

Learner-Centred Syllabus CHEM281 FALL 2024

CHEM281 FALL 2024 Dr. J Carran

Information

COURSE DESCRIPTION

CHEM 281 introduces students to the basic principles of organic chemistry with emphasis on bonding, stereochemistry, reaction intermediates and reaction mechanisms, and structure-reactivity correlations. The virtual laboratory introduces basic experimental techniques and illustrates properties of organic compounds in a virtual laboratory setting. The material builds on that learned during CHEM112 (or equivalent).

Course Author

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OFFICE HOURS TBA. Office hours will be conducted via Zoom for accessibility purposes (these sessions will NOT be recorded unless students give permission), Zoom links will be posted on ONQ. Details of any in-person office hours will be given in class.

Initial Development Date

FALL 2022

TOPICS (NOTE WE DO NOT COVER CHAPTER 9 AND 10 IN CHEM281, CHAPTERS COVERED ARE 1-8 INCLUSIVE PLUS CHAPTER 11). NOTE, NOT ALL OF THE CHAPTER MAY BE COVERED, PLEASE REFER TO THE SYLLABUS AND ANNOUNCEMENTS IN CLASS.

- What is a molecule? (Chapter 1 of textbook)
- Physical Properties and Molecular Structure (including Polarity) (Chapter 2 of textbook)
- An Introduction to Organic Reactions and their Mechanisms - Acids and Bases (Chapter 3 of textbook)
- Nomenclature and General Properties of Alkanes, Cycloalkanes, Alkenes, and Alkynes (Chapter 4 of textbook)
- Stereochemistry – Chiral Molecules (Cut off of material for midterm) (Chapter 5 of textbook)
- Nucleophilic Substitutions and Elimination Reactions of Alkyl Halides (Chapter 6 of textbook)
- Alkenes and Alkynes I – Properties and Synthesis. Elimination Reactions of Alkyl Halides and Alcohols (Chapter 7 of textbook)
- Addition Reactions (including Oxidation) of Alkenes and Alkynes (Chapter 8 of textbook)
- Alcohols and Ethers (Chapter 11 of textbook)

COURSE LEARNING OUTCOMES (CLOS)

Upon successful completion of this course, you will be able to,

1. Write names of molecules from structures and vice versa. Identify and name functional groups
2. Identify reactive sites on reagents (nucleophiles, electrophiles, acids, bases, leaving groups).
3. Identify stereochemistry of molecules in terms of nomenclature and class of compounds.
4. Predict and justify the impact of solvent and electronic effects on reactivity.
5. Predict reaction outcomes in the context of substitution, elimination, addition and rearrangement reactions and their mechanisms.
6. Explore basic experimental techniques.

Note: A certain small amount of recollection of material is expected during and as a requirement of this course. That amount is kept to a minimum though and as such a reasonably complete data sheet is provided for all exams. **Any material that is not on the data sheet and that is not derivable from first principles is expected to be material that should be recollected.**

INCLUSION

Land Acknowledgement

Queen's University is situated on the territory of the Haudenosaunee and Anishinaabek.

Equity, Diversity, and Inclusivity Statement

Queen's University recognizes that the values of equity and diversity are vital to and in harmony with its educational mission and standards of excellence. It acknowledges that direct, indirect and systemic discrimination exists within our institutional structures, policies and practices and in our community. These take many forms and work to differentially advantage and disadvantage persons across social identities such as race, ethnicity, disability, gender identity, sexual orientation, faith and socioeconomic status, among other examples. In this class I will work to promote an anti-discriminatory, anti-racist and accountable environment where everyone feels welcome. Students in this class are encouraged to participate during class discussions and to support others in their participation. Because the class will represent a diversity of individuals, beliefs, backgrounds, and experiences, every member of this class is asked to show respect for every other member.

UNIVERSITY IMPORTANT DATES

Key dates (first day of class, tuition due date, last day to add/drop courses) are important to your academic success. Please find them at [Important Dates](#).

Your midterm will be held on [REDACTED] (1h exam to be sat in a 1h window that opens at 11am and closes at 12pm, you can sit the exam anytime in this window) . (see later section on midterm and Timeline below).

TIMELINE

The **Course Announcements (News posts)** detail relevant course dates, dates for assessments such as midterms will be listed in these announcements, as well as links to other important course information. You should check the Course Announcements regularly each time you log in to the course as dates may change.

