



Physical CHEMISTRY 2 Laboratory Syllabus– 1 credit
Quantum Chemistry and Spectroscopy
General Information, Spring 2025

<i>Course Description</i>	This class covers the quantum theory of atoms and molecules, including atomic structure, angular momentum, chemical bonding, nuclear vibrations, theoretical methods, spectroscopic transitions, and the use of symmetry to understand molecular structure. Some review of important mathematical concepts is included.
<i>Academic Prerequisites</i>	Students should have successfully completed the following courses with a grade of C or better in University Physics
<i>Class Meetings</i>	The course will be delivered as an in-person with two class meetings each week, TTH 11:00 – 12:15 pm and laboratory/recitation session on Tuesdays from 12:30-2:00 pm. Information about the room location is TBD. Students are expected to complete activities outside of class that complement the in-person class meetings.
<i>Contact Information</i>	<i>Instructor:</i> Prof. Raymond R Sadeghi <i>Email:</i> rsadeghi@tamusa.edu You may also reach me at raymond.sadeghi@utsa.edu Or rsadeghi@tamusa.edu <i>Drop-in Hours:</i> Tuesday 10:30-11:00 Thursday 12:30 -2:00 pm (in person) and by appointment
<i>Communication Protocols</i>	Students are encouraged to communicate with Dr. Sadeghi by visiting office hours or via email. You can generally expect a response within 24-48 hours and often sooner. You are also welcome to schedule an interactive online conference via Zoom for additional academic support in the course.
<i>Course Format</i>	All course materials, including the learning content and assessments will be available through Blackboard. Facility with the blackboard environment and ability to perform internet searches, access text, audio, and video information, and submit work online are assumed.

Course Access When you log into the course on Blackboard, you will enter on the Home page. The course menu on the left side of the Blackboard course page will provide ready access to the Course Modules and assignments, as well as course resources such as class notes.

Course Materials The textbook assigned is the second part of the textbook used in Physical Chemistry 1. Class notes shall be provided on the blackboard. Students may also purchase additional textbook of physical chemistry, if they prefer to use one.

Course Technology Needs

Online Help Sessions As needs arise, the instructor may schedule voluntary in-person or online help sessions/student hours conducted via Zoom. Help sessions will be announced via Course Announcement in Blackboard.

For best reception, you may wish to download a copy of the Zoom app for the computer you regularly use.

Students are expected to follow appropriate University policies and maintain the security of passwords used to access the blackboard.

Technology Requirements All students should own or have regular access to a computer connected to the internet with sound and video capabilities. Both PCs and Macs should be sufficient for accessing course materials and gathering needed information on the internet.

Supported web browser: Chrome and Firefox are the recommended browsers. Issues may occur if using Internet Explorer or Safari.

Course Learning Objectives

Learning Objectives Students who successfully complete this course will be able to:

- interpret the wave function representing a physical system and its relationship to the energy content of the system;
- use Hermitian operators to compute observable properties of a quantum system from its wave function;
- evaluate and characterize the angular momentum states of a system and specify its quantum numbers and relative energies from nodal patterns;

- use the Pauli Exclusion principle to predict the population of electronic states in an atom or molecule;
- apply the Born-Oppenheimer approximation to construct a molecular Schrödinger equation, and articulate its role in characterizing nuclear motion in molecules;
- use molecular orbital diagrams to describe the atomic states that contribute to forming chemical bonds;
- characterize the symmetry elements and properties of a molecule and apply those properties to molecular states;
- analyze data from electronic, vibrational and rotational spectroscopy experiments to elucidate detailed information about atoms and molecules.

Course Materials

Course Modules The content of this course is divided into seven (7) Modules, each of which consists of several distinct parts.

Strategy for Success The course is designed to lead you through a set of activities that will help you build knowledge and understanding of molecular thermodynamics and chemical kinetics. To be successful:

- do not skip any steps— review the Lessons thoroughly;
- work through Problem Sets until you have answered the problems and submitted a copy of your work
- review the solution keys, posted after the deadline for each Problem Set; and
- pay attention to deadlines and submit your work on time.

Assignments and Assessments and policy for late work

Class Activities Attendance in class is an important part of the learning process for difficult subjects like those covered in this course. Many class meetings (though not all) will feature interactive learning activities for which you will earn credit for active participation. In some cases, these activities will require that you be current with the course learning materials at the time that the class meets.

