

CHEM 170 – Chemistry for the Chemical Sciences I

Fall 2017

Lectures: MWF 9:00 – 9:50 AM, Room 1001 Malott

Instructor: Krzysztof Kuczera, 5090 Malott, 864-5060, kkuczera@ku.edu

Office Hours: WF 11-12 AM, or by appointment

Lecture Teaching Assistant: Zeke Piskulich, 6083 Malott, piskuliche@ku.edu

Office Hours: M 9-10 AM, T 1:00-2:00 PM or by appointment

Laboratory Director: Dr. Roderick Black, 2021 Malott, 864-3481, rsblack@ku.edu

Discussion: R 2:30-3:30 PM, 2048 Malott

Text: *Chemistry: Atoms First*, by J. Burdge and J. Overby, 3rd Edition, McGraw Hill, 2018.

Class materials:

Throughout the semester, there will be class information available on Blackboard. Check the class website regularly for announcements and assignments.

KU Core: This class fulfills the KU Core Goal 3 natural sciences requirement and Goal 1 outcome 2 (quantitative problem solving).

Grading:

Four "Hour" Exams	30%
Final Exam	15% (cumulative)
Homework+Readings	15%
Clickers	10%
Lab	30%

Final grades will be determined from overall score, close to the standard A = 90-100%, B = 80-89% etc., with final cutoffs determined at end of class.

Examination Schedule:

Exam 1	Friday, September 15
Exam 2	Friday, October 13
Exam 3	Friday, November 10
Exam 4	Friday, December 1
Cumulative Final	Tuesday, December 12, 7:30-10:00 AM

Class goals:

- Learning chemistry foundational knowledge and skills based on properties of subatomic particles, atoms and compounds
- Developing chemical thinking and problem-solving skills
- Preparation for future chemistry courses and careers
- Raising awareness of diversity, equity and inclusion issues

Notes on Examinations:

1. All exams will be held in class and taken as scheduled. There will be **no make-up examinations**. In case of unavoidable absence for valid reasons, please contact the instructor.
2. The hour exam score will be calculated from the average of best three results. This will provide a mechanism to allow students to miss at most one hour exam due to unavoidable conflicts that may arise. Those who miss an hour exam are required to take the final.
3. The examinations will test your knowledge of the material **and** your ability to use the information to solve problems
4. No changes in exam scores will be considered later than **one week** after their return.
5. Students who take all four hour exams and score 90% or higher on all four may opt out of the cumulative final.

Extra credit:

This year we are implementing an on-line chemistry preparedness system called ALEKS. We are asking all students to try out ALEKS by registering and taking the initial learning assessment now and a comprehensive knowledge check later, toward the end of the semester. ALEKS is free and you will receive extra credit of 2% of the lecture grade for participating. The goal is for the Chemistry Department to understand the background preparation and learning progress of our students, so we can design better approaches to teaching. As a start, please perform the initial learning assessment ***before August 23***. Do your best on the knowledge check and don't worry if you don't know the answers to some questions - we will be learning a lot of chemistry during the semester in class. Instructions about signing up are on Blackboard in the Course Documents area in the "KU Quick Start Guide".

Pre-Class Reading and Homework:

Through the semester we will be using the **Connect** electronic learning system, accessible through McGraw Hill, our textbook publisher at <http://connect.mheducation.com>. There will be two types of assignments: **pre-class readings** with questions and **homework** problem sets. The function of these assignments is to aid you in mastering the material covered in the course. The **reading assignments** will appear 1-3 times per week (before most class meetings). These are aimed at preparing you for class activities, which will be split between brief lectures, problem solving and iClicker questions. **Homework** problems will be assigned on an approximately weekly basis (about 12 sets). Homework is vital to obtaining a solid grasp of the material and you are strongly encouraged to make it a high priority. To take full advantage of this learning opportunity, start working on homework assignments early, bring up any questions you have in discussions or office hours, and save copies of solutions for exam preparation. The problems, reading assignments, and the lecture material will be the subject of your examinations. The material covered in this class is quite difficult. The key to success is systematic work, review, problem solving and active engagement.

To access **Connect**, follow instructions in the document "Connect Student Registration" in the Course Documents area on our class Blackboard site.

