

CHEMISTRY 7430 SYLLABUS

Fall 2020

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Accessibility & Support: The most preferred method of personal communication is for students to speak with Prof. Hammond during scheduled live Zoom sessions (immediately after interactive discussion sections, TTh 9-9:30 AM and during office hours on Fri 11:30 AM-12:30 PM). For items that require individual attention, we can use a Zoom breakout room. For questions about class logistics, lecture materials and assignments, and anything else your classmates may wonder as well, students are encouraged to use the Discussion Board. Prof. Hammond typically will review these queries in advance (TTh 5-8 AM) to prepare to address these questions during live discussion sessions. For items that require individual attention, you may email Prof. Hammond or leave a voicemail, however due to family and childcare responsibilities, a same-day response to emails and voicemails is highly unlikely. Please make sure to include "CHEM 7430" in the email subject line or it will get lost in the inbox.

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COURSE DESCRIPTION

(From the Course Catalog) This course is intended for advanced undergraduate and first-year graduate students in Chemistry, Biology, Biochemistry, Biotechnology, and Bioengineering. The subject matter will include a brief background on biomolecular structure and function, then focus on the use of organic chemistry as a tool for manipulating biomolecules, exploring the breakthrough technologies that have enabled recent advantages in fields including protein labeling, protein interactions, biosensors, and nanotechnology. Prerequisites: Organic Chemistry (2 semesters) and Biochemistry (1 semester). 2 credits.

COURSE DETAILS

- **Course Type:** Interactive Video Conferencing (IVC - synchronous online)
- **Location & Meeting Times:** Required interactive discussion sections will be held by Zoom from 8-9 AM on Tues and Thurs. Prof. Hammond will also be available for one-on-one meetings immediately after discussion sections from 9-9:30 AM. Optional interactive office hours will be held by Zoom from 11:30 AM-12:30 PM on Fri or by appointment.
- **Attendance & Punctuality:** Students are required to participate in the discussion sections and attendance will be logged by 8:05 AM (when we will be working on the first activity). If you are ill or are experiencing technical

issues, please email Prof. Hammond or leave a phone message before 8:05 AM to receive an exemption for missing or being late to the discussion section.

- **COVID-19 Considerations:** Students must self-report if they test positive for COVID-19 via coronavirus.utah.edu. Please note that this self-reporting mechanism does not inform Prof. Hammond re: discussion section attendance. If you will miss multiple discussion sections due to COVID-19 or other long-term illness, please contact Prof. Hammond.
- **Course Materials:** All course materials may be accessed via the Chem 7430 Canvas page. Lecture videos, slides, notes, and quizzes will be posted by 11:00 AM on Mon and Wed. Problem sets and problem set solutions will be posted by announcement. All materials for this course are copyrighted. Do not distribute or share course resources without instructor permission.
 - **Textbook:** No textbook covers all of the materials in this course, however the instructor will provide related book chapters via the class Canvas page.
- **Technical requirements:**
 - Knowledge and navigation of Canvas and Zoom is critical to access all features and resources of this course. For technical assistance, review the [Canvas Getting Started Guide for Students](#). Please ask Prof. Hammond to give a tutorial in office hours if you need it.
 - A strong internet connection and adequate bandwidth is needed for live Zoom sessions (discussion sections, office hours, exams).
 - Exams will be proctored using Zoom with audio and video enabled.
- **Syllabus subject to change:** This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas.

COURSE EXPECTED LEARNING OUTCOMES

- Students will gain and demonstrate a broad understanding of research strategies, experimental methods, and data analysis methods employed in the field of chemical biology
- Students will apply background concepts from biochemistry and organic chemistry
- Students will practice reading, searching, and evaluating primary literature

COURSE DESIGN

-Course topics first will be covered using a combination of pre-recorded lecture videos, lecture slides and notes, and assigned reading. Lecture content will be posted on Canvas by 11:00 AM on Mon and Wed. Prof. Hammond suggests that students in the course consider organizing “virtual watch parties” as part of cohort and study group building.

-Lecture quizzes are low-stakes assessments that provide students with accountability and ensure students are adequately prepared for interactive discussion sessions. Lecture quizzes are individually submitted but can be worked on together. Lecture quizzes will be posted on Canvas by 11:00 AM on Mon and Wed.

-Course topics next will be reinforced by interactive discussion sessions that will include live problem solving, explanation of points raised in lecture videos, and responding to student questions. In addition, discussion sessions provide students with the opportunity to request any needed clarification on lecture materials from the instructor.

-Low-stakes assessment of discussion section participation provides students with accountability and ensure students are adequately prepared for problem sets.