Communication. The best way to contact instructors is via email. All correspondence between professors and students must occur via University email accounts. All students have a Jaguar email account ready and working. If it is not working, contact the help desk at

sahelp@tamusa.tamus.edu or at 210-784-4357. Students are expected to access Blackboard for updates on the course, announcements and other course materials. All students are strongly encouraged to come to office hours or make appointments at other times to discuss course material and ask questions. Discussions concerning grading/grades will not be addressed through email and will only be discussed during office hours or scheduled appointments.

Late Work Policy. Students will be informed about due dates and times for assignments reports. Work is required to be turned in on time. Late work turned in on the day it is due will be subjected to a 10% penalty. For each subsequent day, late work will be subjected to an additional 25% penalty per day. For example, if a report is due Wednesday at 11 am and the student submits the report on Wednesday at 5 pm, 10% will be deducted. If the report is due Wednesday at 11 am and the student submits the report Friday at 6 pm, 60% will be deducted (10% for Wednesday, 25% for Thursday, 25% for Friday). **Late work will not be accepted that is more than three day late.**

Academic Accommodations for Persons with Disabilities: The Americans with Disabilities Act of 1990, as amended, and the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights protection for individuals with disabilities. Title II of the ADA and Section 504 of the Rehabilitation Act require that students with disabilities be guaranteed equal access to the learning environment through the provision of reasonable and appropriate accommodations of their disability. If you have a disability that may require an accommodation, please contact Disability Support Services (DSS) for the coordination of services. The phone number for DSS is (210) 784-1335 and email is dss@tamusa.edu.

Academic Learning Center: All currently enrolled students at Texas A&M University-San Antonio can utilize the Academic Learning Center for subject-area tutoring. The Academic Learning Center is an appointment based center where appointments are made through the Navigate platform. Students access Navigate through Jagwire in the Student Services tab. The Center is active on campus outreaching to students to highlight services offered. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu or calling (210)-784-1332. Appointments can also be made through JagWire under the services tab.

Counseling Resources: As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily functioning. If you or someone you know is experiencing life stressors, emotional difficulties, or mental health concerns at Texas A&M University – San Antonio, please contact the Student Counseling Center (SCC) located in Modular C, Room 166 (Rear entrance) or call 210-784-1331 between the hours of 8 a.m. and 5 p.m., Monday – Friday. After-hours crisis support is available by calling 210-784-1331. Please contact UPD at 911 if harm to self or harm to others is imminent.

All mental health services provided by the SCC are free, confidential (to the extent permitted by law), and are not part of a student's academic or university record. SCC provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information, please visit www.tamusa.edu/studentcounseling

Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification system. In the event of an emergency, such as inclement weather, students, staff, and

faculty who are registered in JagE Alert, will have the option to receive a text message, email, and/or phone call with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com/>.

More information about Emergency Preparedness and the Emergency Response Guide can be found here: <https://www.tamusa.edu/upd/index.html>.

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Jaguar Writing Center: The Jaguar Writing Center provides writing support to graduate and undergraduate students in all three colleges. Writing tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Students can schedule appointments with the Writing Center in JagWire under the student services tab. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at www.tamusa.edu/Writing-Center. The Writing Center can also be reached by emailing writingcenter@tamusa.edu.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students (DOS@tamusa.edu) for support. In addition, you may notify the instructor if you are comfortable doing so.

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to communicate, in advance if possible, about special circumstances (e.g., upcoming deployment, drill requirements, disability accommodations). You are also encouraged to visit the Patriots' Casa in-person, Room 202, or to contact the Office of Military Affairs with any questions at military@tamusa.edu or (210)784-1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under A&M System policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equality of opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality, pluralism, and the uniqueness

of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, or gender expression. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units. Texas A&M University-San Antonio faculty are committed to helping create a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio has staff members trained to support survivors in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the university. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and other healthcare providers) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about an incident of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator. If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact the Student Counseling Center at (210) 784-1331, Modular C.

Students' Rights and Responsibilities: The purpose of the following statement is to enumerate the essential provisions of students' freedoms and responsibilities to learn at Texas A&M University-San Antonio. All students are required to follow all policies and regulations as set forth by The Texas A&M University System, including the A&M-San Antonio Student Code of Conduct.

