NUC K117 Atomic and Reactor Physics

☒ Required ☐ Elective

Catalog Description: Introduction to modern physics concepts of the structure of the atom, properties of atomic particles, nature of light, relativity theory and elementary quantum mechanics. An understanding of fission energy concepts and transmutations will be provided.

Prerequisites: MAT K186, NUC K100, PHY K114

Textbook(s) or other materials: Basic Nuclear Engineering, Foster

Course learning outcomes/Expected performance criteria:

The student will gain a solid background in: 1) the physical make-up of an atom; 2) the interrelations of atomic particles; 3) nuclear energy; 4) fissioning; 5) radioactive decay and nuclear equilibrium; and 6) relativity.

Topics covered:

		HOURS
1.	Atomic Hypotheses	1
2.	Gases	3
3.	Electrostatics	4
4.	Charge to Mass Ratio of Electrons and Ions	4
5.	Determination of the Charge of the Electron	3
6.	Nuclear Atoms	1
7.	Relativity	4
8.	Photoelectric Effect	3
9.	Atomic Spectra and Bohr's Model	10
10.	X-rays	3
11.	Wave Mechanics	3
12.	Nuclear Energy and Forces	5
13.	Radioactive Decay Chains and Equilibrium	5
14.	Nuclear Reactions and Cross-sections	11
	TOTAL HOURS	60

Class/Lab schedule: Four classroom sessions each week

Relationship of course to Criterion 5 and Program Outcomes:

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