



Chem&163 Section 03 (item #1920), Spring Quarter '18 SYLLABUS:

3:30–5:35 PM M, W in CC1-010, Lab M 3:30 - 6:00 PM in CC1-330.

Unless pre-approved, you are required to attend the class and laboratory section that you are registered for.

Description:

In this third in a three-quarter sequence for science and engineering majors, students use equilibrium, kinetics and thermodynamics with applications in acid-base chemistry and electrochemical cells. Concepts and applications in nuclear and biochemistry are introduced. Laboratory extends content, emphasizing experimental design, analysis, project activity, communication of results, and safety. (LAB)

Prerequisites:

Chemistry 162 with a grade of 2.0 or better. If you did not complete 162 at Cascadia, you may be asked to provide evidence of your grade from an equivalent course.

Instructor:

Dr. David Reichgott (CC2-389)

Office Phone/Voice Mail 425-352-8165

email: dreichgott@cascadia.edu

Office Hours: M, F 7:45 – 8:30 am; Tu, W, Th 2:30 – 3:20 pm (W may be in CC1-330).

Appointments and “drop-ins” are welcome; stop in any time my door is open.

[Cascadia FacultyWeb page](http://faculty.cascadia.edu/dreichgott/): (<http://faculty.cascadia.edu/dreichgott/> which contains link to CHEM&162 web page). This optional page is intended for persons not enrolled in our course. It will contain all course information and assignments.

Textbook:

Gilbert, Kriss, Foster, Davies, “Chemistry: The Science in Context,” 4th ed (2105); ISBN 978-0-393-91937-0 (hardcover; loose-leaf and ebook formats are welcome). Access to SmartWork is not required.

Also Required:

A hardbound (not spiral) 7½ x 9¼ laboratory notebook or similar size (continue from 162); Safety goggles.

A calculator that is not a telephone.

Access to Canvas.

Canvas (REQUIRED):

Course documents, including Unit Outcomes, daily Power Point slides, assignments and the laboratory manual are available on Canvas; content is located under “Files.” When printing Power Point content be sure to select “Print What ...Handouts...6 per page”. Please also see expectations for appropriate use under “Course Websites”, below.

In case of college closure or instructor’s absence:

In the event of a campus closure, please log into [CANVAS](http://cascadia.instructure.com) at <http://cascadia.instructure.com> for announcements and instructions. On each “out” day a set of instructions, including options for lab and document delivery, will be posted under Files, in a document titled “Instructions for (date)”. All assignments that must be turned in must be done in Microsoft Word (or .txt) format or scanned to a png or pdf format, and delivered by email to dreichgott@cascadia.edu. Photographic or low-quality scans may not be accepted. All aspects of academic honesty must be followed (see below). CANVAS instructions, including technical support information, are available on [Cascadia’s elearning page](#).

Reserve Items, available at Library (optional):

Optional (Chem 139) text: “Introductory Chemistry,” M. S. Cracolice & E. I. Peters;

CD: “Graphical Analysis”, Vernier Software (licensed for student installation).

Course content, topics and themes:

Chapters 14 through 17, and 19 through 21 of Gilbert, including:

- Rate laws and factors affecting kinetics,
- equilibrium as a dynamic state,
- acid/base, ion and redox equilibria, buffer systems,
- coordination complexes,
- electrochemistry,
- nuclear chemistry,
- structure and function of DNA, RNA, and proteins.

Laboratory extends content, emphasizing experimental design, analysis, project activity, communication of results, and safety.

