# **Chemistry for Engineers**

### Chem1101A – Fall 2024

Course Instructor: Eden Goodwin

How to address me: Eden

Gender Pronouns: (She/Her or They/them)

#### (learn more)

#### Email: Edengoodwin@cmail.carleton.ca

Note: If you have or question or would like to talk with me, you can send an email, visit me during student hours (see below), or approach me after lecture.

#### Student Hours: TBA

located	in	the	Steacie	Building,	Room	115
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Student hours are dedicated times through the week for the course instructor and TAs to meet with YOU. Pop in to introduce yourself, ask questions about the course, or discuss content from the course.

Note: If these If these times don't work for you, email me and we can arrange an alternate time to meet.

### Welcome to the course!

In this course, all students are welcome, including all races, cultures, ethnicities, genders, and sexualities. This course is a space for respect for each other, including students, teaching assistants, staff, and professors. I am happy to work with students to implement approved academic accommodations. I am committed to fostering a supportive learning environment for all students. It is my hope that our class will support a diversity of experiences, thoughts, and perspectives. If you have any questions, concerns, or suggestions, please feel free to contact me.

YOU ARE WELCOME

If you are sick, please stay home. The class is recorded, and all course notes will be provided on the course website (Brightspace). While the midterms and exam are in person, please contact me and request a deferral if you are ill, rather than coming to campus.

Class Location: Kalish Mital Theatre in Southam Hall

Class Times: Tuesday & Thursday, 1:05pm-2:25pm

Prerequisites: Permission of the Department.

Course TAs: Hieu Li (minhle@cmail.carleton.ca)

Minfang Luo (minhle@cmail.carleton.ca)

#### Chakra Suzan

(suzanchakra@cmail.carleton.ca)

### Land Acknowledgement

Here at Carleton University, it is important that we acknowledge that the land on which we gather is the traditional and unceded territory of the Algonquin nation. (<u>learn more</u>)

### **Course Information and Materials**

#### **Course Description**

In this CHEM 1101 course, you will learn fundamental concepts in chemistry, including: atomic and molecular theory, phases of matter, mixtures and solutions, stoichiometry, thermodynamics, and chemical equilibrium. Throughout the course, you will learn about Green Chemistry Principles to connect these fundamental chemistry concepts with broader contexts (e.g., global challenges). In addition, you will learn and practice transferable skills such as reporting scientific values, problem-solving, and scientific argumentation that are beneficial to all science disciplines.

#### Course Textbook

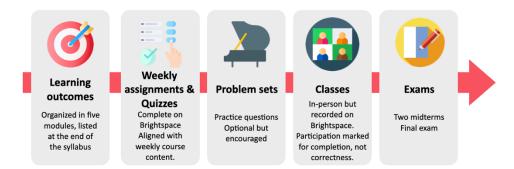
Olmsted, John A., Williams, Gregory M., Burk, Robert C. (2020). *Chemistry* 4<sup>th</sup> edition. Wiley This textbook is available at the <u>Carleton University bookstore</u>.

#### **Technology Checklist:**

- An internet-enabled computer (laptop/desktop)
- □ Zoom software installed on computer (can also install on phone as backup!)
- □ Access to reliable internet
- Webcam
- □ Headset with microphone

Note: If you do not have access to some or all of these resources, there are several options to consider. (1) You can apply for <u>financial aid</u>, (2) there are some inexpensive options for purchasing technology (Best Buy refurbished products, Kijiji), & (3) single workspaces are available for student use on campus. Every student has free access to <u>Zoom</u> and internet access on campus using your <u>MyCarleton1 credentials</u>.

#### **Course Format**



All the details and information for the course are located in **Brightspace**. I send announcements with key information. Please check it regularly. There are specific learning outcomes for this course located below.

## **Intended Learning Outcomes**

Learning outcomes describe the knowledge, skills, and values that you as the learner should be able to demonstrate by the end of the learning period, in this case, by the end of each module or the course. The course is designed so that each learning outcome has associated instruction (e.g., videos, text, or class time), practice opportunities (e.g., class questions, practice problems), and assessment (e.g., assignments, midterm, final exam). Please feel free to ask questions anytime!