Our section web address is: <http://connect.mheducation.com/class/k-kuczera-fall-2017>
Most of you will have obtained product keys with your textbook from the KU library, but access can be purchased separately online as well.

Discussion and Office Hours:

The class discussion will be led by the lecture TA, aimed at answering questions about lecture material and homework in a group setting. The instructor and lecture TA will also hold separate office hours (see top of document). Additional office hours will be offered by laboratory TAs. Students are strongly encouraged to attend discussions and office hours individually or in groups. The goal is to interact directly and informally with the instructor, TAs and other students, as well as to assist with understanding of course material and problem solving.

Clickers:

We will use clickers during lectures, aimed at helping all students actively participate in classroom learning. There will be 1-4 clicker questions per class. The scoring will be ca. 70% for participation and 30% for correctness.

Student Preparation:

You are expected to read the chapter in our text prior to the first lecture on each topic. The lecture material will be based on your being familiar with the chapter; therefore your understanding of the lecture will depend on your preparation.

Notes on Academic Misconduct:

It is expected that students at the University of Kansas adhere to high standards of personal and scientific integrity. In scientific endeavors the same is also expected. Science cannot work without honest reporting of data and the proper attribution of authorship.

Students are encouraged to study and work problems with others outside of class and to discuss lab procedures, results and interpretations with others, both during and outside of lab. It is essential, however, that the data you report *be yours and as you observed it and that all the write-ups are in your own words.*

Recording of Lectures:

Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited.

Students with Disabilities:

Students with disabilities are invited to contact Krzysztof Kuczera and/or Roderick Black with any concerns. All efforts will be made to provide proper accommodations.

Diversity, Equity and Inclusion:

A diversity of people and ideas is crucial for the advancement of society in general and learning in particular. An important goal of this class is to promote diversity, equity and inclusion in general chemistry education, in the Chemistry Department and at the University of Kansas. To achieve this goal, I would like our class to become a learning community, freely exchanging ideas about chemistry. The steps toward this goal include

- Transparent design – helping everyone understand the role of different class components
- Active learning – allowing all participants to actively engage in material

- Class atmosphere – of inclusion and respect
- Mini-biography module – learning about diversity in science by example

Active learning:

One of the main goals of this class is to promote active learning. Class meetings will consist of lectures, clicker question answers, problem solving sessions and hour-exams. The lectures will cover the more difficult part of the material and reinforce pre-class readings. Problem solving will involve students developing strategies, solutions and chemical reasoning. Responding to clicker questions will focus attention on most salient knowledge and skills. Exams will be designed to ensure students master fundamental knowledge and skills. Out-of-class activities will involve pre-class readings to prepare for classes and homework problem sets to develop mastery of the material. Discussion sessions and office hours will allow students to engage individually or in small groups with the graduate assistant and instructor. All these activities are aimed at preparing students for future classes and their profession.

Alternative open source text:

Some of you may be interested in an alternative presentation of the material, which sometimes helps with learning new concepts. Try downloading this open source text: “Chemistry: Atoms First” from OpenStax at <https://openstax.org/> under ‘Topics’-‘Science’. The PDF version is free. You might find other interesting texts there as well.

Approximate schedule of lectures

Dates	Chapter
Aug 21-23	1. Chemistry: The Science of Change
Aug 23-25	2. Atoms and the Periodic Table
Aug 28 – Sep 6	3. Quantum Theory & the Electronic Structure of Atoms
Sep 8 – Sep 13	4. Periodic Trends of the Elements
Sep 15	Exam 1
Sep 18 - 25	5. Ionic and Covalent Compounds
Sep 27 – Oct 2	6. Representing Molecules
Oct 4 – 11	7. Molecular Geometry and Intermolecular Forces
Oct 13	Exam 2
Oct 18 - 20	7. (continued) Bonding Theories
Oct 23 – Oct 27	8. Chemical Reactions
Oct 30 – Nov 8	9. Chemical Reactions in Aqueous Solutions
Nov 10	Exam 3
Nov 13 - 20	10. Energy Changes in Chemical Reactions
Nov 27 - 29	11. Gases
Dec 1	Exam 4
Dec 4 - 6	11. (continued) Gases
Dec 12	Cumulative final

Laboratory: *Laboratories begin the week of August 28th.*

Learning the proper laboratory skills is essential to being a successful chemist. You need to go to each lab prepared to do the assigned experiment. Read about the experiment **before** you go to the laboratory and make sure you have some idea what you need to do. Your laboratory teaching assistant will help you throughout each experiment. See separate website sheet for additional scheduling information. During the first week you will be taking an online examination on safety, which you must pass before being allowed to participate in the laboratory experiments.

