CHE 3026

Quantum Chemistry

Syllabus, Fall 2025, Sep. 2 – Dec 19

POINT 1902 LOMA
NAZARENE UNIVERSITY
Department of Chemistry

This semester of Physical Chemistry focuses on quantum mechanics, spectroscopy. The fundamental goals are to understand *why* chemical systems act as they do, and how to predict what will happen in new situations. Much of this course covers ideas introduced throughout General Chemistry, but with much more detail and rigor to apply to a broader range of circumstances.

Throughout this semester, I strongly encourage you to review class work regularly, practice problems daily and ask as many questions as necessary in order to succeed. Talk to me one-on-one early and often; helping students directly is one my favorite parts of my job.

Course Description: Study of quantum mechanics in the context of physical chemistry, with applications in computational chemistry and molecular spectroscopy. (3 units)

Prerequisite(s): CHE 2013 (Analytical Chemistry)
PHY 1054 or PHY 2054 (General Physics II or University Physics II)
MTH 1044 or MTH 1064 (Calculus With Applications or Calculus I),

- Note: Grades of C– or better in all prerequisite classes is strongly recommended

Corequisite(s): CHE 3026L (lab, graded separately)

Dr. Sam Stoneburner
Office: Rohr Science 322 (enter 330)
Email: sstonebu@pointloma.edu
Phone: 619-849-2788

Lecture location: Sator Hall 116
Section 1: TR: 12:05 pm – 1:20 pm

Final: Thu., Dec 18, 1:30 pm – 4:00 pm

Drop-in Office Hours*:
*Changes to be announced on Canvas
Mondays, 2:45pm – 3:45pm
Tuesdays, 9:00am – 10:30am
Wednesdays, 2:45pm – 3:45pm
Thursdays, 9:00am – 11:30am
Fridays, 11:00am – 1:00pm
2:45pm – 3:45pm

You do not need an appointment to meet with me during my Drop-in Office Hours. I am often available at other times, so you can also email me to schedule an appointment.

Communication: I will post information and announcements via Canvas. You should activate notifications. When I am not available in my office, the best way to reach me is by email. I will attempt to respond within one business day. **Email me only from your PLNU email address**. Emails sent from non-PLNU email addresses may be diverted to a spam folder instead of reaching my inbox.

About your professor: I studied chemistry because I wanted to understand why the periodic table isn't a rectangle, which I thought was the ideal shape for a table. I started college at age 21 with absolutely zero high school experience or credit, so I had a lot of catching up to do in both math and science. I was never the smartest person in the room, but through an academic strategy known as "being too stubborn to quit" I finished my PhD just before I turned 33. My mottos are "don't be Snape" and "be less wrong". I love science fiction, fantasy, video games that don't need internet, and well-written cartoons (like "Last Airbender", "Phineas and Ferb", and "Bluey").

Course Materials: This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas. You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your materials. For more information about **LomaBooks,** please go: HERE

- *Textbook:* Engel & Reid, Thermodynamics, Statistical Thermodynamics, and Kinetics Plus Modified MasteringChemistry with eText, Pearson, 4th Edition, ISBN-13: 9780136781417 (18-week access) or 9780134813813 (24-month access)
- *Online Homework:* MasteringChemistry (access through Canvas)

CHE 3025 (Chemical Thermodynamics and Kinetics) uses the Engle and Reid Thermodynamics textbook, which is also included in the Pearson system for this book. If you are not using LomaBooks AND you will be taking that class next semester, you may want to get a longer subscription to save money. If you still have an active subscription from taking CHE 3025 last semester, that should still work for this book.

Course Learning Outcomes: Upon completion of this course, you will be able to:

- Appreciate the order and intricacy of God's handiwork in nature.
- Develop more sophisticated mental models of wave functions, energy levels, atomic structures, chemical bonding, spectroscopy, and computational chemistry as grounded in the fundamentals of quantum theory.
- Use fundamental exact and approximate physical systems as models for understanding more complex molecular structure and behavior.
- Apply the concepts, methods, and techniques of quantum chemistry to chemical systems and make predictions for these systems.

Grading and Assessment

Letter grades will be assigned according to the following scheme after all scores are finalized. Any changes to these ranges will be only in your favor.