Please note, some students may see an onQ Calendar for their course. The onQ calendar does not display all dates associated with your course assignments. For complete information all of your assignments in this course, including start and close dates of assessments, please refer to the Course News announcements and your Wiley assignments pages.

In terms of a timeline there isn't a set date/lecture by which a given topic will be covered as we may move slightly faster or slower depending on questions students may have either in lectures or in discussion posts. I will introduce some problem sessions into lectures too and we can complete these together. In general my lecture speed is about 18-30 slides per lecture (note that the posted powerpoint slides do occasionally have some material for you to use for review purposes that are not covered, they are included for your reference). I may also ask you to read some material if it is simpler in nature so that we can move on to more complex topics.

COURSE MATERIALS & TECHNOLOGIES

Course Textbook

The following learning resources for this course are available from the Queen's Campus Bookstore:

- Textbook package
 - Organic Chemistry, Solomons and Fryhle, 13th ed. (Wiley)
 - Study Guide and Solutions Manual
 - Molecular Models
 - WileyPLUS online code to access digital textbook (may be purchased as part of textbook package or separately) **NOTE: DO NOT USE TRIAL VERSION. USE THE FULL VERSION AS THIS COMPONENT IS OBLIGATORY AND YOU RISK LOSING MARKS IF YOU DO NOT HAVE THE FULL VERSION.**
- Labs/Tutorials
 - Virtual labs are run in this course. They can be found under the virtual labs item in ONQ.

Recommended Materials (NOT OBLIGATORY)

- *Organic Laboratory Techniques*, Fessenden, Fessenden and Feist, 3rd ed. (Brooks/Cole)
- *Organic Chemistry I as a Second Language: Translating the Basic Concepts*, David R. Klein.

- *Organic Chemistry I As a Second Language: First Semester Topics, 3rd Edition; ISBN: 978-1-118-20377-4, 400 pages, August 2011, ©2012*
- *Organic Chemistry I As a Second Language: First Semester Topics, 3rd Edition; ISBN: 978-1-118-01040-2, 400 pages, June 2011, ©2012*
- Wiley E-Text
- Paperback

Educational Technology

WileyPlus Course Resources

NOTE: ONLY REGISTER AND ACCESS WILEY ASSIGNMENTS FROM THE LINKS IN THIS ONQ SITE (THESE WILL BE AVAILABLE SHORTLY AFTER THE START OF THE COURSE). DO NOT ATTEMPT TO REGISTER OR ACCESS THEM THROUGH A THIRD PARTY WEBSITE. THERE IS NO "COURSE ID CODE" REQUIRED FOR THIS COURSE, IF YOU ARE ASKED FOR ONE YOU ARE NOT USING THE LINKS IN ONQ.

Please follow these instructions for accessing WileyPlus:

Getting started with WileyPlus: [First Day of Class \(D2L Integration\) - Registration Videos - Student Video Tutorials - wileyplus.com \(gallery.video\)](#)

Privacy Statement for Third-Party Software

This course makes use of WileyPlus online assignments for some activities. Be aware that by your independent access of the WileyPlus online content, beyond what is required for the course (for example, purchasing the company's products), is subject to Wiley's terms of use and privacy policy. You are encouraged to review these documents, using the link(s) below, before using the site.

https://www.wileyplus.com/WileyCDA/privacy_policy.html

Calculator Policy

As noted in Academic Regulation 9.2, "Calculators acceptable for use during quizzes, tests and examinations are intended to support the basic calculating functions required by most Arts and Science courses. For this purpose, the use of the **Casio 991 series calculator** is permitted and is the only approved calculator for Arts and Science students."

Copyright of Course Materials

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the instructor's intellectual property. It is a departure from academic integrity to distribute, publicly post, sell, or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution (including note sharing sites), posting, sale or other means of dissemination without the instructor's express consent. A student who engages in such conduct may be subject to penalty for

a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Expectation for Interaction

Throughout this course, there will be opportunities for you to interact with your instructor, your teaching team (e.g., Teaching Assistants and undergraduate volunteers), and your classmates via office hours, before, during and after each lecture and ONQ discussion forums. I encourage you to do so!

You are expected to behave with integrity at all times, in face-to-face interactions and when engaging with each other online and when completing any assignments or exams. See the netiquette and discussion guidelines below which I expect each of us to adhere to when interacting with one another whether in person or online.

Note that my office hours will likely be delivered via Zoom, at least for the start of the course. Zoom links will be provided in the ONQ course website.

