on poster preparation	Kim / Revankar
	04/10	Group meeting with mentors: Discussion on projects	All with Mentors
15	04/15	Practice on Final Oral Presentation: Due Draft Poster	All
	04/17	Group meeting with mentors	All with Mentors
16	04/22	No Class / Meeting as needed	
	04/23	Design showcase – Poster presentations to Nuclear Engineering Advisory Board	All / NEAB /Sponsors
	04/24	Final Technical Presentation	All / Sponsors
	04/26*	*Due: Final Technical Report	

** Earlier due date can be set upon request from the sponsor*

MPR: Monthly Progress Report

WPR: Bi-Weekly Progress Report

TBD: To Be Determined