

Physics 422 –Nuclear and Particle Physics

Term 222

Course Policy

Course Description:

PHYS 422 Nuclear and Particle Physics (3-0-3)

Study of Nuclear and Particle Physics with the help of Quantum Mechanics. Topics covered include nuclear properties, forces between nucleons, nuclear models, radioactive decays and detectors, nuclear reactions, accelerators. Fundamental particles, forces, the subnuclear zoo. Two-body bound and scattering problems, nuclear forces, models, etc. studies both analytically and via computer packages

Prerequisite: PHYS 310

Textbook:

"Introductory Nuclear Physics" by Kenneth S. Krane, 2nd Edition, Wiley (1988).

Course Learning Outcomes:

Upon successful completion of the course, students should be able to:

1. Recognize the systematics of Nuclear properties and the fundamentals of Nuclear Forces
2. Recognize the basics of the Shell Model and Collective Model
3. Recognize the physics and systematics of Alpha, Beta, and Gamma Decays
4. Recognize the different types of Nuclear Reactions, Fission and Fusion Reactions.
5. Calculate important physical quantities relevant to nuclear physics at the elementary and intermediate levels
6. Think critically about matters related to nuclear physics
7. Work ethically and follow ethical guidelines set by the university

Attendance Policy:

1. PHYS 422 course is offered in person. Class attendance and participation are required.
2. A **DN** grade shall be given to the student who has more than 9 unexcused absences

Grading Policy:

Grading Policy	%
Class Work including Quizzes	10
Homework	15
Project	15
Major-1	15
Major-2	15
Final Exam	30
Total	100

General Notes:

Studying: generally, you need 3 hours of self-study for each hour of lecture. Reading from the textbook and references as well as solving homework problems is the best way to understand the material.