Outcomes:

Daily outcomes are also listed in each “Unit Syllabus”. At the end of this course you should be able to:

Learn Actively

- Express reaction rate in terms of reactant and product concentrations, and describe conditions that effect rate
- Describe the dynamic nature of equilibrium and effects of change in reaction variables
- Use equilibrium expressions to describe acid/base, ion and redox reactions
- Use experimentation to demonstrate and experience buffer behavior
- Balance redox equations and describe qualitatively and quantitatively how electrochemical cells work
- Learn how to apply chemical instruments to evaluate real-world phenomena
- Describe the interrelationships among DNA, RNA, and proteins
- Take responsibility for accessing and using a variety of sources to further examine areas of scientific interest

Think Critically, Creatively, and Reflectively

- Evaluate experimental data in order to determine a reaction’s rate and order
- Apply evidence of reaction order to the description of its mechanism
- Develop strategies to approach, solve, and understand problems involving equilibrium, rate and thermodynamics on both conceptual and quantitative levels
- From experimental properties, design and evaluate a buffer system
- Refine understanding of the scientific method, emphasizing analysis of investigations for flaws, limitations and sources of error or bias
- Generate connections between chemical concepts and other disciplines
- Use multiple chemical concepts to solve complex problems
- Design, conduct and present results of a real-world chemical problem

Communicate with Clarity and Originality

- Express chemical concepts using formulas, chemical equations, graphs, vocabulary and mathematic notation
- Express and interpret uncertainties in quantitative information
- Use computer resources to analyze data, generate graphs and present lab reports
- Present experimental results in multiple ways, including narrative, graphs and diagrams

Interact in Diverse and Complex Environments

- Work with peers to perform laboratory experiments and solve problems
- Demonstrate the appropriate use of chemistry lab techniques and equipment
- Refine insights into the interactions between theory and experimentation
- In all group work, listen and contribute with respect and honesty
- Critically assess and challenge scientifically explanations of self, peers and experts

Assignments:

A “Unit Syllabus” for each of four units will be distributed with daily outcomes, reading, suggested problems, “prepared problems”, laboratory report due dates, and **graded homework** assignments and due dates. Late assignments will be accepted, less 10 % if within 24 hours, less 20 % if later, but not accepted if the assignment is returned to the class.

“**Prepared problems**” are to be prepared in writing before each class except as noted in the Unit Syllabus. They are reviewed by peer groups, and scored for completeness at the start of class only. You are encouraged to compare solutions, and question each other on unclear areas. I will collect one group’s problems at random each class to check scoring and revise if warranted. You must be present to receive credit; there are no makeups. Four required, in-class, graded Group Sheets and daily ungraded worksheets.

Assignments are expected to be submitted in person. If this is impossible, any assignment sent by email must be in .doc, .docx, or .pdf file format, in a file size that does not inhibit transmission. Having a document rejected by an email system does not relieve you of the need to submit it on time. If scanned or photographed, the readability of the document

is the responsibility of the sender.

Group presentation of laboratory content.

Each student is required to attend all presentations of their section and participate in assessment and the final group sheet. A 25% (10 pt.) deduction will be made if participation is not complete.

Exams:

Three exams during classes, coupled to graded Group Sheets, and a short quiz for Unit 4. The examinations are cumulative to the extent that concepts and skills introduced in earlier units are applied in later units. There is no comprehensive final exam. Exams can be made up only for unusual circumstances and **only** if I am notified in advance.

Class-time focus and student responsibility:

This course is heavy with content, and it is elected by students with diverse future pathways, some of which require all the content to be covered. Our class-time will be focused on those areas that are best learned through collaborative activities, or are those where instructor support is most needed. For us to be successful, there is a need for you to be responsible for your own learning of content not covered in class, and to use the study skills of an independent learner. The "Unit Syllabus" is one of the ways to support you in your efforts.

Cascadia's expectations for classroom behavior conform to the Washington Administrative Code (WAC). These may be found in the [Student Handbook](#). Cell phones and other communication devices are not to be used in the classroom or laboratory.

Study technique recommendations:

- Check the outcomes on the Unit Syllabus for the class ahead of time.
- Skim the text sections before class, paying close attention to bold-face vocabulary terms, items in the margins, and figures. This should take no more than 20 minutes.
- Read the assigned text sections as soon as possible after class, and work the in-chapter problems.
- Compare the outcomes to your class notes, taking care to review material not covered in class.
- Learn actively by explaining concepts and relationships to someone else.
- Learn collaboratively by solving recommended exercises in a study group.

