Brooklyn College Department of Chemistry
Principles of Chemical Reactivity, CHEM 2110, Section FZ10 –Fall 2020

Prof. Mark Kobrak
E-mail (preferred): mkobrak@brooklyn.cuny.edu V: (718) 915-5758
Office Hours: T 10:00-11:00 AM & Th 5:00-6:00 PM *or by appointment*
Office hours held via Zoom at this link:
https://brooklyncollege.zoom.us/j/97306159901?pwd=OE5jVzlPZmRzbmRSY3J6M1FRbVh3UT09

Class Schedule:
Synchronous Sessions F 10:00 – 11:00 AM, held in Blackboard Collaborate

- Attendance is not required, except when quizzes or midterms are given. These will be announced in advance.
- Synchronous sessions will be used for question and answer sessions rather than formal presentation of new material. The instructor will attempt to record sessions but recordings are not guaranteed and nothing will be posted if technical issues arise.

NOTE: Weds, 11/25 is a conversion day. Classes will meet on a Friday schedule, and this class will run.

Examination Schedule:
Midterms: 10/9, 11/20 – **Midterms will run from 10:00 – 11:30 AM on those days.**
Final exam: 12/18, 10:30 AM – 12:30 PM

Required Technology:

- Students are assumed to have internet access and a device capable of viewing video and common image and document formats.
- Visualization is an important part of this course, and the answers to some quiz and midterm problems will require the uploading of simple sketches in a digital format. Students must have the means to do this, either in the form of a stylus-enabled tablet (e.g. Surface) or by uploading pictures or scans of documents prepared on paper. Assessments will be written allowing ample time for such uploads, but students must be prepared to upload images during quizzes and examinations.

Required Texts:
Organic Chemistry, *8th Edition* by W. Brown, C.S. Foote, B.L. Iverson, E. Anslyn, Cengage, 2018.
Reading assignments are from 8th Edition (the most recent). Earlier editions may be used, but you should check chapter and subject headings for each section to match up required reading.
C*hemistry 2e*, P. Flowers, OpenStax, 2019.

- *This text is available as a free PDF at https://openstax.org/details/books/chemistry-2e*
- *It is also available free for Kindle at http://www.amazon.com*
- *If you would prefer to purchase a hard copy, you may order from http://www.amazon.com – but you can always print chapters from the PDF.*

Online Supplementary Material available in Blackboard

Technical Support:
In general, requests for technical support should be directed to Brooklyn College Information Technology Services (ITS) Help Desk: Phone: 718.951.4357 E-mail: helpdesk@brooklyn.cuny.edu

Academic dishonesty is prohibited in the City University of New York:
Cheating, plagiarism, internet plagiarism and obtaining unfair advantages are violations of policies of academic integrity and are punishable by penalties, failing grades, suspension and expulsion. For more information about CUNY policy on academic integrity see **http://www.brooklyn.cuny.edu/bc/policies/pdt7CUNY%20PolicyAcademicIntegrity.pdf**
Students caught engaging in academic dishonesty will receive a grade of "F" for the course.

Grading:
Your final grade will be determined as follows:

Weighted Average:	Grading Scale	
10% Discussion Board Assignments	95 or higher: A+	68-70: C+
20% Quizzes (lowest quiz grade dropped)	87-95: A	62-68: C
40% Midterms (20% each)	85-87: A-	58-62: C-
30% Final Exam	82-85: B+	50-58: D*
	72-82: B	Less than 50: F
	70-72: B-	*Requests to change a grade of D to F will not be honored.

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

1. Understand basic concepts related to the behavior of electrons in molecules, including concepts such as atomic radius, electronegativity, and polarizability. Students should understand the periodic trends associated with these concepts.
2. Students should understand and be able to apply both the valence bond model and the molecular orbital theory of bonding.
3. Students should understand and be able to apply Lewis diagrams as a means of representing molecules and predicting their structure and behavior.
4. Students should be able to correctly draw 3-dimensional representations of molecules and to identify symmetry elements and chiral centers. Students should understand and be able to recognize isomerism.
5. Students should understand basic principles of reaction mechanism and be able to draw and interpret reaction coordinate diagrams. Students should be able to use curved arrow symbolism to describe mechanistic processes, and also to indicate differing resonance structures.

Use of Blackboard:
The Blackboard Course Management System will be the central platform for the course. Materials will be posted there, messages will be distributed as Announcements and through its e-mail system, interactive sessions will be hosted by the Blackboard Collaborate application, and all assessments will be administered through it. It is therefore critical that you have access to the system with a compatible browser and can both download and upload files. You should also confirm that your e-mail address in the Blackboard system is one that you read regularly.

Course materials will be presented using Blackboards Module feature. In Blackboard, go to the "Course Documents" folder and click on the link for the appropriate module. Links to all relevant materials will be provided there.

Module Structure:
Unless stated otherwise, each module will include the following:

- Textbook Reading and Homework Problems: Required reading and assigned problems are included for each module. Homework problems from the text are not collected or graded, but you are expected to do them and understand them. Answers to problems not included in the texts are posted to Blackboard. *The textbooks are your primary resource for learning material, all other materials are supplementary to the texts.*
- Discussion Board Assignment: You will be required to make a post to a specific thread in the Discussion Board. The assignment and the thread will be specified in the Module on Blackboard.
- Learning Objectives: Learning objectives for each module will be included as a separate document.
- Videos and Worksheets: Instructor-created videos are posted for each module. Each video has a worksheet attached to it for self-assessment.
- End of Module Problems: To help students prepare for quizzes and examinations, each module will have a set of online problems attached to it. These problems will be similar to those used on quizzes and examinations.