A-range	B-range	C-range	D-range	F-range
A: 93.00% or above.	B+: 87.00-89.99 %	C+: 77.00-79.99 %	D+: 67.00-69.99 %	F: Below 60.00%
	B: 83.00-86.99 %	C: 73.00-76.99 %	D: 63.00-66.99 %	
A−: 90.00-92.99 %	B−: 80.00-82.99 %	C−: 70.00-72.99 %	D−: 60.00-62.99 %	

Percent	Component
10 %	Participation: (5% worksheets, 5% attendance, plus extra credit)
15 %	Mastering Chemistry online assignments
20 %	Explainer essays
5 %	Quizzes
30 %	4 Exams (7.5% each)
20 %	Final Exam
100 %	Total

Participation: When I was a student, I hated participation points because my professors never clearly explained how you earned (or lost them). Here is how you can get 100% on your participation points with me:

- **Come to class**. Attendance is required by PLNU policy, so I like to give you points for it. You get full credit if you are on time every class or if you contact me as described in the "Attendance" portion of the Policies section.

- **Worksheets** will be a regular part of class. They aren't homework, and you aren't graded based on accuracy. You get participation credit by uploading any good-faith effort to Canvas. You get full credit if you turn in at least 15.
- **Reading Surveys** are **optional** activities that you complete before class. They are simple one-question Canvas surveys in which you tell me whatever you found most confusing or interesting. It's a way to ask me questions without having to speak up in class, or to request an example problem (which I need to prepare ahead of time). Many of my students have gotten a lot out of them, so if you do at least 15 surveys you will get **extra credit** of 10 points (out of 100) on your Attendance score.
- An **office hours game** can get you another 5 extra credit points. Details are posted on the door to my office (Rohr Science 322. Enter the office suite through door 330.)

Mastering Chemistry online homework (access through Canvas): The Mastering Chemistry content includes assigned homework problems. Due dates will be found within the Mastering Chemistry system and on Canvas.

I carefully hand-select assignments to balance two competing concerns: practice in the most relevant concepts and problem types, and the demands on your limited time. Often there were more problems that I wanted to assign than what I felt would be a reasonable amount of work. The extra problems are still in the assignments, but they are graded differently:

- *Extra credit*: If the problem was especially interesting or worthwhile, I classified it as "extra credit". You can get extra points within your Mastering Chemistry grade for completing those. The Mastering Chemistry grade is *not* capped at 100%, so you may be able to partially make up for low scores elsewhere in the class by doing the extra credit homework problems.
- *Practice*: Other problems didn't feel special enough to give extra credit for them, but they would still be useful for you. The "practice" problems don't get credit, but they are still hand-picked as being relevant for the class. You have access to problems after the assignment is due, so you can use these problems (along with the rest of the assignment) as part of your studying.

The point values for each problem are set based on the system average times in Mastering Chemistry (i.e., you get more points for problems that are expected to take more time). There will not be extra credit problems in every assignment, but they are frequent, and when they are present they are usually worth a substantial number of points.

Look at the problems as practice for quizzes and exams. You will get the most benefit from your homework time if your first attempt on a problem is **closed-book, closed notes**. If you find yourself struggling with a problem (e.g., 3+ wrong answers), ask me for help!

A notebook with your work on previous attempts to a problem is especially helpful when you are asking for my assistance. Using a notebook also creates a written record that you can consult later as you study or seek assistance. I also highly recommend the strategies from Dr. Saundra McGuire's "Strategic Learning" video (posted on Canvas).

Explainers, or "Public Education Projects": With any course I teach at PLNU, I try to think about how to best connect with Christian identity. For this class, I want us to think about the responsibility we have as scientists not just to pursue truth (although that is critical), but also to use communicate that truth to those who lack the expertise, experience, or access to correctly determine it for themselves. You will do this with two informal writing assignments.

In the first assignment, you will do some brief reading on the overlap of philosophy and/or theology with quantum mechanics. You will then write a response explaining a counterintuitive feature of quantum mechanics contextualized with a personal reflection on your own belief systems and how you think about the interplay between faith and science. The second assignment will start with your selecting a popular misconception about quantum mechanics. You will then write a detailed explanation of the issue and the relevant physical chemistry concept(s).

Both essays are to be written at a level suitable for the general public. The goal here is not academic formality, it is to get practice in educating nonexperts in scientific ideas that impact them. For an example of the level of helpfulness and informality I have in mind, consider XKCD's "What If?" blog. Each of these two explainers will be worth 10% of your final grade and include the following stages:

1. *Topic approval (1 % of overall course grade per explainer):* For the first explainer, you will just be confirming that you have completed the assigned reading, and informing me of any related sources you might want to use. You are free to add sources later.

