CHEM 437WI COURSE SYLLABUS

University of Missouri – Kansas City
School of Biological and Chemical Sciences

Course Number and Title: CHEM 437WI Physical Chemistry Laboratory Course
Semester and Year: Spring 2020
Number of Credits: 3
Class Meetings: Blended asynchronous teaching and lab. Meets on Tuesday at noon for a one-hour lecture. Meets on Thursday from 2.00 – 7.00 pm for the lab.
Classroom Location: SCB 203 (lecture), SCB 322 (lab)

Instructor: **Sai Siva Kumar Pinnepalli**
Department of Chemistry
203 Flarsheim Hall
5110, Rockhill Rd
Kansas City, 64110

Office Hours: 2:00 – 4:00 pm on Tuesday. Available for face to face meetings or interactions by appointment via email or phone. Appointment should be scheduled a day in-advance. After-class times are also available for questions as well! Weekend review sessions may also be possible, with sufficient interest expressed.

Office Phone: 816-517-6530

UMKC E-Mail: spthb@mail.umkc.edu (preferred method of contact)

University of Missouri – Kansas City Mission

UMKC's mission is to lead in life and health sciences; to deepen and expand strength in the visual and performing arts; to develop a professional workforce and collaborate in urban issues and education; and to create a vibrant learning and campus life experience.

Chemistry BS Program Mission

The Department of Chemistry offers the B.S. degree for a major in chemistry that is accredited by the American Chemical Society. The B.S. in Chemistry is designed to offer comprehensive preparation in all areas of chemistry through hands-on laboratory training and rigorous coursework. This degree provides a foundation for those interested in pursuing careers in the pharmaceutical, government, and academic sectors. It focuses on student transformation and lay a path towards advanced degrees, such as M.S. or Ph.D. in various areas of chemistry and molecular sciences.

Catalog Information

Course Description / Attributes: Experimental methods in physical chemistry. One-hour lecture and six hours laboratory each week. Satisfies writing intensive requirements for the B.A. or B.S. degree.

Pre-requisites / Co-Requisites: Chem 431: Physical Chemistry I (and its prerequisites); The RooWriter Co-Req: Chem 432

Restrictions / Exclusions: None.

Course Format / Instructional Mode: The course will make extensive use of pre-recorded lectures, small group work, and individual reporting (writing). Because of frequent use of sophisticated and delicate instruments and as a fundamental scientific practice, thorough preparation is vital to the successful management and timely completion of the experiments. In this context, preparation means students will have read the background material and watched the pre-recorded lectures before performing each experiment. It also means that each student will have a comprehensive pre-lab report completed.
Laboratory-based; Writing Intensive Course; Course Instructional Mode **P**.

Course Information

Student Learning Outcomes

1. Give practical examples of the experiments which helped develop the theories of physical chemistry.
2. Gain experience using a representative sampling of apparatus used to obtain physical properties of molecules and reacting systems.
3. Make quantitative estimates of error derived from physical measurements and practice calculating those errors.
4. Write complete lab reports at a level suitable for future work as a professional chemist. Give an oral presentation at that same level of competence.

The student's will be assessed by means of in-class quizzes, data acquisitions and post-lab reports which includes both subjective and analytical type problem-solving questions.

Required & Recommended Materials

- *C. W. Garland, J. W. Nibler, D. P. Shoemaker, "Experiments in Physical Chemistry", 7th ed. (2003, ISBN 007231821X) or 8th ed.(2008, ISBN 0072828420), McGraw-Hill*

In addition, the learners will be prompted to read some peer-reviewed journal articles to expand their knowledge. The access to journals will be provided via Canvas web portal.