Schedule and Assignments:

Work for the semester will be divided into modules. The details of each module will be laid out in Blackboard using the Module feature, which provides a set of links for the activities in outline form. Some modules will have quizzes attached to them, as indicated in the schedule below. These quizzes will be administered during synchronous class time on the specified day.

8/28	Module 1: Discussion	10/16	Module 4: Discussion	11/27	**College Closed**
9/4	Module 1: Discussion & Quiz	10/23	Module 4: Discussion & Quiz	12/4	Module 6: Discussion
9/11	Module 2: Discussion	10/30	Module 5: Discussion	12/11	READING DAY
9/18	NO CLASS	11/6	Module 5: Discussion	12/18	**Final Exam: 10:30 AM – 12:30 PM**
9/25	Module 2: Discussion & Quiz	11/13	Module 5: Discussion & Quiz		
10/2	Module 3: Discussion	11/20	**Midterm 2: 10:00 AM – 11:30 AM**		
10/9	**Midterm 1: 10:00 AM – 11:30 AM**	**11/25** ***conv. day***	Module 6: Discussion		

Quizzes and Examinations:

Assessments (quizzes and examinations) will be administered subject to the following rules:

- Assessments will be open-book and open-note. Students may use the textbooks and any notes they have created themselves during the examination. Students may not use online resources (other than the HTML version of the text, if they desire) or consult other people for advice, either in-person or electronically. Doing so represents academic dishonesty and will result in a failing grade for the course if discovered.
- Students are encouraged to plan to take the examination using a Firefox or Chrome browser, and to use wired (rather than wireless) internet connections if at all possible.
- Assessments will be administered through the Blackboard system, with the following parameters:
    - They will be timed. Students must begin the exam at or after the appointed start time and will lose access to the exam at its endpoint.
    - Questions will be visible to students one at a time. Students will be able to see only one question, and will not be able to see the next question until the current one is submitted. Once submitted, examination questions cannot be reviewed or changed (i.e. no "backtracking" to questions that have already been answered).
    - Assessment questions will be randomized. All students will receive the same set of questions, but these will be presented in a random order to each student.
    - Students will be able to see their scores and review their answers a few days after completion of the exam.

In order to help students prepare for questions in this style, each course module will contain a set of "End of Module" problems administered in this style. This will serve both as a review resource and provide a chance to adjust to the testing style.

If students encounter technical problems during the examination, they must e-mail the instructor immediately and stop taking assessment. Students who e-mail the instructor during the examination, or shortly thereafter, to report a technical problem will be provided some form of accommodation. Students who choose to complete the examination may not ask for accommodation, even if they believe technical issues undermined their performance.

Reading and Homework Problems by Module

1	Atomic Theory and Bonding	*Chemistry-2e:* Secs 6.3-6.5, 7.1-7.3, 7.6 *Organic Chemistry:* Secs 1.2, 1.4-1.6, 2.1	*C2e:* Chap 6: 35, 37, 41, 43, 49, 51, 55, 57, 67, 68, 76, 77, 79,81 Chap 7: 7a-e, 11, 13, 14, 15a-d, 28, 29, 39,85, 89, 91, 93, 95, 99, 101 *OC:* Chap 1: 1.21, 1.25, 1.27, 1.29, 1.33, 1.35, 1.39
2	Valence Bond Theory	*Chemistry-2e:* Secs 7.4, 8.1-8.4 *Organic Chemistry:* Sec 1.7	*C2e:* Chap 8: 1, 5,7, 8, 10, 12, 13, 23, 24, 25, 26, 27a-d, 30, 35, 36, 37, 38, 39, 41, 45, 49 *OC:* Chap 1: 1.56, 1.57, 1.61, 1.62, 1.63
3	Resonance and Formal Charge	*Chemistry-2e:* Sec 7.4 (again) *Organic Chemistry:* Sec 1.2 (Formal Charge), 1.8-1.9	*C2e:* Chap 7: 44, 48, 56, 57, 59, 62 *OC:* Chap 1: 1.31, 1.51, 1.52, 1.53, 1.54, 1.55, 1.69, 1.70, 1.73, 1.74, 1.75
4	Organic Structure: Hydrocarbons, functional groups, and simple nomenclature	*Organic Chemistry:* Sec 1.3, 2.1-2.2, 2.3A (not B or C), 5.1 (alkene cis-/trans-isomerism)	*OC*: Chap 1: 1.41, 1.42(a), 1.45, 1.48 Chap 2: 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.26a-d, 2.27a-d, 2.31a-c Chap 5: 5.9, 5.10
5	Symmetry and Stereochemistry	*Organic Chemistry:* Secs 2.4A, 2.5, 2.6A (not B, no bicycloalkanes), 3.1-3.4 ***Module 5 Handout***	*OC:* Chap 2: 2.40, 2.41, 2.42, 2.43, 2.44 Chap 3: 3.11, 3.13, 3.14, 3.15a-c, 3.16, 3.17, 3.20, 3.21, 3.22, 3.24, 3.26, 3.28, 3.30
6	Organic Chemistry Mechanism	*Organic Chemistry*: Sec 4.1-4.7	*OC:* Chap 4: 4.13, 4.14, 4.15, 4.16, 4.19,4.20, 4.22, 4.24, 4.26, 4.29, 4.31, 4.32, 4.33, 4.42, 4.45, 4.46, 4.48 *Also:* MCAT Practice at the end of Chapter 4 (pg 193 of Kindle ed.)