#### **Overarching learning outcomes**

- Apply core chemical concepts and processes to solving complex problems in the real world
- Construct scientific arguments in chemistry, using evidence and causal reasoning to support a claim—these arguments relate to any question where you are asked to explain "why" or to "justify" your response
- Use green chemistry principles to calculate environmental impact-based metrics in chemistry to compare how environmentally friendly one thing/decision is compared to another
- Use inclusive language and behaviour in all aspects of the course, including classes and assessments (to be self-assessed)

#### Module 1: Math/Measurement skills

- Calculate with values in standard or exponential notation (on a calculator)
- Relate the number of digits reported in a measured or calculated value to the precision of the original measurement(s)
- Report your own calculated values to the appropriate number of significant figures

#### Module 2: Atomic structure and properties

- Use the interaction to electromagnetic radiation and matter to determine the strength of the net forces of attraction involved (between an electron and its nucleus and between individual atoms of a material such as a metal)
- Relate the electromagnetic radiation emitted or absorbed to transitions between levels in the hydrogen atom
- Determine work functions and ionization energies given wavelength data from electromagnetic radiation and vice versa
- Relate electron configurations based on atomic number and position on the periodic table
- Predict the electron configuration of any element
- Determine the relative energies of electrons (electromagnetic potential energies relative to the nucleus) based on electron configurations
- Correctly assign quantum numbers to electrons based on their electron configurations/orbital diagrams
- Relate chemical and physical properties to electron configurations
- Predict relative atomic radii, ionization energies and electronegativities

#### Module 3: Molecular structure and properties

- Use IUPAC rules to name binary ionic and covalent compounds
- Use accepted names for common molecular ions
- Predict bonding arrangements and bond orders based on Lewis rules
- Predict molecular shapes based on VSEPR geometry rules
- Predict bond and net dipoles
- Draw a Molecular Orbital Diagram for any p-block binary compound
- Predict bond orders in binary covalent compounds based on molecular orbital (MO) theory
- Draw a band diagram for any network solid up to 20Ca
- Predict simple electrical behaviour in network solids based on band diagrams

#### Module 4: Phases of Matter

- Understand the assumptions on which the ideal gas law is based
- Calculate pressure, volume, amount, or temperature of a gas that is behaving ideally
- Understand the reasons for non-ideal behaviour
- Calculate the pressure of a gas that is behaving non-ideally
- Describe intermolecular forces in liquids and relate them to heat of vaporization
- Calculate the vapour pressure or boiling point of a liquid
- Describe intermolecular forces in solids
- Relate the intermolecular forces in crystalline solids to the crystal lattice energy
- Draw and use a Born-Haber cycle
- Interpret a one-component phase diagram
- Describe the temperature/pressure dependence of phase changes
- Label and use a one-component phase diagram
- Describe select colligative properties of solutions and relate them to intermolecular forces
- Describe ideal and non-ideal solutions of ionic solutes
- Calculate the boiling points and freezing points of ideal and non-ideal solutions

#### Module 5: Stoichiometry

- Describe the rules of conservation of atoms in chemical reactions
- Predict the relative amounts of reagents consumed and leftover during chemical equations
- Carry out stoichiometry calculations with limiting reagents and specific yields