Grading:

Prepared Problems	16 at 2 points each	32 points
Hour Exams	3 at 50 points each	150 points
Group Sheets	10, 10, 10, 8 points	38 points
Graded Homework	5 at 10 points each	50 points
Presentation		40 points
Laboratory*	See below.	190 points
Total		500 points

*This is a laboratory science course that may be used to satisfy college requirements. To meet these requirements and to meet prerequisites of subsequent courses, you must obtain a passing grade average in the laboratory component of the course. Laboratory content is also testable on the hour exams to the extent that the lab content overlaps class content.

Grades are assigned in proportion to your percent score (you do not compete with each other):

4.0:	90%-100%
3.5 - 3.9:	85%-89%
3.0 - 3.4:	80%-84%
2.5 - 2.9:	75% -79%
2.0 - 2.4:	65% - 74%
1.0 - 1.9:	55%-64%
0.0:	Below 55%

Other grades (I, N, P/NC, V, W) may be assigned in compliance with the College academic policies, which can be found at the Cascadia web site [Academic Policies](#).

Policy on Incomplete (I) and Withdrawal (W) grades:

An Incomplete, as described in the College Catalog, is arranged for ahead of time with the instructor through an Incomplete Contract, and only in the case where the majority of the instruction has been completed. I will interpret this as having missed no more than three class sessions and one laboratory (unless a makeup is possible). A grade will be assigned when the contract is completed. A Withdrawal may be made without instructor approval through May 7th; after that date an application and approval must be made through Student Services – Kodiak Corner.

Transfer Issues

CHEM&163 transfers to the University of Washington as CHEM 162. Special circumstances apply when transferring to semester schools, and Advising needs to be consulted at the transfer school. For transfer to the University of Washington CHEM&162 and CHEM&163 must be taken at the same college; UW Engineering School accepts 162 (without 163) to satisfy the Major-Ready Pathways that require 161 and 162.

Cascadia College Syllabus Learning Agreement

Pluralism and Diversity

Cascadia believes in pluralism, an intentional culture where everyone's history contributes to the collective success of our community. Cascadia is committed to creating a supportive environment for a diverse student, faculty, and staff population. Individual differences are celebrated in a pluralistic community of learners. Cascadia does not discriminate on the basis of race, color, religion, gender and/or sex, sexual orientation, national origin, citizenship status, age, marital or veteran status, or the presence of any sensory, mental or physical disability, or genetic information, and is prohibited from discrimination in such a manner by college policy and state and federal law. The following office has been designated to handle inquiries regarding non-discrimination policies and can direct inquiries to the appropriate office for ADA-related requests: Director of Human Resources, Office CC2-280, 425-352-8880.

Title IX

Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in education programs or activities that receive Federal financial assistance. In compliance with Title IX, Cascadia is committed to providing an educational environment free from sexual harassment, including acts of sexual violence or sexual assault. The College is equally committed to ensuring that those who raise complaints or participate in the investigation and resolution of complaints are free from retaliation. To raise a complaint or voice a concern with Cascadia's compliance with Title IX, contact Martin Logan, Executive Director of Human Resources, at mlogan@cascadia.edu or 425-352-8262.

Academic Honesty

The College regards acts of academic dishonesty, including such activities as plagiarism, cheating and/or violations of integrity in information technology, as very serious offenses. In the event that cheating, plagiarism or other forms of academic dishonesty are discovered, each incident will be handled as deemed appropriate. Care will be taken that students' rights are not violated and that disciplinary procedures are instituted only in cases where documentation or other evidence of the offense(s) exists. A description of all such incidents shall be forwarded to the Student Conduct Officer, where a file of such occurrences is maintained. The Student Conduct Officer may institute action against a student according to the college's disciplinary policies and procedures. [Click here to see the policies and procedures in the *Student Handbook*](#). *In this class, any work found to involve academic dishonesty will be given a grade of 0.* Guidelines specific to this course: The following are situations where I expect you to get help, share ideas, and work cooperatively:

1. Group sheets and worksheets.
2. Prepared Problems and graded homework when you are stuck (but please see below).
3. Preparing for lab (except what you actually write on your pre-laboratory assignment).
4. All aspects of in-laboratory activities.
5. Working-up laboratory data for your report and brainstorming ideas about report questions.

