ME 461: Introduction to Nuclear Engineering

Course description: Applied nuclear physics; application to the nuclear fuel cycle and nuclear reactor core design; nuclear reactor systems and safety.

Number of credits: 3

Course Coordinator: J. Leachman

Prerequisites by course: Certified major in engineering or physical sciences; senior standing; MATH 315

Prerequisites by topic: Science/engineering background in lower-division math, chemistry, and physics

Postrequisites: None


Expected student outcomes: 1. An understanding of nuclear energy fundamentals, nuclear fissions, and fission reactors. 2. An understanding of nuclear reactions and radiations, and reactor heat generation. 3. An understanding of neutron transport behavior. 4. An understanding of a nuclear steam supply system, nuclear safety,
nuclear fuel cycle.
5. An understanding of radiation protection and ability to perform shielding calculations for a simple reactor system.
6. A general understanding of nuclear power plant systems, licensing, design, operation & maintenance, safety, and security.
7. Ability to perform a general design and nuclear safety analysis for a simple reactor system.

Class schedule: Two 75-minute or three 50-minute lecture sessions per week, for one semester

Laboratory schedule: None

Contribution to meeting the professional component: Engineering Topics

Relationship of course to student outcomes:
3 strongly supported; 2 supported; 1 minimally supported

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Student Outcomes Pre-Fall 2018 (ABET EC2000)

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Student Outcomes Fall 2018 forward (ABET EC2019)

Prepared by: Andrea Butcherite and J. Leachman

Date: May 30, 2018