Laboratory Safety:

Follow the link to Safety Regulations for Chemistry Lab on the Chemistry Lab website, and review these Regulations often. Chemistry Department-approved **full-coverage goggles** must be worn at all times. If a student is found not wearing goggles at any time while laboratory work is being conducted anywhere in the room, this student will receive a warning or a grade penalty, and may be asked to leave the room. Laboratory students must wear **long pants**. It is not acceptable to wear shorts, Capri pants or intermediate-length pants of any kind, or skirts. Shoes must cover the entire foot. Open-toed shoes, open-heeled shoes, sandals, or shoes containing holes are not acceptable. (If a student's attire fails to meet these guidelines because of religious or cultural requirements, the student must contact the instructor before the lab period.)

Withdrawal Policy:

Several years ago the University adopted a new policy regarding the dropping of classes. Under this new policy, students will have far less time to drop a class. Dropped courses, however, will no longer affect a student's grade point average. *Note various deadlines can be found on the Office of Registrar website: <http://www.registrar.ku.edu/~registr/calendar/index.shtml>*

Weapons policy

Individuals who choose to carry concealed handguns **are solely responsible to do so in a safe and secure manner in strict conformity with [state and federal laws](#) and [KU weapons policy](#).** Safety measures outlined in the KU weapons policy specify that a concealed handgun:

- Must be under the constant control of the carrier.
- Must be out of view, concealed either on the body of the carrier, or backpack, purse, or bag that remains under the carrier's custody and control.
- Must be in a holster that covers the trigger area and secures any external hammer in an un-cocked position
- Must have the safety on, and have no round in the chamber.

The laboratory part of this course takes place in spaces that will require students to leave belongings such as backpacks and purses away and unattended for the duration of class time. Students who choose to carry a concealed handgun in a purse, backpack, or bag must review and plan each day accordingly, and are responsible for making alternate arrangements as necessary. The university does not provide appropriate secured storage for concealed handguns.

Individuals who violate the KU weapons policy may be asked to leave campus with the weapon and may face disciplinary action under the appropriate university code of conduct.

Resources for Students:

KU Academic Access and Achievement Center (AAAC) – AAAC offers many services and programs to assist students in their academic success and to enhance their collegiate experience at KU. Choose from learning strategy consultations, group workshops or general or course-specific academic assistance, by appointment or on a walk-in basis. Feel free to talk with AAAC and ask for information or direction about academic and personal issues. You can find more information at: <https://achievement.ku.edu>/Phone is 785-864-4064 The AAAC is located in Rm 22 Strong Hall.

KU Writing Center - The Writing Center offers a variety of ways for students and members of the community to get feedback on their writing. It offers face-to-face consultations, online appointments, and an eTutoring appointments. Information regarding each type of appointment and a tool for scheduling can be found at <http://writing.ku.edu>/The Writing Center has multiple locations on campus.

KU Student Involvement & Leadership Center (SILC) – SILC prepares students to become contributing members of society by providing meaningful co-curricular experiences. **SILC** is responsible for coordinating registered university organizations and providing leadership education experiences for students in addition to providing programs and services to specific target populations including fraternity/sorority members, non-traditional students, and students of all gender identities, gender expressions and sexual orientations. More information can be found at <https://silc.ku.edu>. A notable program of SILC is the Safe Zone Training, which aims to reduce homophobia, transphobia, and heterosexism on our campus to make KU a safer and freer environment for all members of our community, regardless of sexual orientation, gender identity, or gender expression. By agreeing to become a Safe Zone ally, the participant agrees to undergo training and to serve as a resource for people seeking clarification on issues of sexuality and gender diversity. SILC is located in the Sabatini Multicultural Resources Center.

