# Course Syllabus: CHEM 128B (Organic Chemistry II)

## Changelog

The syllabus is a live document which is regularly updated. This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on all announcements made while you were absent.

Changes and corrections are listed in the changelog below and will be announced on Canvas.

- 2019-01-15: Syllabus published on Canvas
- 2019-01-22: Added SI information. Updated class schedule
- 2019-01-27: Fixed URL to class schedule and added link to LTA request form
- 2019-03-07: Updated LTA scheduling, office hours, and appointments

## Introduction

Welcome to the second semester of course in organic chemistry (CHEM 128B)!

This course is further exploration of one of the richest and most beautiful areas of modern chemistry: *chemistry of carbon-basaed compounds*. In CHEM 128B, we will examine topics and concepts that are essential for understanding modern biochemistry, medicine, and the chemical reactions related to life.

**Important note about grading:** This course uses a different grading method to one that you might be used to. The details are explained in sections below. *Read the syllabus carefully.* It is nearly 5,000 words for a reason. Almost all questions about the course that you might ask can be answered by referencing the syllabus. If you are uncertain that you understand all rules and regulations, please contact me.

- **Course name and number**: CHEM 128B (75850 05-LEC)
- **Units**: 3
- **Pre-requisite**: Passed CHEM 128A with grade "C" or better.
- **Meetings**: MWF 8:00–8:50 am in Science 2 Room 108
- **Class schedule**: https://chem128b.page.link/schedule (Week = Sunday 12:00 am until Saturday 11:59 pm)
- **Instructor**: Hubert Muchalski, Ph.D., Assistant Professor of Chemistry
- **Instructor office**: Science 1 room 352
- **Office Phone**: (559) 278-2711
- **Email**: hmuchalski@csufresno.edu or hmuchalski@mail.fresnostate.edu (they go to the same inbox). Please note that I typically check email between 11 am and 5 pm, Monday thru Friday. Usually, my response time is *within 6 hours of reading the message*. We also have online course tools where you can ask questions to the entire class at any time, making it more likely to get a quick response.

### Office hours and instructor availability

I will be available for in-office consultations Fridays 10:00–11:30 am. Walk-in visits are welcome but students with appointments get priority. Consultation appointments can be made on Canvas ("Find Appointments" under Calendar). If Friday doesn't fit your schedule, please send email me and suggest 2-3 times and we will schedule a meeting.

### Course materials and technology

- **Textbook:** "Organic Chemistry, 3e" by David Klein published by Wiley. This course will use the 3rd edition. Previous editions will also be sufficient to learn the material but page numbers as well as problems will be different. If you own license to e-text of the textbook you can access it by going to https://online.vitalsource.com/#/books/9781119351603
- **Solutions Manual:** Student Study Guide and Solutions Manual by David Klein. The solutions manual is included in the electronic version of the textbook.
- **WileyPLUS:** You can self-enroll by clicking the following URL: http://www.wileyplus.com/class/683136. **IMPORTANT**: WileyPLUS version is tied to the edition of the textbook. Make

sure that your access code is for the 3rd edition.
- **Student response system:** Each student is required to have their own `i>clicker2` remote or access to REEF polling mobile app on a mobile device. You can borrow remote from a friend as long as they are not in my section. The officially supported model is `i>clicker2` (available at the Bookstore). The `i>clicker` and `i>clicker+` models are not compatible.
- **Canvas:** The central repository for all course materials and information is our Canvas site, accessible through https://fresnostate.instructure.com/. Canvas will house your grades (except online homework, which is kept on the WileyPLUS site); links to handouts, videos, and other materials; and other course tools. We will often use other tools such as Google Drive, but these are all linked to Canvas, so keeping track of multiple websites is not necessary.

### Course goals and student learning outcomes

CHEM 128B is the second part of a two-semester sequence in organic chemistry, the chemistry of carbon-based compounds. Topics in this course will be focused on the principles of bonding, structure, reactivity, and synthesis of organic materials. Also, a significant portion of this course will address the analytical techniques routinely used by organic chemists in their research. I hope that as you examine the topics and concepts covered in the course, you will realize that organic chemistry is central to understanding multiple other disciplines. Lectures and problems will often feature organic compounds and reactions in the context of biology, pharmacy, medicine, materials, and energy science.