NETIQUETTE / DISCUSSION GUIDELINES

University is a place to share, question, and challenge ideas. Each student brings a different set of lived experiences. You can help to create a safe, respectful place for learners by following these guidelines.

1. Make a personal commitment to learn about, understand, and support your peers.
2. Assume the best of others and expect the best of them.
3. Recognize and value the experiences, abilities, and knowledge each person brings to the course.
4. Acknowledge the impact of oppression on other people's lives and make sure your writing is respectful and inclusive.
5. Encourage others to develop and share their ideas.
6. Pay close attention to what your peers write before you respond. Think through and re-read what you have written before you post online or send your comments to others.
7. Be open to having your ideas challenged and challenge others with the intent of facilitating growth. However, do not demean or embarrass others.
8. It's alright to disagree with ideas but do not make personal attacks.

SUGGESTED TIME COMMITMENT

In this course, you should expect to invest on average 8 to 10 hours per week. This will include the time you spend studying course material, practicing course objectives, and participating in course

activities and assessments. You are encouraged to adhere to a pre-determined study schedule as you will be more likely to complete the course on time successfully.

Communication

COURSE ANNOUNCEMENTS

Throughout the course, I encourage you to routinely check the **Announcements** section of the course homepage (sometimes I call this "Course News"). I encourage you to actively check the course onQ main page for course announcements throughout the semester for reminders and additional course information or learning opportunities.

COURSE QUESTIONS AND CONTACTING THE TEACHING TEAM

Throughout this course, you may come upon some general questions about the course and assignments. If you think that your question may benefit other students, you are invited to post your question in the **Course Questions** discussion forum. Feel free to help answer your peers' questions on this forum. The teaching team will monitor this discussion forum and answer questions. Most questions are answered very promptly. Any other questions that you would prefer to share privately (ie not course content based), please contact me or your TA at one of the emails listed at the top of this syllabus. The teaching team contact information is located on the homepage of the course. **AS ONLINE ASSIGNMENTS ARE FOR MARKS PLEASE DO NOT POST ANSWERS OR ASK FOR ANSWERS, YOU CAN POST QUESTIONS ASKING FOR HELP ON TOPICS ASSOCIATED WITH THE ASSIGNMENTS.**

Also note that Wiley assignments may at times have particular requirements for data input (for mechanism or drawing questions). You are encouraged to look at the various available help files and videos within Wiley or on the web to assist you in this.

QUEEN'S EMAIL

The university communicates with students via Queen's email. Please check your email regularly to ensure you do not miss important information related to your course.

COURSE FEEDBACK

At various points during the course, I may ask you to take part in a variety of feedback activities, such as surveys and questionnaires. This feedback enables my teaching team and me to make any adjustments necessary to improve your learning environment. Additional feedback may be

requested throughout the course. All surveys are anonymous and are directly related to activities, assessments, and other course material.

Assessments

WEIGHTING OF ASSESSMENTS

Assessment	Weighting
WileyPLUS Online Mastery Assignments	20%
Virtual labs	20%
Midterm Test - [REDACTED]	20%
Final Exam	40%
Total	100%

Students require a 50% overall to pass the course totalled from all course components and must attempt all assessments of significant course weighting.

DESCRIPTIONS OF LEARNING ACTIVITIES AND ASSESSMENTS

WileyPlus Online Mastery Assignments (20%)

WileyPLUS online materials are designed to help you expand your knowledge in the concepts discussed and act as a supplementary virtual tutor. The assignments provide an opportunity for you to apply your knowledge to a mastery level before moving onto another topic. Practice questions are also available to help you to check your understanding of the material and increase your skill at completing organic calculations.

The WileyPlus assignments are numbered 1-9 and are associated with the chapters we study (the assignment number usually matches the chapter number but not always, we cover chapters 1-8 inclusive which align with assignments 1-8, assignment 9 covers chapter 11). Please attempt the assignments in order and alongside the material we are currently looking at and make sure they are all completed before the suggested due date (see announcements for included accommodations for all students). Assignments should be used as a "virtual tutor" for this course, **DO NOT GET FIXATED ON GRADES FOR THIS COMPONENT OTHERWISE YOU'LL MISS OUT ON THE MOST USEFUL ASPECT OF THESE ASSIGNMENTS WHICH IS IDENTIFYING WEAK TOPIC AREAS.**

Each assignment clearly shows its hard electronic due date and time but you should aim to complete the assignments alongside the material we cover during lectures. You will have three attempts at each question in the assignment before it is marked wrong, and each successive try will be worth 80% of the total mark for that question. Check your Wiley assignments links and any course news announcements for the due dates of these assignments.

