

NRE 4232 Nuclear Radiological Engineering Design (Required)

Catalog Description: NRE 4232 Nuclear Radiological Engineering Design (1-9-4)

Prerequisite: NRE 4328 NRE 4208

Introduction to the methodologies of nuclear and radiological design. An open-ended design project that integrates all relevant engineering aspects is to be completed in this course.

Textbook: None

Reference(s): Weston M. Stacey, “*Nuclear Reactor Physics*”, 2nd Edition, Completely revised and enlarged, Wiley-VCH, 2007. ISBN#978-3-527-40679-1.
James J. Duderstadt and Louis J. Hamilton, “*Nuclear Reactor Analysis*”, Wiley-Interscience, 1976, ISBN#0-471-22363-8
Neil E. Todreas and Mujid S. Kazimi, “*Nuclear Systems I, II*”, Taylor and Francis, 2001, ISBN#1-56032-079-6

Topics Covered:

1. Appropriate to the specific design project; design of primary system of a nuclear reactor; the associated fuel cycle; and determination of relevant safety parameters.

Course Outcomes:

Outcome 1: To teach, develop and encourage team work, technical leadership, communication and presentation skills.

- 1.1 Students will demonstrate the ability to lead, work in teams, communicate (oral and written) and make presentations.

Outcome 2: To complete an open-ended design project that integrates all relevant engineering aspects (such as economics, neutronics, thermal hydraulics, safety, ...).

- 2.1 Students will demonstrate the ability to complete a design project, write a technical report and present preliminary and final designs.

Correlation between Course Outcomes and Program Educational Outcomes:

| NRE 4232 Nuclear Radiological Engineering Design | Outcome a | | | Outcome b | Outcome c | Outcome d | Outcome e | Outcome f | Outcome g | Outcome h | Outcome i | Outcome j | Outcome k |
|--|-----------|----|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | i | ii | iii | | | | | | | | | | |
| Course Outcome 1.1 | | | | | X | X | | | X | | | | |
| Course Outcome 2.1 | X | X | X | | X | | X | | | | X | X | X |

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