Students' Rights

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no university rule or procedure that in any way abridges the rights of freedom of speech, expression, petition, and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the university, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, gender identity, gender expression, genetic information, or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university student rules shall be assured a fundamentally fair process.

Students' Responsibilities

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty and staff, and the administration.

2. A student has the responsibility to be fully acquainted and compliant with the University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, and in the University Catalog.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.
5. A student has the responsibility to check their University email for any updates or official University notifications.
6. We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

All work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

All written assignments must be worked on individually. All student term papers and other written assignments are subject to analysis by anti-plagiarism software. Plagiarism will result in a grade of a zero for the assignment.

IMPORTANT POLICIES AND RESOURCES

Academic Accommodations for Persons with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Support Services in the Central Academic Building, Suite 210, or at (210) 784-1335 or visit <https://www.tamusa.edu/index.html> or email us at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services and their instructors as soon as possible.

Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the *Tools* section of Blackboard. You can contact the Academic

Learning Center by emailing tutoring@tamusa.edu, calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment call 210-784-1331 or visit Madla 120.

All mental health services provided by the SCC are free and confidential (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services.

Crisis support is available 24/7 by calling the SCC at 210-784-1331 (after-hours select option '2'). For more information and self-help resources, please visit www.tamusa.edu/studentcounseling

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More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/campus-information/safety/university-police-department/documents/emergency-operations-plan.pdf> and <https://www.tamusa.edu/about-us/campus-information/safety/university-police-department/documents/emergency-action-plan.pdf>

Download the SafeZone App for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900

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Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on "Writing, Language, and Digital Composing Center" to make your appointment. The Center offers face-to-face,

synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://bit.ly/WLDCenter>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students (DOS@tamusa.edu) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to provide any resources they may possess.

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to communicate, in advance if possible, and special circumstances (e.g., upcoming deployment, drill requirements, disability accommodations). You are also encouraged to visit the Patriots' Casa in-person room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210)784-1397.

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A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamusa.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide reasonable accommodations to pregnant students that would be provided to a student with a temporary medical condition and that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K).

Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

Students' Rights

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of

freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.

2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
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Students' Responsibilities

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, [Student Code of Conduct](#), on our website, University Catalog and to comply with them, as well as federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide an environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notification.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated. Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the [Student Code of Conduct](#).

Artificial Intelligence Policies

No Use of Generative AI Permitted

[Insert Course Number] assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Violations of Academic Conduct (Section 14.5 Student Handbook)

As a member in an academic community, students at Texas A&M University-San Antonio are expected to exhibit a high level of honesty and integrity in their pursuit of higher education, be mature, be self-directed and be able to manage their own affairs. Students who are unwilling to abide by these basic expectations will find themselves facing academic and/or disciplinary sanctions. Students are expected to share in the responsibility and authority with faculty and staff to challenge and make known acts that violate the Texas A&M University-San Antonio Code of Conduct. For more information please visit the Office of Student Rights & Responsibilities website <http://bit.ly/TAMUSASStudentRR>.

Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. Academic misconduct includes, but is not limited to, cheating, plagiarism, [prohibited use of artificial intelligence](#), multiple submissions, collusion, lying and bribery. For more information, refer to the Student Code of Conduct, Article III: Conduct Rules and Regulations. Texas A&M University-San Antonio faculty has the discretion to impose grade penalties as deemed necessary.

Faculty members are required to report such serious breaches of academic honesty to their chair, their dean and the Office of Student Rights and Responsibilities. In cases of academic misconduct, students may be subject not only to grade sanctions in courses but to disciplinary action. Grade sanctions may be imposed only by faculty members, but suspension or expulsion may be imposed only by the Vice President for Student Affairs. If a student wishes to appeal the decision of suspension or expulsion due to violations of academic misconduct, they must initiate their appeal as outlined within the Student Code of Conduct. Extenuating circumstances may cause the University to deviate from the defined time frames.

All student term papers and other written assignments are subject to analysis by anti-plagiarism and [anti-AI software](#). Posting of any class work given to student, or solutions, or discussion, on publicly accessible forums, social media, [or artificial intelligence](#) is not permissible.