The following are examples of situations where I expect that your work will be **entirely** your own:

1. All aspects of examinations.
2. All written aspects of graded homework assignments.
3. All written aspects of pre-laboratory assignments.
4. All written aspects of laboratory reports.
5. All aspects of the Chemical Resource Lab.

The key distinction is *when you write something down*, it represents your own communication of your understanding. It is inappropriate to copy anyone's work or provide your answers to others, except where you are sharing data.

Student Rights and Responsibilities

Cascadia is a student-centered college, operated to provide knowledge and skills for the achievement of learners' academic, professional and personal goals. Inherent in the college's mission are certain rights and freedoms needed for learning and personal development. Admission to Cascadia provides these rights to students, and also assumes that students accept the responsibility to conduct themselves in ways that do not interfere with the purposes of the college in providing education for all of its learners. For the complete policy, see [the Student Code of Conduct in the Student Handbook](#).

Course Websites

Nearly every course at Cascadia has one or more dedicated websites. The most common course website is the college Learning Management System, [CANVAS](#); nearly all mathematics courses use [WAMAP](#). Access to course websites is through Internet browsers, and students will use personal user IDs and passwords to log in.

- Students may not share their user IDs and passwords with anyone else or allow anyone else to participate in course sites on their behalf.

- Students need reliable access to the Internet. Some devices, such as smartphones, cannot access all aspects of CANVAS and most other course websites. Cascadia does not recommend that students attempt to complete a course using only a smartphone. Computers are available in many locations on campus.

Students who enroll in courses that make use of a course website are expected to check that site frequently with their own devices and campus computers. Technical support for accessing learning management systems is available at the Cascadia Bock Learning Center.

John and Margaret Bock Learning Center Services

To support student success, Cascadia offers a variety of support services through its John and Margaret Bock Learning Center (The Bock Center). The Bock Center, located in CC2-060 and CC2-080, provides tutoring in a range of subjects, space for students to work individually or in small groups, computer and printing resources, technology support, and graphing calculators available for checkout. [Click here for hours and contact information for the Bock Center.](#)

Online Tutoring and Writing Assistance

Cascadia provides online access to live tutors in a variety of subjects through the Western e-Tutoring Consortium. This service includes live, interactive sessions and asynchronous feedback through an Essay Center. Many subjects have convenient tutoring hours late into the evening and seven days a week, depending on tutor availability; schedules are available online. To learn more or get started, visit the Bock Learning Center's [tutoring webpage](#).

Disability Support Services

Cascadia provides services to help students with disabilities successfully adapt to college life. Students who meet specific criteria may qualify for reasonable academic accommodations. If you have or suspect you have a disability and need an accommodation please contact the DSS Office at 425-352-8128 to make an appointment, or email us at disabilities@cascadia.edu. Services and Accommodations through DSS are not retroactive. It is the student's responsibility to approach the faculty member with the accommodation letter as soon as it is issued from DSS.

Counseling Services

If you have a personal problem or stress that is affecting you and would like to talk with someone, please contact [UWB's Mental Health Counseling Center](#). Counseling at Cascadia (provided through UWB) is confidential, professional and free (six sessions). Visit the Counseling Center front desk Monday through Friday, 8:30 a.m. to 5 p.m. or call 425-352-3183 for an appointment. The number for a 24-hour Crisis Line is 206-461-3222.