Course Technology Requirements

Although this course is not so demanding regarding the computer resources, the students are expected to avail basic resources through university or personal means. The university library provides the latest updated softwares whose services can be utilized. At a basic level, you need to have access to:

- Internet Explorer, Google Chrome or Mozilla Firefox for Windows/ Safari for Apple operating systems
- Updated versions of Java, Media Player and Adobe Reader or similar features for Apple and
- High-speed broadband internet connection

Technology Support

The UMKC's Instructional Technology Services (ITS) can be utilized by calling 816-235-6700 or emailing its@umkc.edu, should you have questions with regards to technical glitches. The tech support is available during the business hours (7:00 am to 6:00 pm) from Monday through Friday. Live online chat is available through the Canvas login page on Sunday and Monday nights from 6:00 pm to 10:00 pm and on Tuesday's from 8:00 pm to 10:00 pm.

Course Requirements, Assignments, and Deadlines

Note: I generally will NOT be lecturing on course content in class, so if you do not read ahead and watch the pre-recorded lectures, you will be completely lost, and it will show both during class participation and in your grades.

Also Note: Safety glasses and appropriate clothing must be worn while working on all experiments. Calculators and texts should also be brought to each lab. Notes, lab notebooks, and laptops (optional) should be brought to each class.

Experiments:
Six experiments must be completed and reported on. A full qualitative and quantitative experimental derivation and analysis should be included in all reports.

1 Heat Capacity Ratio for Gases
2 Heats of Combustion
3 Electrical Conductance
4 Determination of the Kinetic Order for the Bromination of Acetone
5 Binary Liquid–Vapor Phase Diagram
6 Rotational -Vibrational Spectra of HCl and HBr

For each experiment, in addition to pre-recorded lectures, a handout will be provided with information about the experiment, references to the material in the optional textbook, any modifications to the procedure, required and optional raw data and results, and suggestions for discussion.

During the pre-recorded lecture, the theory and experimental method are discussed for each experiment. Supplemental handouts will be available on Canvas. Please study the appropriate reading material carefully and watch the pre-recorded content before coming to lab.

Pre-Labs Reports:
In advance of each experiment, every student is required to write a preliminary report for the experiment in order to demonstrate that they understand how the experiment works and that they won't damage the experimental instrumentation. You will have to investigate the set-up of the experiment and the details of the apparatus (including differences between what is in the lab and what is described in the handouts). The preliminary report is typically due at 11:59 pm on the Monday before the experiment is performed.
The preliminary report must convince us that you understand the physical principles and experimental apparatus for performing the experiment, otherwise you cannot perform the experiment (and you get a 0 for that lab). If your preliminary report is unsatisfactory, I will offer you the opportunity to correct it.

Since the experiment is performed on Thursday afternoon, you need to submit your pre-lab report at the absolute latest of 11:59 PM on Tuesday, so that we have time to look at it and offer you a chance to make corrections, if necessary. For those submitting between 11:59 PM on Monday and 11:59 PM on Tuesday, there will be a 20% (4 point) deduction for lateness.

Post-Lab Reports:
Instructions about the format of the post-lab reports will be handed out in class. Post-lab reports must include all primary data collected (in tabular form), plus any charts, printouts, etc. obtained. All text and tables and data must be in the same single document.

Typically, post-lab reports must be submitted within two weeks following completion of an experiment (always due on Thursdays at 11:59 PM). Late reports are subject to a late penalty of 3 points per day. Reports that are late more than one week late will not be accepted and a grade of 0 will be recorded for the final report. Although experiments will normally be performed by students working in groups of three or four, all reports must be written individually – that includes the data analysis! Only the raw data is shared with your lab partners. Each post-lab report will be worth 30 points.

Uploading Files:
All Pre- and Post- Lab reports and drafts will be submitted on Canvas (where they will be parsed through turn-it-in to check for plagiarism). Combine all components into a single document for submission and give your files meaningful names (eg: Hoober_HeatsOfCombustion_Prelab.pdf) This single document may contain text, spreadsheet data, graphs, and hand-drawn figures or handwritten equations). The only file types that will be accepted are .doc, .docx, and .pdf files.