Considering the potential consequences of academic misconduct, it is obviously in students' best interests to avoid even the appearance of such behavior. If a student is unclear whether a specific act might constitute academic misconduct, please she/he should contact the instructor for an assessment of the situation.

Course Assessments and Grades

There will be 5 math review sets and 4 experiments throughout the semester. The breakdown is as follows

Math review	50%
Lab reports	50%

Class Activities throughout the semester

Course Grade Assignment:

A = 89-100

B = 73-88

C = 60- 73

D = 40-59

F = < 39

Important Due Dates for Assignments

Each assignment will be due as discussed in class on the indicated due date. Late problem sets will not be accepted, so please make every effort to submit them by the deadline.

<i>Module</i>	<i>Topics</i>	<i>Assignment</i>	<i>Due Dates</i>
	Syllabus		
1	Foundations of Quantum Theory	<i>Problem Set 1</i> <i>Quiz 1</i>	TBD
2	Postulates of quantum mechanics, Particle in a box	<i>Problem Set 2</i> <i>Quiz 2</i>	TBD
3	Simple harmonic oscillator, angular momentum	<i>Problem Set 3</i> Quiz 3	TBD
4	Hydrogen atom	<i>Problem Set 4</i> Quiz 4	TBD
5	Vibration-Rotation States and Spectroscopy, Spin and Slater determinants	<i>Problem Set 5</i>	TBD
6	Approximation (Variational principle)	<i>Problem Set 6</i> <i>Quiz 5</i>	TBD
7	Molecules and Born-Oppenheimer approximation,	<i>Problem Set 7</i>	TBD

All assignments in the course must be completed by "End-of-Day" on May 1

Physical Chemistry II Laboratory Experiments.

Week 1 – Math Review 1

Week 2 – Math Review 2

Week 3 – Math Review 3

Week 4 – Experiment 1: Photoelectric Effect

Week 5 – Math Review 4

Week 6 – Math Review 5

Week 7 – Experiment 2: Particle in a box

Week 8 – Experiment 3: IR of HCl/DCI

Week 9 – Experiment 4 (Computation 1)

Week 10 – Slater Determinants

Week 11 – Experiment 4 (Computation 2)

Interpersonal Interactions and Netiquette

Treat your classmates with the professionalism and courtesy you would expect in the workplace, and with which you yourself would want to be treated. Make sure that your communications are appropriate and adhere to netiquette policy. There is an informal code of conduct that most people follow on the Internet. Netiquette includes not sending email or messages in ALL CAPS or with too many exclamation points or asking repetitive questions in forums that have FAQs posted. Sending spam is also a violation of netiquette. You will have an easier time communicating with others over the Internet if you conform to these basic standards. Note that Canvas software automatically stores course access records, quiz scores, email postings, discussion postings, and chat room conversations.

“Courtesy, politeness, manners, and civility are all, in essence, forms of awareness. Being civil means being constantly aware of others and weaving restraint, respect, and consideration on into the very fabric of this awareness. Civility is a form of goodness; it is gracious goodness. But it is not just an attitude of benevolent and thoughtful relation to other individuals; it also entails an active interest in the well-being of our communities and even a concern for the health of the planet on which we live.”

P.M. Forni – Choosing Civility: The 25 Rules of Considerate Conduct

General Tips & Resources for Success

- Make sure that your computer is configured to work with Canvas.
- Regularly check the Canvas course site for announcements and updates.
- Log in to your Canvas course site every day.
- Complete all required assignments and quizzes by the due dates.
- Participate in all required discussions. Learning is not a solitary activity; you must interact with your classmates to optimize your educational experience.
- Take responsibility for your own learning. Take the course and yourself seriously.

- Be aware of the amount of class work you need to accomplish. Hybrid classes do NOT mean less work— they normally require MORE work. Usually, 8-10 hours of study are required every week in order to succeed in this course.
- Be polite and respectful in all communications.
- Contact your instructor if you are having problems understanding the material or have any questions.

Changes to This Syllabus

The syllabus is subject to change at the discretion of the instructor. Changes will be communicated via Canvas announcement. It is your responsibility to check Canvas for corrections or updates to the syllabus. Any changes/corrections to the course materials, assignment dates, or other updates will be posted ahead of time in the course Announcements tool. It is your responsibility to check Canvas regularly for updates.