Advising

Students should schedule an appointment to meet with an advisor to consult about classes and degrees, and to create a tentative education plan. They can call 425-352-8860 or come to the Kodiak Corner to make an appointment. Appointments are not made via email. At the time of the appointment, they need to indicate which degree they are pursuing. See the Cascadia website for information about Drop-In Advising hours.

Online Advising

Email advising is available at advising@cascadia.edu. Our distance advisor can answer most questions via email, but we don't schedule advising appointments via email.

Campus Closures and Inclement Weather

In the event of inclement weather affecting morning classes, there will be notification on the local media by 5:30 a.m. You may also call the main campus number: 425-352-8000 to hear a message that will be updated with the latest Cascadia closure information. Should the weather deteriorate during the day, you may check online, listen to the main campus message, check email or the media to hear news about closures or class schedule changes.

Find information about and sign up for alerts and notifications at [Emergency Notifications Cascadia FlashAlert](#). The site includes instructions for subscribing to alerts. In the event of a campus closure, instruction for this class will continue in the following way:

Please log into [CANVAS](#) for announcements and instructions. On each "out" day a set of instructions, including options for lab and document delivery, will be posted under Files, in a document titled "Instructions for (date)". All assignments that must be turned in must be done in Microsoft Word (or .txt) format or scanned to a png or pdf format, and delivered by email to dreichgott@cascadia.edu. Photographic or low-quality scans may not be accepted. All aspects of academic honesty must be followed (see below). CANVAS instructions, including technical support information, are available on [Cascadia's elearning page](#).

Emergency Procedures

Emergency procedures are posted in each classroom. To reach campus security personnel, dial 425-352-5222. City of Bothell fire and police may be reached by dialing either 9-9-1-1 or 9-1-1 from any campus phone. Campus emergency phones are located on campus walkways and parking lots.

Acceptable Use Policy on Information Technology

In general, the same ethical conduct that applies to the use of all college resources and facilities applies to the use of Cascadia's systems and technology. These systems may only be used for authorized purposes, using only legal versions of copyrighted software, and with consideration and respect for the conservations of resources and the rights of other users. For additional information, see [the online version of the Student Handbook](#) or go to the Bock Learning Center for assistance with any questions.

Family Education Rights and Privacy Act (FERPA)

Cascadia College complies with the Family Education Rights and Privacy Act (FERPA) of 1974 concerning the information that becomes a part of a student's permanent educational record and governing the condition of its disclosure. Under FERPA, students are protected against improper disclosure of their records. [See the student handbook for details.](#)

Laboratory:

There are seven laboratory experiments during your scheduled laboratory periods (one of which will also include class content), plus three sessions for a cumulative set of water quality analyses that are linked in a group project activity. See points below. **Laboratories cannot be made up unless you arrange in advance to attend another section's lab session with instructor approval.** An absence will result in a zero grade for that lab.

Laboratory Manual

All laboratory experiments and supporting materials are in files located on Canvas. You are required to read, print, and bring the scheduled laboratory experiment to lab, and turn in the required Prelaboratory Assignment at the start of lab. Cascadia has a required Safety Protocol that is contained in the introductory file. You are required to submit the signature form that is provided to you during the first laboratory period (parental signature if you are under 18).

Safety Goggles and Attire

As part of laboratory safety you are required to wear the following attire to all labs:

1. Pants or skirts that cover the entire leg, down to the ankle.
2. Shoes that cover the entire foot, including toes, heel, and top of the foot (no "ballet" style shoes or sandals, for example).
3. Shirts that cover the entire torso and shoulders (no tank tops or cropped shirts, for example).
4. Safety goggles (available at the Bookstore) must be worn in the laboratory any time chemicals or glassware are in use by anyone in the lab.
5. Additional protective equipment as advised by your instructor or lab technician.

When you come to lab, if you are not in full compliance with our lab attire protocol, you will automatically lose 10% of the point value for that lab session. You are welcome to participate in lab if we have extra clothing for you to borrow, such as rubber boots, lab coats, and "scrub" pants. These are available on a "first come, first served" basis.