Students will be expected to demonstrate competence in self-regulated learining of new technical material, managing time and tasks, and educational interactions with peers.

Students will develop competence in broad areas of organic chemistry and demonstrate the application of these concepts and theories. Students will apply their understanding of terminology, concepts, theories, and skills to solve problems by defining problems and research questions clearly, formulating testable hypotheses, designing and conducting experimental tests of hypotheses, analyzing and interpreting data, and drawing appropriate conclusions within professional ethical guidelines. Specifically, students who successfully complete this course you will be able to:

- use common drawing and naming conventions to communicate the structure and properties of organic molecules;
- analyze chemical structures and reactions to make and defend predictions about chemical transformations;
- use curved arrow notation to depict mechanisms of chemical reactions;
- design a synthesis of an organic molecule;
- reflect on how organic chemistry relates to materials, life sciences, and medicine; and

## How to achieve course goals

The work you will be asked to do in- and outside of class is designed to promote learning of the concepts of the course Learning happens by doing, not just by listening. So to reach the learning goals in this course, you'll be doing a wide variety of *learning activities* both in and outside of class.

### In-class requirements

Three 50-minute meetings per week (MWF) where we review, discuss, and practice concepts from the course. You'll be working with your classmates to make sense of concepts and work on creative applications of those basics through group problem-solving sessions, discussions driven by interactive polling activities, and more. (3 hours per week).

### Out-of-class requirements

Prior to the class meeting, students are required to work actively to get their first contact with new concepts by reading the textbook, watching videos, and completing the ORION baseline diagnostic activity.

After class meeting, students should regularly study the material by doing practice problems, completing online homework, and other assignments (approximately 9 hours per week).

### Supplemental Instruction

Supplemental Instruction (SI) is provided for all students who want to improve their understanding of the material taught in this course. SI sessions for this course are led by a SI leader who has already completed the course material and has been trained to facilitate group sessions where students can meet to compare class notes, review and discussimportant concepts, develop strategies for studying, and prepare for exams. The SI leader attends this class and communicates regularly with the instructor to ensure that accurate information is given.

The SI Leader for this course is Bhvandip (Bob) Bajwa (bsbajwa@mail.fresnostate.edu).

Sessions:

- Wednesdays 3:30PM-5:00PM in Grosse Industrial Tech (IT) room 117
- Fridays 9:00AM-10:30AM in University Center 202

Office Hours:

- Mondays 11:00AM-12:30PM in the Learning Center
- Thursdays 11:00AM-12:30PM in the Learning Center

*Attendance at SI sessions is free and voluntary for any student enrolled in this course.* Students may attend as many times as they choose. Learn more by watching this video: http://youtu.be/yTLGu5TLOUI

## Types of graded work

There are five primary kinds of assignments and tests that you will encounter in this course:

1. WileyPLUS ORION online assignments that will assess how much you learned by yourself by reading the textbook, watching online videos, etc.

2. WileyPLUS "Mastery" online homework to build expertise in newly introduced concepts.
3. WileyPLUS "level 1" assignments that test fundamentals of spectroscopy and synthesis.

4. Learning Target Assessments (LTAs). Short quizzes assessing learning within one unit of material, a Learning Target.
5. Take-home assignments to assess learning objectives that involve higher level concepts and cognitive processes.
6. Final Exam.

A complete listing of the criteria used to assign grades to these items is found in Appendix A, "Grading Standards".

### Pre-class assignments (WileyPLUS)

This class is designed according to a model in which pre-class readings, videos, and Skill Builder problems provide you with a structured introduction to the basic ideas of new material so that we can review, discuss, and practice concepts during in-class meetings. Completing the pre-class ORION diagnostic assignment serves two roles. First, it gives you an idea about the level of mastery you achieved from reading the textbook, watching online videos, etc. Second, it guides my decisions about what activities to plan and what concepts to focus on in the upcoming class meetings.