Poster Presentation:
At the end of the semester, you will give a poster presentation on one of the labs that you performed this semester. You will be assigned this lab at the beginning of the semester, so that when you perform the experiment, you will have the chance to take detailed notes on how you performed the experiment and take special care with your data analysis. You will graded out of 50 points on your presentation.

Pre-Lab, Post- Lab, and Poster Drafts:
For the first one or two experiments' pre-lab and post-lab reports, you will be submitting drafts so that I, the GTA, and your peers can provide feedback on your drafts. This process should help you with your editing process but will also demonstrate baseline expectations for these written documents this semester. Since these due dates will differ from typical pre- and post-lab due dates, please make sure to take note of them. They are posted on Canvas and are also listed in the Lecutre_Lab_Schedule_SP2020 (handed out in class and also available on Canvas).

You will also be asked to submit a draft of your poster before sending it to the printer. I will correct your poster and we will set up individual meeting times in order to go over any edits.

All drafts will be worth 10 points and it will be graded mostly for completion. Please submit as complete a draft as possible as this will help with peer review and will help you learn how to self-edit. Late drafts will be deducted at 3 points per day and will not more than 72 hours after the due date. After that 72 hour deadline, you will receive no credit for that assignment, and you will also not be able to participate in the subsequent peer review session, for which you will lose more points.

Peer Review:
We will engage in peer review of student's work and in-class writing workshops. You will be expected to critically critique your fellow students' work, but also take their criticisms to help make your own understanding and writing better. Each peer review worksheet that you complete will be worth 10 points, and there will be at 3-4 peer review sessions held throughout the semester.

Lab Procedures and Documentation:
You are expected to exhibit professional behavior in the laboratory, and to properly document your work. Proper documentation of your work includes a 'pre-lab' section in your notebook and a complete procedural record of your work. The procedural record is a complete and chronological record of your work and results obtained. For example, follow these steps:

1) Write down the procedural step you're working on and then write down its result (both qualitative and quantitative).
2) Repeat.

Include descriptions of any deviations from the 'ideal' procedure, include descriptions of any unexpected results or mistakes or accidents. Don't scratch out anything in your lab notebook. If you make a mistake, cross it out once and write in the correction (with the original still legible).
Chronological entries, clarity, and completeness are also necessary for good documentation. Lab notebooks will be checked and evaluated for completeness at the beginning of each lab session.

They will be graded for completion and the detail with which you documented your performance in that day's lab (5 points each). The total grade of your lab notebook will be 25 points, since there is no in-lab work for the Rotational-Vibrational Experiment.

Evaluation and Grading Criteria

Grading:
Course grades are based on pre- and post- lab reports and drafts, peer review participation, the poster presentation, and the detailing of your lab notebook. The grading scale is as follows:

6 Pre-lab Reports (20 points each):	120 points
6 Post-lab Reports (30 points each):	180 points
Poster Presentation:	50 points
3-4 Peer Review (10 points each):	30-40 points
Lab Notebook:	25 points
Pre-Lab, Post-Lab, & Poster Drafts (10 points each):	30 -40 points
Total:	**435 – 455 points**

You are guaranteed the grade in the indicated range:

90-100%:	A
80-89%:	B
70-79%:	C
60-69%:	D
59% & below:	F

Course Expectations, Policies, and Requirements for Student Conduct

Late Work Policy

Students are expected to attend the lab sessions in-time and receive safety precautions. Students will not be entertained to perform the lab upon late arrival. The assignments and lab reports must be turned in by the due date. The post-lab reports are due by a week from the corresponding lab day. The reports must be submitted online via Canvas before the 11.59 pm on the due date. Late submission will not be accepted. However, late submissions will be accepted based on the situation, prior intimation and validity of the reason or during emergencies.