IMPORTANT NOTE ABOUT ACCOMMODATIONS FOR ASSIGNMENTS:

DUE DATES FOR ASSIGNMENTS HAVE BEEN IMPLEMENTED USING UNIVERSAL DESIGN PRINCIPLES. Please note that answers to assignments are set to be viewable after the hard electronic due date (and any included accommodations) for study and discussion purposes. For this reason, assignments cannot be extended beyond this date under any circumstances. Because of this limitation accommodations have been included on all relevant hard electronic due dates. Do not miss due dates and do not leave assignments until the last day in case of server or wi-fi outages. Note that assignments covering midterm material will have a due date before the midterm so you can use them along with answers and hints for study purposes.

Virtual Labs (20%)

The five interactive labs introduce basic techniques and illustrate properties of organic compounds. These labs include videos that demonstrate experiments and/or experimental techniques, with the incorporation of quizzing throughout each demonstration. The grade for this component is based on the completion of the labs (necessary to answer the quiz questions) and your mark from the quizzes. You should use the listed resources PLUS ANY OTHERS YOU FIND ONLINE OR ELSEWHERE to get an understanding of the following:

1. What is the technique/experiment for?
2. What equipment do you need?
3. How does the technique work?
4. What do you physically have to do?
5. Are there any safety considerations?
6. Are there any limitations?
7. How do I treat any results?

Midterm Test (20%)

This short auto-graded test of 1h duration will be administered through ONQ and will consist of a combination of multiple choice/fill in the blanks/multiple selection type questions **covering module material from weeks 1-6 of the course, the exact cutoff of material for the midterm will be announced in class.** The midterm will be on [REDACTED] and will be set for 1h duration. **Anyone who cannot sit the common midterm exam time will be accommodated by reweighting of the final exam but you must contact your instructor about this. DO NOT SCHEDULE ANY ACTIVITIES FOR THIS DATE/TIME.**

Students with QSAS approved accommodations will have those accommodations applied to the midterm as long as their information has been input into Ventus at least 10 days prior to the midterm date.

Final Exam (40%)

This will be a 3H on-campus proctored final exam:

- Your Final exam will comprise 2 sections: a multiple choice section of 30-40 questions followed by a long answer section on the content contained in the main course materials. The final exam will be slightly biased towards material from the latter half of the course after the midterm content but you should note that as each topic builds on the previous topic questions on the final can be expected from all the material covered in the course.

ALIGNMENT OF ASSESSMENTS WITH LEARNING OUTCOMES

Course Assessment	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
WileyPLUS Online Mastery Assignments	X	X	X	X	X	X
Virtual labs	X	X	X	X	X	X
Midterm Test	X	X	X	X	X	X
Final Exam	X	X	X	X	X	X
Lab Exam	X	X	X	X	X	X

LATE ASSIGNMENT SUBMISSION POLICY (ALSO SEE ABOVE-IMPORTANT NOTE ABOUT ACCOMMODATIONS FOR ASSIGNMENTS).

All assignments have a built-in automatic accommodation for all students to use at their discretion. All WileyPlus assignments have **two due dates**, the first is an expected due date that follows the delivery of materials in lecture. **An assignment associated with lecture material is expected due at the end of the week for that module as outlined in the timeline.** The second is a hard electronic deadline beyond which no extensions are allowed or possible. Any assignment answers submitted after the hard electronic deadline will not be accepted. **Hard deadlines have been set with generous due dates and answers are set to be available after those due dates for students to use for study purposes. There are thus no extensions possible for online assignments beyond the hard electronic deadline ALL ACCOMMODATIONS, QSAS AND OTHERWISE, ARE INCLUDED IN THESE HARD DUE DATES.** Students should keep to the timeline for expected due dates for assignments and not leave submission until the last days before the assignments are due in case of network/server or WiFi issues.

Note that assignments that cover material for the midterm will be due before the midterm for study purposes!

PROCTORED EXAMS

Exam Location

- Students will write their final exams in-person and on-campus. These final exams will be administered through the central Exams Office. Accommodations for any students will also be arranged by the exams office.