Pre-class assignments are graded either *Satisfactory* or *Unsatisfactory* on the basis of completeness and effort (not correctness). Deadlines for submitting pre-class assignments are listed on class schedule and on Canvas.

### Online homework (WileyPLUS)

This assignment requires that you show that you mastered the material. You can attempt each question only once, however if you do not get a percentage correct to show mastery, you can reset the assignment and try again. Resetting the assignment will generate a new set of questions for you to attempt. Your best attempt at this assignment will be your final recorded score. Resetting the assignment will not change the difficulty level of the questions. Details and deadlines for submitting online homework will be listed on WileyPLUS.

### Learning target assessments (LTAs)

The content and the skills you will learn in the course are divided into multiple Learning Targets (LTs). There is approximately one learning target for each chapter of the textbook that we will cover this semester.

Throughout the semester, you will be asked to provide evidence that you mastered the skills and concepts that by completing short quizzes, each addressing a single Learning Target. The quizzes, called Learning Target Assessments, or LTAs, are graded either *satisfactory* or *progressing*. What constitutes *satisfactory* or *progressing* work will be spelled out explicitly for each Learning Target and made known to you in advance but typically it means answering correctly >75% of queststions. (A sample LTA for each chapter will be posted on Canvas.)

Each attempt requires a token (see section below for more details). Students can attempt LTAs during in-class sessions, during office hours, or by appoinment. LTAs can be attempted multiple times. There are mechanisms set in place to encourage/force you to maintain reasonable progress on your

portfolio throughout the semester and not to procrastinate, and also to keep the grading workload small enough that I can get feedback to you quickly. Check section on Reasessment below for details.

### Take-home assignments

Students who aspire to receive the highest grade in this course and/or consider using me as a reference for their graduate/professional school applications will be asked to earn *satisfactory* grade on additional take-home assignments on spectroscopy, synthesis, and other special topics.

### Final examination

Final exam will be on **Wednesday, May 15th, 08:45–10:45 AM**. Final exam is composed of 70 multiple choice questions designed by experts from the American Chemical Society.

### Participation

You will also have opportunity to earn *participation credits (PC)*. A participation credit will be awarded for participation in clicker questions or asking an insightful question in class or during office hours. Some additional participation credit opportunities may be announced in advance.

Research shows that student response systems (clickers) help students learn more and do better in the course. I have successfully used the student response system to gauge student learning and direct the flow of the lecture. Student polling will be used in almost every lecture and students must respond to at least 75% of questions on a particular day to earn PC for participation in the session.

## How your course grade is determined

CHEM 128B uses a mastery-based grading system that is designed to provide you with control over the grading process. Your course grade in CHEM 128B will be determined by the quantity and quality of evidence you can provide that you have mastered the concepts of the course. At the beginning of the semester, you will be able to decide on the target grade you plan to earn for the course. This can be an "A", "B", or even a "C", depending on your circumstance.

**You will have multiple attempts to earn a *satisfactory* grade on majority of key assignments**. The grading system in this course allows revisions and multiple attempts to demonstrate a *satisfactory* level of learning. Grades on LTAs are not final until the end of the semester because quizzes can be attempted again. Quiz retake policy is described in more detail below (see Course Policies section).

### Final letter grade

The grade you earn at the end of the semester is determined by refering to table below. There are no statistical or numerical adjust (a.k.a. grading on a curve). All items within "grade bundle" must be completed to receive the letter grade. Failing grade (F) is given if not all the requirements for a "D" are met.

**"D" Bundle**

- completed ORION assignments for chapters 1-11;
- completed 5 ORION pre-class assignments;
- *satisfactory* on 5 Chapter LTAs;
- two of the following:
  - 40% on WileyPLUS Mastery homework,
  - 40% of *Participation Credits*,
  - 40% Proficiency on ORION;
- 20% on the final (ACS) exam;

**"C" Bundle**

- completed ORION assignments for chapters 1-11;
- completed 6 ORION pre-class assignments;
- *satisfactory* on 6 Chapter LTAs;
- *satisfactory* on spectroscopy (level 1);
- *satisfactory* on synthesis (level 1);
- two of the following:
  - 50% on WileyPLUS Mastery homework,
  - 50% of *Participation Credits*,
  - 50% Proficiency on ORION;
- 30% on the final (ACS) exam.