Professional Dispositions

The experimental nature of the course expects all the students to have a professional behavior while working in the lab. Each student should work through the experiment from beginning till the end independently. In order to perform the lab, the students must come prepared to arrange the experimental setup and know the safety data sheet of all the chemicals used in particular experiments. The students are asked to consult the lab instructor in case of any doubts as unwanted actions might lead to catastrophic results in the lab which puts all the students in danger. No room for personal relationships during the lab.

Responsibility

Attendance:
Expect to attend all scheduled lectures and labs. If a major long-term crisis occurs, discuss it with the instructor. Excused absences require documentation.

UMKC Resources & Policy Statements

Please refer to the following web page and the linked resources there on for critical information regarding course policies and resources. You are expected to abide by all the rules and regulations regarding student conduct referenced in these pages. http://cas.umkc.edu/CPR/

Academic Calendar: Students are encouraged to review important add, drop or withdraw dates: http://www.umkc.edu/registrar/acal.asp

Academic Honesty: The Board of Curators of the University of Missouri recognizes that academic honesty is essential for the intellectual life of the University. Faculty members have a special obligation to expect high standards of academic honesty in all student work. Students have a special obligation to adhere to such standards. Academic dishonesty, including cheating, plagiarism or sabotage, is adjudicated through the University of Missouri Student Conduct Code and Rules of Procedures in Student Conduct Matters.

Academic Inquiry, Course Discussion and Privacy:

Faculty allowing recording - University of Missouri System Executive Order No. 38 lays out principles regarding the sanctity of classroom discussions at the university. The policy is described fully in Section 200.015 of the Collected Rules and Regulations. In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of any audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded, including those recordings prepared by an instructor. Students found to have violated this policy are subject to discipline in accordance with provisions of Section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

Attendance Policy: Students are expected to attend and participate in classes. Advance notice of attendance policies of academic units and individual instructors should be given, and such notice should be in writing. Students should notify instructors of excused absences in advance, where possible. Students who have an excused absence are expected to make arrangements with instructors for alternative or make-up work. Such arrangements should be made in advance of the absence, where possible. Instructors should accommodate excused absences to the extent that an accommodation can be made that does not unreasonably interfere with the learning objectives of the course or unduly burden the instructor. Attendance policies shall be applied in a non-discriminatory manner.

Campus Safety: Inclement weather, mass notification, and emergency response guide: http://www.umkc.edu/umkcalert/

Counseling and Health Services Available at UMKC:

UMKC students may experience many challenges in their lives while attending college – stress, depression, suicidality, trauma, relationship issues, health concerns, etc. As your professor I care about your success and well-being and want to make you aware of some helpful resources on campus. The UMKC Counseling Center (www.umkc.edu/counselingcenter), located at 4825 Troost in Room 206, offers a wide range of supportive services to students. Appointments can be made by calling 816.235.1635. UMKC Student Health and Wellness (http://info.umkc.edu/studenthealth/), located at 4825 Troost in Room 115, offers a full range of health care and promotion services. Appointments can be scheduled online or by calling 816.235.6133. The Mind Body Connection (www.umkc.edu/mindbody) is located in the Atterbury Student Success Center in Room 112 and offers a variety of stress-reduction services.

Disability Support Services:

To obtain disability related accommodations and/or auxiliary aids, students with disabilities must contact the Office of Services for Students with Disabilities (OSSD) as soon as possible. To contact OSSD, call (816) 235-5696. Once verified, OSSD will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. For more information go to: http://www.umkc.edu/disability/

English Proficiency Statement:

Students who encounter difficulty in their courses because of the English proficiency of their instructors should speak directly with their instructors. If additional assistance is needed, students may contact the UMKC Help Line at 816-235-2222 for assistance.

Grade Appeal Policy:

Students are responsible for meeting the standards of academic performance established for each course in which they are enrolled. The establishment of the criteria for grades and the evaluation of student academic performance are the responsibilities of the instructor.
The University grade appeal procedure is available only for the review of allegedly capricious grading and not for review of the instructor's evaluation of the student's academic performance. Capricious grading, as that term is used here, comprises any of the following:
• The assignment of a grade to a particular student on some basis other than the performance in the course;
• The assignment of a grade to a particular student according to more exacting or demanding standards than were applied to other students in the course; (Note: Additional or different grading criteria may be applied to graduate students enrolled for graduate credit in 300- and 400-level courses.)
• The assignment of a grade by a substantial departure from the instructor's previously announced standards.