-Problem sets are medium-stakes assessments that provide students with accountability and ensure students are following and learning the material at a reasonable pace. Problem sets allow students to practice applying their knowledge of the course material as well as prerequisite knowledge in new and different ways, and as such are meant to prepare students for exams. Students are encouraged to work together in study groups but must show their own work to receive credit. Again, problem sets are the best preparation for exams, so students should make sure that they understand how to arrive at solutions. A Canvas announcement will be made when a problem set is posted.

-Lit searches are medium-stakes assessments that generate a resource for all students to use to select a journal paper for the oral presentation. Lit searches provide students with practice searching the primary literature.

-Each student will prepare an oral presentation on a selected journal paper that will be presented live during discussion sessions. Presenters will gain practice reading and evaluating primary literature, giving a literature presentation

as required for Chem graduate students in their second year. Listeners will see the connection between course topics and contemporary research. Presenters will meet with Prof. Hammond one-on-one to prepare for this high-stakes assessment.

-Each student will prepare a multi-part question and solution set based on a journal paper. The lit problem provides students with a different way to apply their knowledge of the course material, and to connect specific course topics with contemporary research. Students will submit a draft to Prof. Hammond to receive feedback in advance for this high-stakes assessment.

-Two exams will each cover roughly half of the course topics and will assess whether students demonstrate a broad understanding of research strategies, experimental methods, and data analysis methods employed in the field of chemical biology. Prof. Hammond will prepare study guides detailing which specific concepts and topics will be covered on each exam and will conduct review sessions to help students prepare for these high-stakes assessments. A Canvas announcement will be made when a study guide is posted.

CLASS SCHEDULE & IMPORTANT DATES

Mandatory Online Instruction Periods: All classes will be online the weeks of October 5-10 and November 30-December 3. Since the class type is IVC, no change is expected to the way the class is conducted during these periods.

Exam Dates: Exam I will be held by Zoom from 8-9:45 AM on Tues, Sept 22. Exam II will be held on Zoom, 8-9:45 AM on Tues, Oct 13.

Official Drop/Withdraw Dates: The last day to drop classes is Fri, Aug 28; the last day to withdraw from this class is Fri, Sept 18. Please check the academic calendar for more information pertaining to dropping and withdrawing from a course. Withdrawing from a course and other matters of registration are the student's responsibility.

Holidays: There will be no class on Monday, September 7 (Labor Day) and November 26-29 (Thanksgiving break).

Please see Detailed Schedule PDF for all expected assignment deadlines

| Class # | Date (Video + Discussion) | Topic/Exam |
|---------|-----------------------------|---|
| 1 | TUES 8/24 + <u>8/25</u> | Intro and overview; Protein chemistry: AA, pKa's |
| 2 | THURS 8/26 + <u>8/27</u> | Protein chemistry: Conformations, Peptidomimetics |
| 3 | TUES 8/31 + <u>9/1</u> | Protein chemistry: Solid phase peptide synthesis |
| 4 | THURS 9/2 + <u>9/3</u> | Protein chemistry: Native chemical ligation (NCL), Expressed protein ligation (EPL) |
| 5 | TUES 9/7 + <u>9/8</u> | Protein chemistry: Bioconjugation reactions, Protein mutagenesis |
| 6 | THURS 9/9 + <u>9/10</u> | Cell bio: Fluorescence, Fluorescent proteins |
| 7 | TUES | Cell bio: Protein fusions, Hybrid proteins |

| | | |
|----|-----------------------------|---|
| | 9/14 + <u>9/15</u> | |
| 8 | THURS 9/16 + <u>9/17</u> | Cell bio: Proteasome, PROTACS |
| 9 | TUES <u>9/22</u> | Exam 1 (8-9:45 AM) |
| 10 | THURS 9/23 + <u>9/24</u> | Post-translational modifications (PTMs): Glycosylation, Metabolic incorporation |
| 11 | TUES 9/28 + <u>9/29</u> | PTMs: Bioorthogonal reactions |
| 12 | THURS 9/30 + <u>10/1</u> | PTMs: Phosphorylation, Bump-hole method |
| 13 | TUES 10/5 + <u>10/6</u> | Signaling: Protease cascades, Activity-based Protein Profiling (ABPP) |
| 14 | THURS 10/7 + <u>10/8</u> | Signaling: Ions and second messengers, Biosensors; Exam 2 review |
| 15 | <u>10/13</u> | Exam 2 (8-9:45 AM) |

Underlined: Scheduled live Zoom sessions, 8-9 AM for discussion section and 8-9:45 AM for exams

