NPRE 402

Nuclear Power Engineering

Spring 2026

Please submit the corresponding written assignment through email to https://canvas.illinois.edu

Online Temporary Alternative Coverage and access during Avian Influenza Type A Bird Flu H5N1, H5N2 or Covid-19 and possible resurgence through mutations and variants or WHO anticipated Gain Of Function GOF research "Disease-X"
https://www.cdc.gov/bird-flu/situation-summary/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fbird-flu%2Fphp%2Favian-flu-summary%2Findex.html

1. Please read the assigned-reading lecture-notes chapters.
2. Then answer the corresponding written assignment,
3. For questions about the assignments, please access the teaching assistants by email or phone:
https://www.mragheb.com/NPRE%20402%20ME%20405%20Nuclear%20Power%20Engineering/talist.htm
4. Submit the corresponding written assignment through email to https://canvas.illinois.edu
5. Please use either the Word or pdf formats
6. In case of internet "rationing" (e. g. to health and government authorities), instability, or collapse through overload, please read the lecture notes and submit the corresponding assignments. Already-taken tests and submitted assignments would be used in assessing the final grade.

Threat of Nuclear War:
https://www.youtube.com/watch?v=HSC7Lp1nvx8
https://www.youtube.com/watch?v=M7hOpT0lPGI

Number	Date Assigned	Due Date	Description
1	1/21	1/28	**Reading assignment** **Preface** **10. Artemis Lunar and Mars Nuclear Power** **Written Assignment** How many nuclear power plants are currently operating worldwide? How many power plants are under construction worldwide? Hint: Visit: **World Nuclear Association, WNA** **https://www.world-nuclear.org/information-library/facts-and-figures/reactor-database.aspx** Identify the radioactive isotope that was used by NASA in providing electrical power generation for the Pioneer and Voyager space probes. Define the Terawatt unit of power. Access the internet to determine the latest available figure of total yearly global power consumption. Use the Carl Sagan's formula to calculate our technological civilization's level on the Kardashev's cosmic scale. On the Kardashev Scale, identify the power needs in Watts for Type I, II and III civilizations. In how many years is our Earth expected to achieve a Type I status?

			Write a paragraph about the “Fermi Paradox”. Write a paragraph on NASA’s Artemis Project. In Greek mythology, who is Artemis’ twin brother? Who was born first?
2	1/23	1/30	**Reading assignment** **Preface** **Written Assignment** Use the “Sankey diagram” to calculate the percentage share of nuclear energy in: a) The primary energy supply, b) Electrical energy generation? Define the Quad unit of energy in terms of BTUs and Joules. Use the “Sankey diagram” to calculate the end use efficiencies of the following energy sectors: 1. Residential, 2. Commercial, 3. Industrial, 4. Transportation. Draw a diagram and list the components of the envisioned Internet of Things (IoT) for a future energy system. Access France’s Smart Grid Site at a given time of the day and construct a table showing the energy options in use and their respective power levels. What is the fraction of Nuclear Energy Use? Hint: https://www.rte-france.com/en/data-publications/eco2mix/power-generation-energy-source
3	1/26	2/2	
4	1/28	2/4	
5	1/30	2/6	
6	2/2	2/9	
7	2/4	2/11	
8	2/6	2/13	
9	2/9	2/16	
10	2/11	2/18	
11	2/13	2/20	
12	2/16	2/23	
13	2/18	2/23	
14	2/20	2/23	
	Monday, 2/23		Monday February 23, First Midterm Exam. During class period
15	2/25	3/4	
16	2/27	3/6	
17	3/2	3/9	
18	3/4	3/11	
19	3/6	3/13	
20	3/9	3/16	
21	3/11	3/18	

22	3/13	3/23	
	3/16		Spring Break
	3/18		Spring Break
	3/20		Spring Break
23	3/23	3/30	
24	3/25	4/1	
25	3/27	4/3	
26	3/30	4/6	
27	4/1	4/6	
28	4/3	4/6	
	4/6		**Monday, April 6, Second Midterm Exam. During class period**
29	4/8	4/15	
30	4/10	4/17	
31	4/13	4/20	
32	4/15	4/22	
33	4/17	4/24	
34	4/20	4/27	
35	4/22	4/29	
36	4/24	5/1	
37	4/27	5/3	
38	4/29	5/6	
39	5/1	5/6	
40	5/4	5/6	
Final Exam	5/6	5/14	**Wednesday May 6, Last day of classes, during class period**
Final Exam			~~(1:30-4:30 p.m., Thursday, May 14)~~ **Last day of classes, Wednesday May 6**

Assignments Policy

Assignments will be turned in at the beginning of the class period, one week from the day they are assigned.
They need to be submitted earlier when tests are scheduled.
The first five minutes of the class period will be devoted for turning in, and returning graded assignments.

Late assignments will be assigned only a partial grade. Please try to submit them on time since once the assignments are graded and returned to the class, late assignments cannot be accepted any more.
If you are having difficulties with an assignment, you are encouraged to seek help from the teaching assistants (TAs) during their office hours. Questions may be e-mailed to the TA's, but face-to-face interaction is more beneficial.
Although you are encouraged to consult with each other if you are having difficulties, you are kindly expected to submit work that shows your individual effort. Please do not submit a copy of another person's work as your own. Copies of other people's assignments are not conducive to learning, and are unacceptable.
For further information, please read the detailed assignments guidelines.