EP 712 Advanced Nuclear Reactor Analysis

LECTURER: Dr. Dan Meneley Term II (2000-2001)
AECL Sheridan Park (905)-823-9060, x5079, mailto:meneleyd@aecl.ca

COURSE WEB PAGE: http://epic.mcmaster.ca/~garlandw/ep712/ep712index.htm

LECTURES: To be arranged.

PREREQUISITE: EP4D3 or equivalent reactor physics course at a senior level covering multigroup diffusion theory statics and dynamics. There is no "steady state" in a real critical fission-chain reactor. There are no "point" reactors in the real world.

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TEXT: Course notes as provided on the web page. (These will be updated)

OUTLINE: Dynamic Characteristics of neutron chain reactors, with time scales ranging from the prompt neutron cycle (10^{-8} s to 10^{-3} s) through temperature-induced feedback, delayed neutron precursor production and decay, and control systems response, up to the time scale of fuel burnup and irradiation damage of structures (~10^{+8} s). Refinement of concepts important to current and future CANDU power plants. Approximations for inclusion of those variables important for reactor design, safety design, accident analysis, normal operation, startup and shutdown, fuel management, and structural response.

COURSE OBJECTIVE: To provide students with a sound practical understanding of neutron dynamics in general, and CANDU power reactor dynamics in particular.

COURSE METHODOLOGY:

- One 3-hour lecture period per week (2-hour lecture, one 1-hour tutorial) as per course schedule.
- A first-time course. Students and lecturer will jointly determine the best approach to learning.
- There will be one term test (~1 hour) in week 4 and one analysis project, due near end of term.
- There will be a 3-hour final exam.

FINAL COURSE MARK:

30% assignments, 30% analysis project, 40% term test and final exam

POLICY REMINDERS: Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to the published policy.

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