COMMUNICATION

- All course materials, such as lecture videos, assignments, solutions, grades, etc. will be posted on the Chem 7430 Canvas site. Class announcements will be done via email through the Canvas server and/or at beginning of lecture videos posted on Canvas. You will be responsible for any information contained in them as well as the information announced during live discussion sections.
- It is your responsibility to also regularly check your Umail (make sure you set up forwarding if you do not check it regularly), your Umail is the only way for me to communicate privately with you, there may be occasions during the semester that that I may need to reach out to you individually (e.g. regarding a grade or assignment) and it is in your best interest to respond promptly.
- Feel free to contact me by email for questions at mingch@chem.utah.edu, but please make sure to include "CHEM 7430" in the email subject line. I will do my best to answer emails promptly, but please see Accessibility & Support for my schedule details. I would like to encourage you to email me only if it is something personal that requires individual attention, if instead you have questions about logistics of the class, course material and assignments, and anything else your classmates may wonder as well, please post a question on the Discussions Board instead. This way the information is shared quickly to the entire class, and each of you can benefit from seeing other classmates' questions.
- I will always do my best to ensure the communication relevant to the course is clear and transparent, it is your responsibility as well to keep yourself updated by regularly checking: the announcements on Canvas, your Umail, the posts on the Discussions Board, and pay attention to the announcements given in lecture videos and live discussion sections.
- Course Canvas Page: Students are strongly advised to set up notifications for Canvas so they do not

miss any important notifications.

NETIQUETTE - EXPECTATIONS FOR ONLINE LEARNING ENVIRONMENT

- Classroom equivalency: Respectful participation in all aspects of the course will make our time together productive and engaging. Zoom discussions, discussion board threads, emails, and Canvas are all considered equivalent to classrooms and student behavior within those environments shall conform to the student code. Specifically:
 - Posting photos or comments that would be off-topic in a classroom are still off-topic in an online posting.
 - Disrespectful language and photos are never appropriate.
 - Using angry or abusive language is not acceptable, and will be dealt with according to the Student Code. The instructor may remove online postings that are inappropriate.
 - Do not use ALL CAPS, except for titles, or overuse certain punctuation marks such as exclamation points and question marks.
 - Course e-mails, e-journals, and other online course communications are part of the classroom and as such, are University property and subject to the Student Code. Privacy regarding these communications between correspondents must not be assumed and should be mutually agreed upon in advance, in writing.
- Other expectations for online communication (on Discussion Board, Emails, Zoom chat etc):
 - Live Zoom Discussions: It is recommended that students log into Zoom with audio and video enabled, if possible. Please use your preferred first name and last name for your display name so your attendance can be accurately recorded. You may add your preferred pronouns to your display name. We will set up and use a class virtual background.
 - Emails: When emailing your Instructor please keep a professional tone (e.g. Use a descriptive subject line, avoid “Hey” and always use your professors’ proper title: Dr. or Prof., Sign your message with your name and return e-mail address. Please consult this page for tips on how to write appropriate professional emails: <https://academicpositions.com/career-advice/how-to-email-a-professor>
 - Treat your instructor, her administrative assistant, and classmates with respect in email or any other communication.
 - Remember that all college level communication should have correct spelling and grammar (this includes discussion boards).
 - Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and your message might be taken seriously or be offensive to others.
 - Be careful with personal information (both yours and others).
- Electronic or equipment failure: It is your responsibility to maintain your computer and related equipment in order to participate in the online portion of the course. Equipment failures will not be an acceptable excuse for late or absent assignments.
- Online submissions: You are responsible for submitting the assignment with the required naming convention, correct file extension, and using the software type and version required for the assignment.

ASSIGNMENTS, ASSESSMENT & GRADING

| Assignment Types | # | Points Each | Points Total |
|---------------------------|----|-------------|--------------|
| Lecture Quizzes | 13 | 5 | 65 |
| Discussion Participation* | 13 | 5 | 65 |
| Problem Sets | 5 | 40 | 200 |
| Lit Searches | 5 | 14 | 70 |
| Oral Presentation | 1 | 100 | 100 |
| Exams | 2 | 200 | 400 |
| Lit Problem | 1 | 100 | 100 |
| TOTAL | | | 1000 |

*Students with exemplary participation in class discussions will earn a round-up for their grade if they are 'on the bubble'

Late/Missed Assignment Policy: Lecture quizzes, discussion participation, lit searches, and problem sets cannot be made up if late. However, students are permitted to miss one lecture quiz and one discussion participation (the lowest quiz and participation assignments will be dropped). Students who miss problem set(s) due to a family or health emergency may receive a pro-rated score with instructor approval. Students can request an extension for the oral presentation or lit problem due to a family or health emergency. Students who miss an exam due to a family or health emergency will get a pro-rated score or will take an oral exam by appointment with Prof. Hammond. There will be no written make-up exam.

