MEMORANDUM:

TO: Students in NucE 420
FROM: J. S. Brenizer, Jr.
SUBJECT: Beginning of Course Memo, Fall 2015

Catalog Data: NucE 420 RADIOLOGICAL SAFETY (3) Ionizing radiation, biological effects, radiation measurement, dose computational techniques, local and federal regulations, exposure control. Prerequisite: NucE 301 or NucE 405


Handbook of Chemistry and Physics, recent ed., Chemical Rubber Company
Handbook of Tables for Applied Engineering, recent ed., Chemical Rubber Company

Instructor: J. S. Brenizer, Professor of Mechanical and Nuclear Engineering

Goals: This course will provide students with an understanding of radiation health physics in the areas of radiation protection, regulatory guidelines, and dosimetry.

Program: This course covers the following program outcomes:

Outcomes: 
5% 1d. demonstrate a knowledge of atomic and nuclear physics.
15% 2a. understand and apply the basic concepts of particle transport, nuclear interactions including radioisotope production and decay, nuclear fission, criticality and reactivity.
20% 2d. demonstrate breadth of understanding of the various areas in nuclear field,
10% 2e. demonstrate a knowledge of contemporary issues in the nuclear engineering profession, and
30% 3a. understand the principles of radiation interaction with matter.
10% 3b. demonstrate an understanding of the principles of radiation detection and measurement, nuclear instruments and detectors.
10% 4a. demonstrate ability to write effectively, especially in a technical context.

Topics:
1. Introduction and Basic Considerations
2. Radiation Dosimetry
3. Radiation Biology
4. Regulatory Guidelines and Requirements
5. Health Physics Instruments
6. Internal Radiation Protection
7. External Radiation Protection
8. Evaluation of Protection Measures

Grading: Final course grades will be determined in the following manner:

Homework Problems 25%
Mid-semester Exam 25%
Final exam 30%
Special Topic Report 20%
Examinations: All examinations will be in-class exams. The mid-term examination will be held in class on Monday, October 19, 2015 and the final exam will be held in the assigned time slot during the final examination period.

Report: The reports will be due at the start of class on Monday, December 7, 2015. The report will be submitted in both an electronic form (ANGEL dropbox) and in a printed hard copy.

Additional Notes:

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at http://equity.psu.edu/ods/.

In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see the documentation guidelines at http://equity.psu.edu/ods/guidelines/documentation-guidelines). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.

Academic Integrity: The College Academic Integrity Policy applies; please become familiar with the policy at http://www.engr.psu.edu/CurrentStudents/acadinteg.aspx.