For the second explainer, the topic approval will be a *description* of your topic, not an actual draft. I will look over your submission and offer feedback. I may approve it, tell you to change your topic, or approve it conditionally (pointing out potential difficulties and requiring you to either address them in your next submission or pick a different topic). To ensure a good score on the main assignment, be sure to address any issues I raise at the topic stage.

2. *Peer review (2 % of overall course grade per explainer):* You will provide a draft of your explainer to another student in the course. They will assess it according to the rubric for the overall assignment and offer feedback. You will do the same for another student. You will then answer a brief survey about the feedback you received and what changes you plan to make. Your grade will be based on this survey AND on how the person you reviewed describes your feedback.

3. *External review (2 % of overall course grade per explainer):* You will provide a draft of your explainer to an outside person with limited scientific background and ask for their feedback using a provided form. This person is your target audience, so if they can't understand every detail, you need to change something. You will then submit their feedback form and answer a brief survey about the feedback you received and what changes you plan to make. Your grade will be based on their completed form and your survey.

First submission (5 % of overall course grade per explainer): See the Canvas assignment and rubric for specific requirements and criteria. When you submit the explainer, I will grade it as if it is the final submission. If you are satisfied with your grade, you can be done at that point.

Second submission (can replace first submission grade): If you would like to try to improve your grade, you may submit a second attempt based on my feedback. If you make a second submission, I will grade it, and your grade will be whichever of the two submissions has the higher score. (In other words, there is no risk of your grade going down by making a second submission.)

Note that first and second submissions are graded independently of each other. It is possible I might catch something one the second submission that I missed on the first one.

Be sure to pay careful attention to ALL aspects of the rubric on the second submission, not just the items that I flagged on the first submission.

Quizzes (5%): There will be quizzes roughly once per week covering content from the most recent few lectures. The day of the week and the delivery method may vary. The quizzes will help you assess your understanding of the material, especially as you are preparing for exams. Look at them as relatively low-risk opportunities to identify areas where you need my help or additional practice before your next exam.

Exams (30%, 4 exams at 7.5% each): Exam days are on the course schedule at the end of the syllabus. Exams will not be moved outside of truly extraordinary circumstances. There are no re-takes, corrections for credit, or any other extra credit opportunities associated with exams unless extra points are included in the exam itself. Exam scores will not be revised or adjusted after grades are posted unless an error is found in the grading.

Exams will include two sections. The first will be closed-book multiple-choice, with no calculator or outside tools. This will help you practice the format for the ACS final (in keeping with requests of past students). The second part will be open-book, open-notes, open-internet. You may use any calculator or web tools you want on the second part, including AI, but be warned that I often use AI while preparing the exam and may write questions where AI gets it wrong. You may not do anything that involves communication with another person during either part of the exam.

Final Exam (20%): Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: Final Exam Schedules site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

The final exam will be on Thursday, December 18, 1:30 pm – 4:00 pm and will be a closed-book ACS exam. ACS does not permit calculators on Physical Chemistry exams. As stated above, PLNU policy is that the final exam is required and that it must be given at the scheduled time. Travel arrangements are *not* a valid reason to request a different time.

Exam scheduling with Educational Access Center accommodations: If your exams are proctored by the EAC, you need to schedule the exam with them at least one week in advance. The exam dates are on the schedule on Canvas and should not be changing, so I strongly recommend you schedule all of your exams (including the Final Exam) at the start of the semester. I cannot ensure all accommodations can be met if the exam is not proctored by the EAC.

The EAC may have specific time slots, open hours, or other constraints on when you can take an exam with them. You should select the option that is closest to the exam time for our class, but you may need to start earlier in order to get the full time.

Additional Notes and Policies

Incomplete/late assignments, and extensions: All assignments are to be submitted/turned in by the due date/time, including assignments posted in Canvas. Late work will generally not receive credit, but feel free to ask for extensions. I am usually willing to give extensions, but requests must be made in advance if at all possible, and they will be considered on a case-by-case basis. I especially encourage you to ask for extensions if you need them in the last few weeks of class, where the end of the semester forces the schedule to be tighter in a variety of ways. If you need an extension on an assignment, email me and **suggest a specific new (extended) deadline** that you believe would meet your needs.

Quizzes and exams can be made up in many circumstances, but you must *request* the make-up. If you are absent on the day of a quiz or exam and you do not request a make-up, you will receive a 0. If you are aware in advance that you must be absent at the scheduled time of an exam, arrange a make-up with me as soon as you are aware of the conflict. If you have an emergency or sudden illness on the day of the exam, email me as soon as you are able (by the end of the day in most circumstances). Make-ups must be taken as soon as possible after the scheduled quiz or exam time.