**"B" Bundle**

- completed ORION assignments for chapters 1-11;
- completed 7 ORION pre-class assignments;
- *satisfactory* on 7 Chapter LTAs;
- two of the following:
  - *satisfactory* on spectroscopy (level 2);
  - *satisfactory* on synthesis (level 2);
  - *satisfactory* on special topic essay;
  - 50% on final exam;
- two of the following:
  - 60% on WileyPLUS Mastery homework,
  - 60% of *Participation Credits*,

  - 60% Proficiency on ORION;
- 40% on the final (ACS) exam.

**"A" Bundle**

- completed ORION assignments for chapters 1-11
- completed 8 ORION pre-class assignments
- *satisfactory* on 8 Chapter LTAs
- three of the following:
  - *satisfactory* on spectroscopy (level 3);
  - *satisfactory* on synthesis (level 3);
  - *satisfactory* on special topic essay;
  - 60% on final exam
- two of the following:
  - 70% on WileyPLUS Mastery homework,
  - 70% of *Participation Credits*,
  - 70% Proficiency on ORION
- 50% on the final (ACS) exam

### Reassessment

The grading system in our course insists that you show consistent excellence in all assignments in the course—outstanding work on homework, for example, does not "bring up" poor work on LTAs. This can be challenging, but the course also provides a robust system of revision and reassessment for most graded tasks, so that if you aren't happy with a grade on an assignment, you'll have multiple chances to try again or fix any mistakes.

Scores for WileyPLUS "Mastery" homework are final. If you do not get a percentage correct to show mastery (>75%), you can reset the assignment and try again until the deadline.

Students can request reassessment for any unsuccessful LTAs. Each additional attempt will cover the same material and have similar problems but will not be identical to past quizzes. Students can attempt up to three LTAs during a reassessment session or up to two LTAs during a single office hour visit. The 20-minute of LTA is firm and no extra time will be allowed. To request a (re)assessment, student must reserve an appointment on Canvas (look for "Find Appointments" feature in Calendar).

I found that students tend to defer LTAs until it's too late. Thus, if an attempt at passing a chapter LTA occurs later then 3 weeks after covering it in class (first attempt) or 3 weeks after previous unsuccesful attempt, it will cost two tokens.

If you receive either a *Progressing* or *Incomplete* mark, you will receive feedback on your work, and you can use the feedback to make corrections and then resubmit your work for regrading. You may submit up to one revision per week.

### Tokens

Tokens are a "currency" in the course that you use to purchase LTA attempts, assignment regrades, and exceptions to some course rules. Each student begins the course with 20 tokens, and tokens can purchase any of the following:

- one token buys one attempt at passing one LTA;
- one token buys 24-hour deadline extension for online "Mastery" homework;
- two tokens buy one attempt at one LTA beyond the three week window;
- two tokens buy one participation credit; and
- three tokens buy ORION proficiency meter reset.

## What are my expectations?

**I want you to be successful in this course.** I will do my utmost to help you do this, by creating and maintaining a learning environment based on challenge and support and giving my highest professional commitment to your success and well-being. But, **I cannot achieve success for you**. Success in college courses comes from cooperation with instructors, interaction with your classmates, and diligent effort throughout the semester. I like to compare successful classroom interactions to interactions between players and coaches on a sports team. Players do the work and coaches make sure players do the work that helps players succeed.

To be successful in the course, you need to make sure you are always giving an effort to do the following:

- Prepare for the class through the pre-class learning exercises (Skill Builder).
- Attend all class meetings and participate in class activities.
- Be proactive in completing course work and avoid procrastination in all things.
- Maintain awareness of course announcements and calendar events, by regularly checking email, and the course calendar.
- Take initiative to seek out help when you are stuck or have a question by using office visits, SI, study groups, and whatever else works for you.
- Maintain a positive attitude about the class and what you are learning.

