

# EEE 564 INTERDISCIPLINARY NUCLEAR POWER OPERATIONS

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Midterm Exam: Monday, June 14

**EEE 564 is a fully online course**

Final Exam: Thursday, July 8

Textbook: The primary textbook for this course is *Theory and Application of Power Plant Operations* by Robert L. Simmons, © 2009, which is posted to Canvas as a pdf file (for free). There are a few additional documents and references posted there for reading also.

Course Webpage: Lecture slides, homework and exams posted on Canvas.

Course Objective: Instill the fundamental concepts and importance of nuclear safety to engineers and scientists in a variety of disciplines.

Course Outcomes: Students are

- knowledgeable about nuclear power plants and their safety systems,
- cognizant of the critical role that engineers have on the safe operation of a nuclear power plant, and
- prepared for the impacts that various engineering processes (changes and failures) have across the entire power plant.

Course Description: Nuclear power plant systems. Study of the interrelationship and propagation of effects that systems and design changes have on one another, especially in relations to nuclear power plant safety and operations. Case studies. Prerequisite: EEE 563.

## Grading

“Standard” scale (with  $\pm$ ) using 90-100 "A", 80-90 "B", 70-80 "C", etc.

Homework	40%
Midterm Exam	30%
Final Exam	30%

Homework: The homework assignments will be posted online. Homework is expected to be turned in on-time. Presentation and methods for arriving at the answer are just as important as the mathematical answer; solutions should be neat and logical. For complete credit: (1) show all work, and (2) box the answer and include the units. Students may work together on the homework, but copying is unacceptable: the ASU [Academic Integrity Policy](#) (AIP) is incorporated herein by reference. Please complete and submit homework assignments according to the instructions on Canvas, as this course is nearly self-contained online.

Discussion Board: **Be sure to subscribe to the Discussions board as this is considered equivalent to in-class discussions.** To ensure that your questions can be answered most effectively, be sure to state which homework set or lecture slide number that you are inquiring about.

## EEE 564 TEACHING PLAN

(Online, Summer 2021)

The textbook sections (given in parenthesis below) should be read **before** the specific lecture.

Week	Dates	Lecture Topic	Assignment Due
1	May 17–21	1. Introduction; Nuclear Safety Principles (Glossary & Chapter 1)	
		2. Nuclear Power Plant Systems Overview (Sections 2.1–2.2)	
		3. Plant Emergency and Safety Systems – Part I (Section 2.4)	May 20: Hmwk # 1
		4. Plant Emergency and Safety Systems – Part II (Sect. A.2–A.3)	
2	May 24–28	5. Materials Corrosion and Chemical & Volume Control – Part I (Section 2.3)	
		6. Materials Corrosion and Chemical & Volume Control – Part II (Section A.1)	May 25: Hmwk # 2
		7. Electrical Grid Disturbances – Part I (Section 2.5)	
		8. Electrical Grid Disturbances – Part II (Section A.4)	
		<i>Saturday:</i>	May 29: Hmwk # 3
3	May 31 – June 4	### Memorial Day Holiday ###	
		9. Startup Preparations – Part 1 (Sections 3.1–3.4)	
		10. Startup Preparations – Part 2 (Sections 3.5–3.8)	June 2: Hmwk # 4
		11. Reactor Startup – Part 1 (Sections 4.1–4.5)	
		<i>Saturday:</i>	June 5: Hmwk # 5
4	June 7–11	12. Reactor Startup – Part 2 (Section 4.6)	
		13. Reactor Startup – Part 3 (Section 4.7)	
		14. Intro to the Nuclear Licensing Process (NUREG/BR-0298)	June 10: Hmwk # 6
		15. Review for Midterm Exam	
5	June 14–18	*** Midterm Exam *** (June 14)	
		16. Power Increase to the Power Range – Part 1 (Sect. 5.1–5.5)	
		17. Power Increase to the Power Range – Part 2 (Sect. 5.6–5.7)	
		18. Power Increase to the Power Range – Part 3 (Sect. 5.8–5.11)	
		<i>Saturday:</i>	June 19: Hmwk # 7
6	June 21–25	19. Power Range Operations – Part 1 (Sections 6.1–6.3)	
		20. Power Range Operations – Part 2	
		21. Power Range Operations – Part 3 (Sections 6.4–6.7)	June 24: Hmwk # 8
		22. Power Range Operations – Part 4 (Sections 6.8–6.10)	
7	June 28 – July 2	23. Power Range Operations – Part 5 (Sections 6.10–6.12)	June 28: Hmwk # 9
		24. Power Range Operations – Part 6	
		25. Probabilistic Risk Assessment – Part I (Section A.5)	
		26. Probabilistic Risk Assessment – Part II	
		27. Reactor Safety Studies and Accidents (WASH-1400)	July 2: Hmwk #10
8	July 5–8	### Independence Day Holiday (Observed) ###	
			July 6: Hmwk # 11
		28. Review for Final Exam	
		*** Final Exam *** (July 8)	

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