Final Exam Dates

The exam dates for each term are listed on the Faculty of Arts and Science webpage under [Important Dates](#). Student exam schedules for the Fall Term are posted via SOLUS immediately prior to the Thanksgiving holiday; they are posted on the Friday before Reading Week for the Winter Term; for the summer term, they are individually noted on the Arts and Science Online syllabi. **Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel/holiday plans or flight reservations.**

GRADING SCHEME AND METHOD

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale.

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Policies

ACADEMIC SUPPORT

All undergraduate students face new learning and writing challenges as they progress through university: essays and reports become more complex; effectively incorporating research into writing becomes more important; the types of assignments become more diverse; managing your time and developing the skills you need to read and think critically gets more challenging. I encourage students to contact **Student Academic Success Services (SASS)**. SASS offers many different options to receive support:

- Free online or in-person [appointments](#) to get personalized support on writing and academic skills from expert staff and trained peers.
- [Workshops](#) and [drop-in programs](#). SASS' [Events Calendar lists events coming soon](#).
- [Online resources](#) that provide strategies for academic skills and writing development at university.
- If English is not your first language, SASS has specific resources for [English as Additional Language students](#), including weekly programs and EAL academic skills appointments. You can meet on an ongoing basis with an EAL consultant to work on your academic writing, speaking, listening, and reading skills.

ACCOMMODATIONS FOR DISABILITIES

Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all their academic activities. The [Senate Policy for Accommodations for Students with Disabilities](#) was approved at Senate in November 2016. If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the **Queen's Student Accessibility Services (QSAS)** and register as early as possible. For more information, including important deadlines, please visit the [QSAS website](#).

Students with course accommodations should enter their request into Ventus as soon as possible, to have the appropriate arrangements added to their courses and exams.

ACADEMIC CONSIDERATIONS FOR STUDENTS IN EXTENUATING CIRCUMSTANCES

Academic consideration is a process for the university community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to

- Short-term physical or mental health issues (e.g., stomach flu, pneumonia, COVID diagnosis, vaccination, etc.),
- Responses to traumatic events (e.g., death of a loved one, divorce, sexual assault, social injustice, etc.),
- Requirements by law or public health authorities (e.g., court date, isolation due to COVID exposure, etc.).

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the [Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. For more information, undergraduate students in the Faculty of Arts and Sciences should consult the Faculty's webpage on [Academic Consideration in Extenuating Circumstances](#) and submit a request via the [Academic Consideration Request Portal](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their instructor and/or course coordinator as soon as possible once Academic Consideration has been granted. Any delay in contact may limit the options available for Academic Consideration.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, please see the Faculty of Arts and Science [Academic Consideration](#) website. ASO courses include links to information on **Academic Accommodation** on your **Course Homepage** in onQ.

Please see the [Teaching Team](#) page for all contact information regarding Academic Accommodations and Considerations.

ACADEMIC INTEGRITY

Queen's students, faculty, administrators, and staff all have responsibilities for upholding the [fundamental values of academic integrity](#): honesty, trust, fairness, respect, responsibility and courage. These values are central to the building, nurturing, and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed

through academic integrity forms a foundation for the “freedom of inquiry and exchange of ideas” essential to the intellectual life of the University (see the [Senate Report on Principles and Priorities](#)).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see [Academic Regulation 1](#)), on the [Arts and Science website](#), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery, and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

You may benefit from visiting these websites for further tips on what constitutes plagiarism and how to avoid it.

- [Avoiding Plagiarism: Paraphrasing](#)
- [Quoting and Paraphrasing](#)

TECHNOLOGY REQUIREMENTS

Please note: Mobile devices are not recommended for the course as they cause several known issues in onQ.

Computer Specifications

- Windows 8.1 or newer
- OS X 10.13 (High Sierra) or newer
- Dual Core 2 GHz processor
- 4 GB RAM
- Soundcard
- USB headset
- Webcam

Supported Web Browsers

- Chrome (preferred - latest version)
- Firefox (latest version)
- *Safari is not recommended as it causes several known issues in onQ*
- *Edge is not recommended as it causes several known issues in onQ*

Internet Connection

- Wired high speed access: Cable or better
- ***Wifi is not recommended***
- A minimum download speed of 10 Mbps and up to 20 Mbps for multimedia is recommended
- Click here for an [Internet speed test](#)

Java

- Latest version

Media Player

- HTML5 compatible

Adobe Reader

- Latest Version

STUDENTS STUDYING OR TRAVELLING ABROAD

It is the responsibility of all students to book travel around course work, as we cannot change the format or timing on assessments or assignments because of travel plans.