There are many strategies to study Organic Chemistry. The hardest and one I don't recommend is rote memorization. There will be a lot of new words, definitions, names, and structures that you will have to commit to memory. Memorizing *everything*, however, is nearly impossible because the amount of material that is covered increases dramatically as the semester progresses. Understanding of the trends, principles, connections, and logic of chemical transformation will give you better chances of success.

### Expectations for professor

My primary responsibility is to create a learning environment where it's safe to take risks and make mistakes, without shaming or judgment, and to give you feedback and guidance as you grow in your understanding of the subject. As my students, you have a right to expect from me:

- carefully designed and executed learning activities both in and out of class;

- informative feedback on, and timely return of all graded work (I strive to return all graded work within one week of your turning it in);
- timely responses to all communications; and
- respectful, professional treatment in all personal interactions.

If you perceive that I am falling short in any of these expectations, you have the right and responsibility to give constructive feedback that helps me improve. I will consider all reasonable suggestions in the course regarding my instruction or the course design.

### Supplemental Instruction

Supplemental Instruction (SI) is provided for all students who want to improve their understanding of the material taught in this course. SI sessions are led by a student who has already mastered the course material and has been trained to facilitate group sessions where students can meet to compare class notes, review and discussimportant concepts, develop strategies for studying, and prepare for exams. The SI leader attends this class and communicates regularly with the instructor to ensure that accurate information is given. Attendance at SI sessions is free and voluntary for any student enrolled in this course. Students may attend as many times as they choose. A session schedule will be announced in the first few weeks of class. Learn more by watching this video: http://youtu.be/yTLGu5TLOUI

## Course policies

### Technology issues when submitting work

WileyPLUS and ORION assignments are submitted electronically. It is the student's responsibility to make sure these items are submitted on time, through any means necessary, even if technology issues arise. If a tech issue arises that prevents your being able to submit work on time, it is your responsibility to find another way to get it to me (for example, via an email attachment). Technology issues that are avoidable or resolved with a simple work-around will not be considered valid grounds for a deadline extension. For example, if you are trying to upload a Lab to Canvas and Canvas won't accept the file, you should try again later or send the file as an email attachment until you can upload it successfully.

### Recording of in-class content

Audio and video recordings of class lectures are prohibited unless I give you explicit permission to do it. Students with an official letter from the Services for Students with Disabilities office may record the class if SSD has approved that service.

### Academic Dishonesty

Your work on Learning Target Assessments must be done individually, and all collaboration is prohibited.

For take-home assignments you are allowed and encouraged to work with others. However, the final product that you submit for feedback must be the result of your own efforts. Therefore, you may share ideas and strategies with others, but collaboration on the actual finished product you submit is

not allowed. Your work is expected to be the product of your own thinking, written and explained in your own words with no parts of the work copied from external sources such as books or websites, and done clearly enough in your own mind that you could explain the work from start to finish if asked. Specifically, this excludes:

- copying work from another student;
- copying work from a website;
- paraphrasing work done by another student or from print or internet resources—i.e. putting it in your own words—without coming up with the main ideas and strategies yourself; and
- *allowing or enabling* another student to copy or paraphrase work that you did, even if you did the original work yourself.

Violation of this policy is considered "academic dishonesty" and carries with it strong punitive measures mandated by Fresno State, including possible automatic failure of the course or suspension from the university. For details, please see APM 235 by going to http://www.fresnostate.edu/aps/documents/apm/235.pdf.

You may feel tempted to academic dishonesty at some point in the semester. The work can be difficult, and many of you are under a lot of stress. If you are considering academic dishonesty, please STOP, take a breath, and remember that your classmates and I want you to succeed in the course. You are not alone, and you have a strong network in the class for getting help. The revision and resubmission policies mean that it's OK to turn in work that isn't perfect. There is no need to be academically dishonest! Just do your best on the work, and you'll have the chance to revise it later.

