

Chemistry 8564 Laser Spectroscopy
Spring Semester, 2016
MWF 12:20–1:10
364 Vincent Hall

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This course emphasizes the fundamentals of light-molecule interactions and their manifestation in spectroscopic observables. The course will cover time correlation functions, spectroscopic lineshapes, linear and nonlinear material responses, and material susceptibilities. Throughout the course, the particular role of lasers in measuring these quantities will be highlighted.

Prerequisite: Chem 8551 (or its equivalent) is recommended.

Textbook: The primary “text” for this portion of the course will be the Time Dependent Quantum Mechanics and Spectroscopy notes by Andrei Tokmakoff, which is available online for free (<https://tdqms.uchicago.edu>). Other resources may be utilized, including textbooks that will be placed on reserve at the library, handouts, and current literature.

Grading and Evaluation: The final course grade will be determined by grades on the quizzes and the homework assignments. The combined score on the quizzes will constitute 60% of the final grade and the combined score on the homework will constitute 40% of the final grade. There will be no final exam.

Quizzes: There will be five 25 minute quizzes during the scheduled lecture time on dates that will be announced at least one class period in advance. The quizzes will begin promptly at the beginning of class, 12:20 pm. Missed quizzes: A student can be excused from a quiz for a true emergency, serious illness, or University sponsored activity. The student should contact the instructor as soon as circumstances allow and appropriate documentation must be provided. If the circumstances are deemed as appropriate for missing a quiz, the unweighted average score of all other quizzes will be used in place of the missed quiz. If circumstances lead to a student missing more than one quiz, the student should immediately schedule a meeting with the instructor to discuss any available options.

Homework:

There will be five homework assignments that will be due at the beginning of class on the dates indicated in the schedule below. Each assignment will be spot checked and graded on a scale of 0-4. The grade will reflect the degree of completion, number of correct solutions with emphasis on the approach taken rather than the final value, AND the clarity, legibility, and organization of presentation. Your homework should be clearly marked with your name, the assignment number, and a page number on every page. Each problem should be clearly numbered and the assignment should be well organized. All pages must be stapled together in the correct order. Complete solutions will be provided soon after the due dates.

Scholastic Dishonesty: The Board of Regents Student Conduct Code states that, "Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis." For additional information see the student conduct code at: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf. The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty at: <http://www1.umn.edu/oscai/integrity/student/index.html>. The policy in this course is zero tolerance. The minimum action taken in a case of scholastic dishonesty in any portion of the work in this course will be a grade of F for the course.

Incompletes: Students that have an excused absence from the final exam AND are passing the course based on all the work completed prior to the final exam may be eligible to receive a grade of "I" in the course. If these criteria are met, contact the instructor as soon as circumstances allow to discuss the possibility of an incomplete grade and the associated requirements for completion.

Student Mental Health and Stress Management: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via <http://www.mentalhealth.umn.edu/>.

Sexual Harassment: The University policy on sexual harassment can be found at: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>.

Equity, Diversity, and Equal Opportunity: The University policy on equity, diversity, and equal opportunity can be found at: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Services: Students with special needs should contact the Disability Services Office <https://diversity.umn.edu/disability/>, which will arrange with the instructor information on how those needs shall be accommodated.