Regrade Policy: It is the student's responsibility to ensure the accuracy of all recorded assignment grades. If you see any error in your grades on Canvas, please reach out to the instructor as soon as possible.

Exams: Each exam will cover roughly half of the course material; a detailed study guide will be provided to help you study. Exams will be conducted online and will be open notes and open book. Allowed resources: your notes and all Chem 7430 Canvas materials (lecture slides, notes, solution sets, study guide, and book chapter PDFs). Disallowed: non-7430 sources on the internet, other people. Exams will be proctored and recorded using Zoom with audio and video required. Prof. Hammond will be available to help students with questions during the exam via Zoom break-out rooms. The following is the expected exam schedule:

| | |
|--------------|--|
| 8-8:05 am | Students must sign in to Zoom by this time |
| 8:05-8:15 am | Set up remote proctoring sessions |
| 8:15-9:15 am | Students take exam (1 h time limit) |
| 9:15-9:45 am | Exam answer submission window |

Incompletes: According to university policy, to be considered for an incomplete, a student must have 20% or less of the course work remaining and be passing the course with a C or better. You must request an incomplete grade and I will consider giving that grade only under exceptional circumstances.

Grading: Final grade will be calculated based on a normalized grading scale, where the average of top 5% scores will be set as the final point total (e.g. last year, student point totals were divided by 905 instead of 1000, but this value is different from year-to-year). Typically, 100+ to 95 = A, 94-90 = A-, while grading ranges for B+ and lower are wider but varies from year-to-year.

ACADEMIC CODE OF CONDUCT

Students are encouraged to review the Student Code for the University of Utah: <https://regulations.utah.edu/academics/6-400.php>. In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating. A student who engages in academic misconduct as defined in Part I.B. may be subject to academic sanctions including but not limited to a grade reduction, failing grade, probation, suspension or dismissal from the program or the University, or revocation of the student's degree or certificate. Sanctions may also include community service, a written reprimand, and/or a written statement of misconduct that can be put into an appropriate record maintained for purposes of the profession or discipline for which the student is preparing.

ADDITIONAL POLICIES AND RESOURCES

Inclusivity Statement: It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, and veteran status, and other unique identities. gender, sexuality, disability, age,

socioeconomic status, ethnicity, race, culture, and other unique identities. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

Discrimination and Harassment: If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or Office of the Dean of Students, 270 Union Building, 801-581-7066. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS). Please see Student Bill of Rights, section E <http://regulations.utah.edu/academics/6-400.php>. I will listen and believe you if someone is threatening you.

Names/Pronouns. Canvas allows students to change the name that is displayed AND allows them to add their pronouns to their Canvas name. Class rosters are provided to the instructor with the student's legal name as well as "Preferred first name" (if previously entered by you in the Student Profile section of your CIS account, which managed can be managed at any time). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class or on assignments. Please advise me of any name or pronoun changes so I can help create a learning environment in which you, your name, and your pronoun are respected. If you need any assistance or support, please reach out to the LGBT Resource Center. https://lgbt.utah.edu/campus/faculty_resources.php

English Language Learners. If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (<http://writingcenter.utah.edu/>); the Writing Program (<http://writing-program.utah.edu/>); the English Language Institute (<http://continue.utah.edu/eli/>). Please let me know if there is any additional support you would like to discuss for this class.

Undocumented Student Support. Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.

Veterans Center. If you are a student veteran, the U of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu/>. Please also let me know if you need any additional support in this class for any reason.

Wellness Statement. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

Student Success Advocates: The mission of Student Success Advocates is to support students in making the most of their University of Utah experience (ssa.utah.edu). They can assist with mentoring, resources, etc. Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact a Student Success Advocate for support (<https://asuu.utah.edu/displaced-students>).

The Americans with Disabilities Act:

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS).

Campus Safety: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu

University Counseling Center The University Counseling Center (UCC) provides developmental, preventive, and therapeutic services and programs that promote the intellectual, emotional, cultural, and social development of University of Utah students. They advocate a philosophy of acceptance, compassion, and support for those they serve, as well as for each other. They aspire to respect cultural, individual and role differences as they continually work toward creating a safe and affirming climate for individuals of all ages, cultures, ethnicities, genders, gender identities, languages, mental and physical abilities, national origins, races, religions, sexual orientations, sizes and socioeconomic statuses.

Office of the Dean of Students The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. Please consider reaching out to the Office of Dean of Students for any questions, issues and concerns. 200 South Central Campus Dr., Suite 270. Monday-Friday 8 am-5 pm.