Discrimination Grievance Procedures for Students:

Discrimination Grievance Procedures for Students can be found here:
http://www.umsystem.edu/ums/rules/collected_rules/grievance/ch390/grievance_390.010

Statement of Human Rights:

The Board of Curators and UMKC are committed to the policy of equal opportunity, regardless of race, color, religion, sex, sexual orientation, national origin, age, disability and status as a Vietnam era veteran. Commitment to the policy is mentored by the Division of Diversity, Access & Equity, but it is the responsibility of the entire university community to provide equal opportunity through relevant practices, initiatives and programs.

Title IX:

Under the University of Missouri's Title IX policy, discrimination, violence and harassment based on sex, gender, and gender identity are subject to the same kinds of accountability and support applied to offenses based on other protected characteristics such as race, color, ethnic or national origin, sexual orientation, religion, age, ancestry, disability, military status, and veteran status. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting UMKC's Title IX Office webpage (http://info.umkc.edu/title9/) or contacting UMKC's Title IX Coordinator, Sybil Wyatt (816.235.6910 or wyattsb@umkc.edu). Additionally, you can file a complaint using UMKC's online discrimination complaint form, which is located at http://info.umkc.edu/title9/reporting/report-online/.

While most UMKC employees are required to report any known or suspected violation of Title IX, students may seek confidential guidance from the following campus locations:

UMKC Counseling Service **Volker Campus** 5110 Oak St Ste 201, Kansas City, MO 64112 Phone – (816) 235-1635 Open – Mon thru Fri – 8 am to 5 pm	**Student Health and Wellness** Volker Campus 5110-5101, Oak St Kansas City, MO 64112 Phone - (816) 235-6133 Open – Mon thru Fri – 8 am to 5 pm

UMKC Connect:

Important information is available to undergraduate students in UMKC Connect accessed through Blackboard. Throughout the term, students may receive emails regarding course grades or academic performance. Students are expected to address information posted in a timely fashion. This information may be shared with the student's Success Network made up his or her academic advisor(s) and other campus resources so that UMKC may fully support the student's success.

College of Arts & Sciences Course Policies & Resources:

Please refer to the following web page and the linked resources for critical information regarding course policies and resources. You are expected to abide by all the rules and regulations regarding student conduct referenced in these pages. http://cas.umkc.edu/CPR/

CHEM 211L **Experimental General Chemistry Lab I** **Summer 2019**

STUDENT INFORMATION QUESTIONNAIRE

(In order for me to make my instruction more personalized and helpful, I like to learn more about students as individuals. If you would, please fill out the information requested below, and return it to me within the first 2 weeks of the semester, either in my office or after class. I will retain this information on file only for this semester and will not be shared with others, but you are under no obligation to provide any or all of the data requested.)

PLEASE PRINT, AND THANKS!

NAME _____

WHERE ARE YOU FROM? _____

WHAT ARE YOUR PLANS ONCE YOU FINISH YOUR DEGREE PROGRAM?

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PLEASE LIST THE NAMES OF COLLEGE/SCHOOL LEVEL CHEMISTRY COURSES YOU HAVE TAKEN BELOW (PLEASE ALSO INDICATE WHERE THESE WERE TAKEN):

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PLEASE LIST THE NAMES OF COLLEGE/SCHOOL LEVEL MATH COURSES YOU HAVE TAKEN BELOW (PLEASE ALSO INDICATE WHERE THESE WERE TAKEN):

_____

_____

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(Please use the back side of this page to provide me with any other relevant information, such as your class schedule and any scheduled commitments, such as work or service.)