### Dropping the course

Students may drop classes using the on-line system through Thursday, February. The Drop/Withdrawal Form, signed by instructor and department chair, is needed to drop a course after that date. Withdrawals processed before 9/20 will not show on the official transcript. Serious and compelling drop period begins on September 21 and ends on November 20. More details on Admissions web pages

A *serious and compelling reason* is defined as an unexpected condition that is not present prior to enrollment in the course that unexpectedly arises and interferes with a student's ability to attend class meetings and/or complete course requirements. The reason must be acceptable to and verified by the instructor of record and the department chair. The condition must be stated in writing on the appropriate form. The student must provide documentation that substantiates the condition.

Failing or performing poorly in a class is not an acceptable "serious and compelling reason" within the University policy, nor is dissatisfaction with the subject matter, class or instructor.

## University policies and disclaimers

In addition to course policies, you are expected to be familiar with Academic Regulations described in the University Catalog as well as policies listed below.

- Class Schedule Policies: http://fresnostate.edu/studentaffairs/classschedule/policy/
- Copyright Policy: http://libguides.csufresno.edu/copyright

- Students with Dissabilities: http://fresnostate.edu/studentaffairs/careers/students/interests/disabilities.html
- Academic Integrity: http://fresnostate.edu/studentaffairs/studentconduct/academic-integrity/
- Policy on Cheating and Plagiarism: http://fresnostate.edu/studentaffairs/studentconduct/policies/cheating-plagiarism.html
- Add/Drop Course: http://www.fresnostate.edu/studentaffairs/registrar/registration/add-drop-deadlines.html

## Appendix A: Grading rubrics

- Pre-class ORION assignments are graded either *satisfactory* (S) or *unsatisfactory* (U) and are graded on the basis of completeness, effort, and timeliness.

| Mark | Description |
|---|---|
| S | Completed initial diagnostic activity for the chapter. Every item on the assignment has a response that represents a good-faith effort to answer correctly; and the work is submitted before the deadline. |
| U | No work submitted; or work is submitted that is late, has at least one blank response, or at least one response that is not a serious attempt. |

- WileyPLUS Mastery assignments are typically 10 questions on a particular topic and require that you attempt each of the questions and get a total percentage correct. You can attempt each question only once, however if you do not get a percentage correct to show mastery (>75%), you can reset the assignment and try again. Resetting the assignment will generate a new set of questions for you to attempt. Your best attempt at this assignment will be your final recorded score. Resetting the assignment will not change the difficulty level of the questions. 75% or more correct to receive 10 points; 50% or more correct to receive 5 points; less than 50% correct to receive 0 points.
- Learning Target Assessments (LTAs) are graded either Satisfactory (S) or Progressing (P) using criteria spelled out individually for each target.
- Take-home assignments are graded either Satisfactory (S), Progressing (P), or Incomplete (I). The base criteria for all assignments are as follows (some may have additional criteria which will be explained withing the assignment):

| Mark | Description |
|---|---|
| S | Understanding of the concepts is evident, although there may be a small number of mistakes in the work that do not significantly affect the overall reasoning. All solutions are backed up by work that is clearly shown and easy to read. |
| P | Partial understanding of concepts is evident, and all parts of the solution have a good-faith attempt. But there are significant errors in computation, logic, or writing that affect the overall reasoning. The work should be revised. |
| I | No work submitted or there are significant omissions in the work, such as parts of the solution left blank intentionally or essential parts of the reasoning behind the answers that are missing or unreadable. Not enough information to determine if the concepts are fully understood. |

## Course calendar

### Important dates

| Date | Day | Item | Comment |
|---|---|---|---|
| 01/15 | Tue | First day of Spring Semester | |
| 01/17 | Thu | First day of instruction | |
| 01/21 | Mon | Holiday - Martin Luther King Jr. Day | |
| 02/07 | Thu | Last day to drop course online via Student Center | Permission not required. No [W] will show on transcript |
| 02/13 | Wed | Last day to drop course via paper form | Permission required. No [W] will show on transcript. |
| 02/18 | Mon | Holiday - President's Day | |
| 04/01 | Mon | Holiday - Cesar Chavez Day | |
| 04/15 | Mon | Spring Break begins | |
| 04/16 | Tue | Last day to drop for serious and compelling reason (paper form) | Permission required. [W] will show on transcript. |
| 05/08 | Wed | Last day of Fall instruction | |
| 05/10 | Fri | Last day to retake LTAs | |
| 05/15 | Tue | Final exam (08:45-10:45 AM) | ACS exam (multiple choice) |