PLNU Attendance and participation policy: Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (i.e., three absences for this course), the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent

(i.e., six absences for this course), the student may be de-enrolled without notice until the course withdrawal date or, after that date, receive an "F" grade.

I will be taking attendance on Canvas at the start of every class. If you arrive late, you are responsible to check with me after class to ensure I don't have you absent by mistake. Being late will still get you 90% credit (within the first 15 minutes) and won't be counted as absences for the university attendance policy.

I will not penalize your grade for ***any*** absences about which you email me ahead of time (or, for emergencies, by the end of the day of the class you miss). Just email me with the date you are missing and a brief explanation of why you need to be absent. These absences will still count towards the 20% threshold for possible de-enrollment, but they will not directly impact your grade.

PLNU academic honesty policy: Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

Artificial Intelligence (AI) Policy: You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, GrammarlyGo, Perplexity, etc.) in this course on any assignment. Any work that utilizes AI-based tools must be clearly identified as such, including the specific tool(s) used. Cite the AI tool used with the American Chemical Society citation style: https://www.concordia.ca/library/guides/chemistry/acs.html#AI

You must also **email me a copy of any AI chats** used to generate any content included in any work submitted to be graded, including for explainers, quizzes, exams, and any other applicable assignments. This is part of "showing work" when using AI in this course.

Disclaimer: AI has a bad history with scientific details, and you are fully responsible for the accuracy of anything you submit in this course. Using AI for homework help is not recommended because it tends to short-circuit the learning process and it leaves you less prepared for quizzes and exams.

PLNU Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU copyright policy: Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU academic behavior policy: Both faculty and students at Point Loma Nazarene University have the right to expect a safe and ordered environment for learning. Any student behavior that is disruptive or threatening is a serious affront to Point Loma Nazarene University as a learning community. Students who fail to adhere to appropriate academic behavioral standards may be subject to discipline. In the context of our course, good behavior includes being present in class (mentally as well as physically), actively participating in group work, and asking questions when you need help or clarification. See Academic Policies in the online PLNU catalog for additional definitions of different kinds of disruptive behavior and for further policy information.

PLNU academic accommodations policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2533). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines

allowed accommodations. Professors are able to view a student's approved accommodations through Accommodate.
PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

Language and Belonging

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice free. Inclusive/Bias-free language is the standard outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality.

If you (or someone you know) have experienced other forms of discrimination, you can find more information on reporting and resources at www.pointloma.edu/nondiscrimination.

Sexual misconduct and discrimination:
In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/title-ix

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias

Spiritual care: PLNU strives to be a place where students grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.
If you have questions, a desire to meet with the chaplain, or if you have prayer requests, you can contact the Office of Student Life and Formation.

State authorization: State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on State Authorization to view which states allow online (distance education) outside of California.

PLNU Mission: To Teach ~ To Shape ~ To Send
Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed,

and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Loma Writing Center

The Loma Writing Center exists to help all members of the PLNU community cultivate transferable writing skills to engage their academic, professional, personal, and spiritual communities. We work toward this goal by conducting one-on-one consultation sessions, supporting writing education across the PLNU community, and participating in ongoing writing center research.

Getting feedback from the Loma Writing Center while you're in the process of working on an assignment is a great way to improve the quality of your writing and develop as a writer. You are encouraged to talk with a trained writing consultant about getting started on an assignment, organizing your ideas, finding and citing sources, revising, editing for grammar and polishing final drafts, and more. For information about how to make in-person or online appointments, see Loma Writing Center webpage or visit the Loma Writer Center on the first floor of the Ryan Library, room 221.

- Appointment Calendar
- Website
- Email: writingcenter@pointloma.edu

Academic Success

Physical Chemistry is a challenging course, and I understand that many students are taking it only because it is a requirement for their program. However, it is a requirement because you can reasonably expect ideas from this course to show up elsewhere, often where you least expect it. When I was an undergraduate chemistry major, I took the approach of doing whatever I was told, assuming that was enough, and then relying on memorization for exams. It worked okay in the moment, but I had to re-learn everything the next time I needed it… and the time after that, and the time after that…. In the long run, it was a lot of extra work, it was frustrating, and it was embarrassing (especially when I had to re-take grad school entrance exams). I would prefer to spare you that.