Laboratory Notebooks

All notes taken while in lab must be written in ink in your laboratory notebook. The notebook must be hardbound, similar in size to 7½" x 9¼", with either preprinted or handwritten page numbers. It should not have a flexible cover, nor removable pages, nor a spiral wire binding. You are encouraged to continue your Chem 162 lab notebook.

The following items must be included in your lab notebook for each experiment:

- Title of experiment
- Date of experiment
- Page reference to manual or reference to handout.
- Statement of purpose - one or two sentences completed before coming to the lab
- An entry in your Table of Contents
- Notes the day of lab that your instructor specifies to place in your notebook.
- Name of partner (if any) and references to co-workers' data.
- Data and notes taken during the experiment, made in time sequence. Do NOT transcribe the manual, but make page references to the manual (noting any procedure changes). Your entries, taken together with the lab manual, should enable a co-worker to understand and reconstruct your results.

During the experiment no notes should be taken in the laboratory manual or on separate sheets of paper, and all notes should be taken in the lab notebook. Entries are to be made in time sequence. If an error is made in the notebook, a single line should be drawn through it and initialed by you. Other than a simple correction, entries must be made in time-sequence, and any additions or changes must be made following the original entry. If you decide to repeat a procedure, leave the original entry and make a statement that you are repeating it. Pencil or "whiteout" should never be used in a lab notebook.

At the completion of each laboratory period, your notebook must be reviewed by a classmate other than your lab partner, and submitted to your instructor for initialing.

Notebooks will be graded twice during the quarter for required elements, correct format, clarity of data, organization, and entries sufficient to allow another individual to understand what you have done and reconstruct your results.

Arriving late to Lab / Absence

If you arrive late to lab, you are welcome; however, if the safety and procedure briefing has been completed you may participate only as an observer and at reduced credit (60 – 80% credit). If you are absent for lab, there will be no credit for that laboratory unless a makeup has been scheduled in advance. Due to the complexity of lab setup it is not normally possible to arrange a makeup unless you can participate with another section that is performing the same experiment.

Laboratory Reports

Both Pre-Lab and Post-Lab reports will be required for each experiment. The Pre-Lab report contains questions designed to allow you to gain some initial understanding of the experiment. To answer the Pre-Lab questions, a thorough and thoughtful reading of the experiment must be done. While you may consult with colleagues in the class about your responses to the Pre-Lab questions, you must provide your own individual, unique answers to these questions. Because the Pre-Lab questions are designed to prepare you for the experiment, Pre-Lab reports are due at the beginning of each laboratory session. Failure to submit a Pre-Lab report at the start of lab will result in no credit given for that Pre-Lab report.

The Post-Lab report allows you to reflect on the data collected in each experiment and to answer questions related to the experiment. You are encouraged to collaborate with your colleagues, but submit your own individual, unique report. Laboratory reports must not be written in your laboratory notebook. They may include pages from the manual and may require additional printed or handwritten pages of your own.

Laboratory reports will normally be due by the start of the second class following lab (Tuesday). Late reports will automatically lose 10% (if within 24 hours), 20% (if later). They will not be accepted after the class' reports have been returned (usually the next laboratory period). Report grades are based on: Complete and correct prelab. assignment (about 20%), accuracy and precision of results (about 20%), clear presentation of data (about 10 - 20%), accuracy of calculations (about 20%), complete and correct post-laboratory questions (about 20 - 30%). No lab scores will be dropped.

Laboratory Group Interaction and Personal Responsibility

A maximum of 20 points will be awarded for cooperative and responsible laboratory behavior. Ten points for Learning Interactively will include, but not be limited to working cooperatively and interactively with your colleagues, sharing of techniques and data, and serving as a resource for others. Ten points for Personal Responsibility will include arriving on time and prepared for lab, and observing all verbal instructions and all safety and waste disposal procedures. These include, but are not limited to having goggles and always wearing them in the lab, maintaining your drawer with clean glassware, keeping track of your assigned glassware, cleaning up at the end of the lab period, carefully dispensing chemicals and always replacing lids, and disposing of lab waste in the appropriate containers.