KU Counseling and Psychological Services (CAPS) – CAPS can help students with issues related to adjusting to college and other psychological, interpersonal, and family problems. Individual and group sessions are available. You can find more information at <https://caps.ku.edu>/Phone is 785-864-2277 and hours are M, W, F 8-5 and T, H 8- 6. CAPS is located in Watkins Memorial Health Center

KU Office of Multicultural Affairs (OMA) – OMA provides direction and services for current and prospective students from underrepresented populations. In addition, through collaborative partnerships it offers diversity education programs that foster inclusive learning environments *for all students*. OMA's programs and services enhance the retention of successful matriculation of students, while supporting their academic and personal development. You can find more information at: <https://oma.ku.edu/about> Phone is 785-864-4350 OMA is located in the Sabatini Multicultural Resources Center next to the Union.

Institute of Institutional Opportunity & Access (IOA) - The Office of Institutional Opportunity and Access (IOA) is responsible for administering the University of Kansas equal opportunity and non-discrimination policies and procedures, as well as, encouraging a campus climate of respect and understanding of all aspects of the human experience. To accomplish these duties, the IOA offers assistance and protective measures to students, faculty, and staff who report acts of harassment, discrimination, sexual misconduct, sexual violence, and retaliation; provides information about health, safety, advocacy, and support resources for members of the Lawrence and Edwards campuses; performs formal investigations to detect, discontinue, and prevent violations of the Non-Discrimination Policy and Sexual Harassment Policy; and ensures University compliance with state and federal civil rights laws. IOA is located at 153A Carruth-O'Leary; Phone 785-864-6414; email: ioa@ku.edu; <http://ioa.ku.edu/>.

KU Public Safety – Public safety is dedicated to providing a safe and secure environment for the thousands of students, faculty, staff and visitors that are on campus each day. Public Safety’s website (<https://publicsafety.ku.edu/>) contains practical information that can protect you from becoming a victim of a crime, help you recognize and report suspicious activity, and guide you in the event of an emergency.

KU Emily Taylor Center for Women & Gender Equity (ETC) – The ETC provides leadership and advocacy in promoting gender equity and challenge gender-related barriers that impede full access, inclusion, and success. The ETC provides services, assistance, advocacy and support to campus community members of all genders. We also provide consultation, information and resources to Edwards and KUMC campus members, parents of KU students and the community by request. Appointments are recommended, but not necessary. Services are private. In situations involving discrimination and violations of Title IX, ETC staff report information to campus authorities. Center programs and facilities are also accessible to individuals with disabilities. For those requesting accommodations, please contact KU [Student Access Services](#) at 785-864-4064 or achieve@ku.edu. The ETC is located in 4024 Wescoe Hall.

Sexual Assault CARE Coordinator - Watkins Health Services provides support to victims of sexual and domestic violence. [Merrill Evans](#), LCSW, is our CARE (Campus Assistance, Resource, and Education) Coordinator whose primary role is to coordinate support for individuals (both victim and alleged perpetrators) impacted by sexual violence including incidents of sexual assault, sexual battery, partner violence, dating violence and stalking. The CARE Coordinator is a confidential position and is not required to report incidents to University officials or organizations. If you or someone you know has been affected by any form of sexual violence, please do not hesitate to [contact Merrill](#) or stop by Watkins Health Center Room 2615 during normal business hours. If WHS is closed, the Sexual Trauma & Abuse Care Center is available 24 hours for victim assistance at [785-843-8985](tel:785-843-8985).
<https://studenthealth.ku.edu/sexual-assault>

Sexual Assault Prevention and Education Center (SAPEC) - SAPEC promotes social change and the elimination of sexual violence through prevention education, inclusive programming, and campus-wide collaboration. SAPEC is located at 116 Carruth O’Leary; Phone 785-864-5879; email: sappec@ku.edu.
<http://sappec.ku.edu/>

Formal KU Policies

You should be aware of KU’s academic policies, available at the KU policy library: academic. While the policies are numerous, key policies to be aware of include:

Academic Misconduct (<http://policy.ku.edu/governance/USRR#art2sect6>),

Final Examination Schedules (<http://policy.ku.edu/governance/USRR - art1sect3>),

and The Grading System (<http://policy.ku.edu/governance/USRR - art2sect2para3>)