Doing well may require beyond what has been required in previous courses, and you will need to assess your own understanding frequently. More generally, you should employ ***metacognition***, or thinking about your thinking. Ask yourself serious questions about how

well you understand what you're studying, not just whether you could pass the next exam. Better yet, ask yourself if you could teach someone else… or *actually* teach someone else, whether it's a study buddy, a friend, a pet, or a rubber duck.

I strongly recommend watching "**Strategic Learning**", a talk given at PLNU in 2022 by Dr. Saundra McGuire. She is an award-winning expert in chemistry and in teaching and learning. In the linked talk, she provides a lot of practical strategies AND a broader way of thinking that will help you figure out where you need to focus your efforts.

A lot of the advice you will get from me or from Dr. McGuire will feel like it will take more time than you can afford. You may actually save time over the semester as you get more practiced in good study strategies, but it is true that Physical Chemistry requires a substantial time investment.

The PLNU Credit Hour Policy states that 2 hours of preparation per 1 hour of class time is "normal", meaning 5 hours per week (besides lecture itself) for the CHE 3026 lecture course. There is no shame in needing more time. If you work strategically and put effort into learning *how* to learn, you will probably understand the content much better than the student who seems to get all the right answers in the first few minutes of trying.

You can also maximize the effectiveness of your time by giving yourself a focused environment. Do not try to "multitask" with videos or social media while you are working on chemistry. I also recommend caution when consulting other resources on the internet. Even outside of the well-known hallucination problems in AI, there is an abundance of misinformation online in general. Much of it is intentional.

Finally, know that I am here to help. If you ask me questions early and often, that goes a long way towards making sure your precious time is spent as productively as possible. I want to see you succeed, and I look forward to participating in that success.
– Dr. Stoneburner

Schedule: This schedule is accurate as of the posting of this syllabus. Canvas will have the most up-to-date information.

Date	Topic	Textbook sections
Tue, Sep 2	Discovery of Quantum Mechanics	1.1-1.7, ME1-6
Thu, Sep 4	Probability and Distributions	TK 12-13
Tue, Sep 9	Partition Functions	TK 14
Thu, Sep 11	Statistical Thermodynamics	TK 15
Tue, Sep 16	The Schrödinger Equation	2.1-2.7
Thu, Sep 18	The Quantum-Mechanical Postulates	3.1-3.5
Tue, Sep 23	Particle-in-a-Box	4.1-4.4
Tue, Sep 23	Exam 1 (during lab period)	1-3, TK 12-15
Thu, Sep 25	Applied Particle-in-a-Box	5.1-5.9
Tue, Sep 30	Heisenberg Uncertainty Principle, Vibration	6.1-6.3, 6.6, ME7-8, 7.1-7.3
Thu, Oct 2	Rotation	7.4-7.8
Tue, Oct 7	Vibrational Spectroscopy	8.1-8.5
Thu, Oct 9	Rotational Spectroscopy	8.6-8.8
Tue, Oct 14	The Hydrogen Atom	9.1-9.6
Tue, Oct 14	Exam 2 (during lab period)	4-8
Thu, Oct 16	Many-Electron Atoms	ME9, 10.1-10.6
Tue, Oct 21	Atomic Spectroscopy	11.1-11.8
Thu, Oct 23	No class due to Fall Break	
Tue, Oct 28	Molecular Orbitals	12.1-12.5
Thu, Oct 30	Diatomic Molecules	12.6-12.9
Tue, Nov 4	Polyatomic Molecules	13.1-13.6
Thu, Nov 6	Hückel Model	13.7-13.10
Tue, Nov 11	Electronic Spectroscopy	14.1-14.6
Tue, Nov 11	Exam 3 (during lab period)	9-13
Thu, Nov 13	Fluorescence Spectroscopy	14.7-14-14
Tue, Nov 18	Computational Chemistry	15.1-15.4
Thu, Nov 20	Practical Computational Chemistry	15.5-15.7
Tue, Nov 25*	Doing Computational Chemistry	15.8-15.10
Thu, Nov 27	No class due to Thanksgiving Recess	
Tue, Dec 2*	Symmetry	ME10, 16.1-16.5

Date	Topic	Textbook sections
Thu, Dec 4	Selection Rules	16.6-16.9
Tue, Dec 9	NMR	17.1-17.5
Tue, Dec 9	Exam 4 (during lab period)	14-16
Thu, Dec 11	Specialized NMR	17.6-17.10
Thu, Dec 18	Final Exam: 1:30-4:00pm	

* Thanksgiving Recess is Nov. 26-28, which does not include the Mondays or Tuesdays before or after Thanksgiving. There will be class on Nov. 25 and Dec. 2.