

Physics 421 - Contemporary Atomic Physics

Spring 2019

- Instructor: Subhadeep Gupta
- Lectures: T Th 1:00-2:20 pm, A110 Physics & Astronomy Building
- Office: B428 Physics & Astronomy Building (616-9649), deepg@uw.edu
- Office Hours: T Th 3:00-4:30 pm (or by appointment)
- Textbook: Chris Foot, *Atomic Physics*
- Homework: HW problems will be assigned in lecture each week, to be worked out completely and handed in before noon on (typically) Friday of the following week. A portion of each week's HW assignment will be graded.
- Exams: There will be two one-hour exams and a take-home final exam (see schedule on reverse side). The one-hour exams will be in B109 and will be closed book. The final exam is open book, open notes, and will cover the entire syllabus. There will be no make-up exams. You may return an exam for regrading within one week after it was distributed, but you must attach a brief statement explaining the possible error in the original grading.
- Course TA: Xinxin Tang (xixtang@uw.edu).
- Course grade: In addition to the weekly homework assignment, there will be two one-hour in-class exams and a take-home final exam. The total homework grade and the one-hour exams are worth 100 points each. The final exam is worth 200 points. You can drop either of the one-hour exams, or half of the final, but not the homeworks. The grade for the class will thus be on a total of 400 points.
- Course Website: <http://faculty.washington.edu/deepg/phys421/>
Lecture notes will be made available after lecture.
Homework solutions will be made available the day after the due-date.

If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to me (the instructor) so we can discuss the accommodations you might need for class.

Course Schedule

Week	Topic	Text
Apr 2, 4	Two-Level Systems, Hydrogen, fine structure	Ch. 1 & 2
Apr 9, 11	Helium atom, central-field	Ch. 3 & 4
Apr 16, 18	Alkali atoms, LS coupling	Ch. 4 & 5
Apr 23, 25	Zeeman and hyperfine structure	Ch. 5 & 6
First Exam - Tuesday April 30		
May 2	Interaction with radiation	Ch. 7
May 7, 9	Doppler free laser spectroscopy	Ch. 8
May 14, 16	Laser cooling and trapping	Ch. 9
May 21, 23	Optical Dipole Trap, Quantum Degenerate Gases	Ch. 10 & 11
Second Exam - Tuesday May 28		
May 30	Ion Traps and Quantum Computing	Ch. 12
Jun 4, 6	Special Topics: Molecules, Quantum Simulation	handouts
Final Take-Home Exam - Handed out June 6 in class, due June 10, 5PM		