Lab Grading

Lab reports (2 x 10 + 5 x 20 pts.)	120 pts	Complete and correct prelab. assignment (about 20%), accuracy and precision of results (about 20%), clear presentation of data (about 10 - 20%), accuracy of calculations (about 20%), complete and correct post-laboratory questions (about 20 - 30%). No scores will be dropped. 10 pt. labs: Rate of Reaction Part 1, Rate of Reaction Part II; see also project lab reports, below. Others are 20 pts.
Project lab reports (3 x 10 pts.)	30 pts	Brief weekly reports of activity and results. While methods will be provided, the design, execution, and reporting of results will be to a great extent student-directed. Its summary will be the content for the end-of-course presentations, which are scored separately.
Laboratory Notebooks (2 x 10 pts.)	20 pts	
Group Interaction	10 pts	
Personal Responsibility	10 pts	
Total	190 pts.	

This total will be used as one component in calculating your overall course grade, as specified above in this syllabus; a separate laboratory grade will not be recorded on your transcript.

Tentative Schedule is on the following page.

Check each Unit Syllabus and Canvas for changes.

Chem 163-03 Spring '18 Tentative Course Schedule

Tuesdays, 3:30 – 5:35 in CC1-010	Wednesdays, 3:30 – 6:00 in CC1-330	Thursdays, 3:30 – 5:35 in CC1-010
Mar-27: Sections 14.1, 14.2, start 14.3	Mar-28 Lab: Rate of Reaction, Part 1	Mar-29: Section 14.3 (Prepared Problems #1)
Apr-3: Sections 14.4, 14.5 (Prepared Problems #2)	Apr-4: Lab: Rate of Reaction, Part 2	Apr-5: Sections 14.6, 15.1 – 15.3 (Prepared Problems #3, HW #1)
Apr-10: Sections 15.4 – 15.7, 18.7 (Prepared Problems #4)	Apr-11: Lab: Introduction to Equilibrium	Apr-12: Sections 15.8 (Prepared Problems #5); start Chapter 16 (Unit 2)
Apr-17: HW #2; Group Sheet 1, Unit 1 Exam	Apr-18: Lab: pH and Buffers Part 1	Apr-19: Non-Instructional Day (no classes)
Apr-24: Sections 16.2, 16.9, 16.4 (Prepared Problems #6)	Apr-25: Lab: Titration of a Polyprotic Acid	Apr-26: Sections 16.3, 16.5, 16.6 (Prepared Problems #7)
May-1: Sections 16.7, 16.8 (Prepared Problems #8)	May-2: Lab: pH and Buffers Part 2	May-3: Sections 16.10, 17.1 – 17.3 (Prepared Problems #9, HW #3)
May-8: Sections 17.4, 17.6 – 17.9, 17.11 (Prepared Problems #10)	May-9: Class: Sections 19.1, 19.2 Lab: Experimental Cell Potentials	May-10: Group Sheet 2, Unit 2 Exam
May-15: Sections 19.3 – 19.6 (Prepared Problems #11)	May-16: Lab: Water Quality Analyses - Methods	May-17: Sections 19.6 – 19.10 (Prepared Problems #12)
May-22: Sections 20.1, 20.2 (Prepared Problems #13, HW #4)	May-23: Lab: Water Quality Analyses – Stream Water Analyses	May-24: Sections 20.5, 21.1 – 21.3 (Prepared Problems #14)
May-29: Sections 21.4 – 21.9 (Prepared Problems #15, HW #5)	May-30: Lab: Water Quality Analyses – Stream Water Analyses	May-31: Group Sheet 3, Unit 3 Exam (Prepared Problems #16)
Jun-5: Presentation Preparation	Jun-6: No Lab - Presentations	Jun-7: Presentations, Group Sheet 4

See Unit Syllabi for updates.