### Class meeting schedule

| W | L | Date | | Topics of in-class meeting | Reading assignment |
|---|---|---|---|---|---|
| 1 | 1 | 01/18 | Fri | Introductions | Syllabus |
| 2 | X | 01/21 | Mon | NO CLASS (MLK Day) | |
| 2 | 2 | 01/23 | Wed | Acid–base reactions of alcohols. The Grignard reaction. | Chapter 12 |
| 2 | 3 | 01/25 | Fri | Redox reactions that involve alcohols | |
| 3 | 4 | 01/28 | Mon | Alcohols in organic synthesis. | |
| 3 | 5 | 01/30 | Wed | Ring-opening reactions of epoxides | Chapter 13 |
| 3 | 6 | 02/01 | Fri | Ethers and epoxides in organic synthesis | |
| 4 | 7 | 02/04 | Mon | Infrared (IR) spectroscopy | Chapter 14 |
| 4 | 8 | 02/06 | Wed | Mass spectrometry | |
| 4 | 9 | 02/08 | Fri | NMR: Chemical shift and integration | Chapter 15 |
| 5 | 10 | 02/11 | Mon | NMR: signal shape (multiplicity) | |
| 5 | 11 | 02/13 | Wed | Spectroscopic analysis in practice | |
| 5 | 12 | 02/15 | Fri | Spectroscopic analysis in practice | |
| 6 | X | 02/18 | Mon | NO CLASS (President's Day) | |
| 6 | 13 | 2/20 | Wed | | |
| 6 | 14 | 2/22 | Fri | | |
| 7 | 15 | 2/25 | Mon | | |
| 7 | 16 | 2/27 | Wed | | |

| W | L | Date | | Topics of in-class meeting | Reading assignment |
|---|---|---|---|---|---|
| 7 | 17 | 3/1 | Fri | | |
| 8 | 18 | 3/4 | Mon | | |
| 8 | 19 | 3/6 | Wed | | |
| 8 | 20 | 3/8 | Fri | | |
| 9 | 21 | 3/11 | Mon | | |
| 9 | 22 | 3/13 | Wed | | |
| 9 | 23 | 3/15 | Fri | | |
| 10 | 24 | 3/18 | Mon | | |
| 10 | 25 | 3/20 | Wed | | |
| 10 | 26 | 3/22 | Fri | | |
| 11 | 27 | 3/25 | Mon | | |
| 11 | 28 | 3/27 | Wed | | |
| 11 | 29 | 3/29 | Fri | | |
| 12 | X | 4/1 | Mon | NO CLASS (Cesar Chaves Day) | |
| 12 | 30 | 4/3 | Wed | | |
| 12 | 31 | 4/5 | Fri | | |
| 13 | 32 | 4/8 | Mon | | |
| 13 | 33 | 4/10 | Wed | | |
| 13 | 34 | 4/12 | Fri | | |
| 14 | X | 4/15 | Mon | NO CLASS (Spring Break) | |
| 14 | X | 4/17 | Wed | NO CLASS (Spring Break) | |
| 14 | X | 4/19 | Fri | NO CLASS (Spring Break) | |
| 15 | 35 | 4/22 | Mon | | |
| 15 | 36 | 4/24 | Wed | | |
| 15 | 37 | 4/26 | Fri | | |
| 16 | 38 | 4/29 | Mon | | |
| 16 | 39 | 5/1 | Wed | | |
| 16 | 40 | 5/3 | Fri | | |
| 17 | 41 | 5/6 | Mon | | |
| 17 | 42 | 5/8 | Wed | | |
| 17 | | 5/9 | Thu | Consultation Day | |
| 17 | | 5/10 | Fri | Consultation Day | |
| | | 5/15 | Wed | 08:45–10:45 AM: FINAL (ACS) EXAM | |