

COURSE SYLLABUS
PHYS 717 - NUCLEAR THEORY I
Fall 2011

Instructor

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Office Hours

By appointment

Course Meetings

TTh 11:00am to 12:15pm, PSC 115

Course content

- Basics of quantum chromodynamics
- Effective field theories
- Nucleon-nucleon interactions
- Deuteron
- Nuclear models
- Decays and reactions

Learning Outcomes

By the end of the course students should be able to

- Understand the origin of nuclear forces in quantum chromodynamics
- Understand the properties of nucleon-nucleon interactions
- Calculate deuteron properties
- Apply nuclear models to predict the level structure of nuclei
- Calculate basic properties of nuclei using models
- Describe simple nuclear reactions

Requirements

- Homework: Graded homework will be assigned approximately six to eight times. The homework must be turned in by the time specified on the assignment.
- Quizzes: There will be approximately four to six graded quizzes throughout the semester.
- Final Examination on Friday, December 9 at 5:30pm. The Final Examination will be based on material covered in class, reading assignments, the

material in quizzes, and the homework assignments.

Grading

The overall grade will be determined by the average of all grades accumulated during the course, weighted as:

- Homework: 60%
- Quizzes: 10%
- Final Examination: 30%

Grading scale

A: 88–100 B: 76–87 C: 63–75 D: 50–62

Course Policies

All work submitted by the student must be his/her own and must comply with the rules stated on this sheet. Please refer to *Carolina Community* for further information concerning the Code of Student Academic Responsibility. Homework will not be accepted after the due date, and the Final Examination must be taken as scheduled on this syllabus. Exceptions will only be made in special circumstances and at the discretion of the instructor.

Students requiring special arrangements for class participation or test administration should notify the instructor at the beginning of the semester.

Recommended textbook

Nuclear Physics in a Nutshell, Carlos A Bertulani (Princeton University Press)