#### Module 6: Thermodynamics

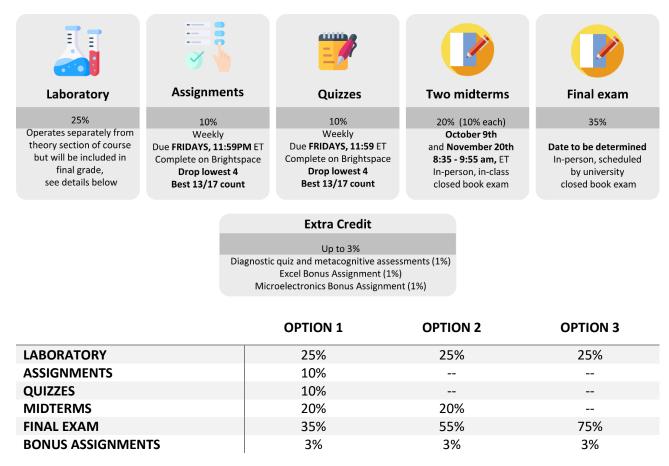
- Describe how thermal energy relates to chemical reactions and balanced equations
- Calculate heats of reaction from standard heats of formation
- Understand the links between the phase and size of atoms and molecules and their entropy
- Calculate entropy change of reaction from standard entropies
- Understand the principle of free energy and how it relates to enthalpy and entropy of reactions
- Calculate the free energy for a reaction from standard free energies
- Calculate the free energy for a reaction from its standard enthalpy and entropy
- Understand the difference between standard and non-standard state
- Calculate non-standard state free energy from standard state free energy and actual reaction conditions, Q

### **Assessments and Key Deadlines**

Research about learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and analyzing. Learning happens best when people actively engage material on a consistent basis, and that is why we have high standards in this course. We are confident that, with appropriate effort, you <u>all</u> can meet those standards.

We also try to reduce unintentional bias in grading by using methods such as grading assignments one question at a time (i.e., grading all of question 1 before grading any of question 2), grading anonymously, and using rubrics.

#### Assessment Breakdown



Note: I will choose whichever option gives you the best final grade

#### **Laboratory**

You are registered in a lab section (L1, L2, L3 or L4), but you will also be assigned to a lab group (A, B, C, D, E, F, G or H). Labs are every other week. If your name does not appear on this list by the date of your first lab, please email your lab coordinator: Fraser Colquhoun (FraserColquhoun@cunet.carleton.ca). The complete schedule of labs is in the lab manual. Please eat before coming to your labs (especially for morning labs) - you will be on your feet for three hours at a time. You must do the online lab safety training before your first lab. Instructions are on Brightspace.

The laboratory part of this course is mandatory for all students. If you do not complete the labs, the course grade is automatically F. Safety glasses and lab coats must be always worn in the laboratory. You should avoid wearing contacts in the lab, in case of an emergency they may interfere with flushing your eyes. A lab manual and lab notebook, and a lab fee, are also required. Everything is available from Science Stores (room 118 SC) for about \$60. Please buy these items before your first lab period. If you have questions or problems with the lab scheduling, etc., please contact the lab coordinator: Fraser Colquhoun (FraserColquhoun@cunet.carleton.ca).

You must complete an on-line training course on Workplace Hazardous Materials Information System before your first lab period. Instructions are in the laboratory folder on BrightSpace.

#### **Assignments**

Assignments are designed to help you learn how to handle the material - if you don't know how to do an assignment question, you may not have learned the material fully yet and you need to go back and review the notes and examples. They are similar to the questions that will be on the topic quizzes, the midterms, and the final exam.

Assignments in this course are set up as Brightspace "quizzes". If you contact tech support at Carleton or at Brightspace, you must refer to these assignments as "quizzes" or the tech. support people will assume a totally different Brightspace function.

Assignments are posted on Brightspace. You can go in and out of them, and submit, re-submit as often as you like up to the due date/time. It is OK to work with other people or get help from me on the assignments. Each student will have a different set of variables for the calculated questions, though, so you will need to use the same techniques, but you will NOT get the same answers. **THE LAST SUBMISSION IS THE ONE THAT COUNTS** - so I suggest you do the assignment as well as you can and submit it early - then repeat it carefully, getting help if you need it (from friends or from me - if you want me to help, send me a pdf of the work you've already tried so that I can see where you are in the problem and try to pick out what you do and what you don't understand.)

NOTE: for a numerical assignment, once you submit it, you'll get different numerical values when you go back in to try again. The question will be the same, but with different data.

MAKE SURE YOU DON'T FORGET TO SUBMIT THE ASSIGNMENT - Brightspace will not submit it for you.

Each lecture (excluding the special topics and review lectures) will have an associated topic quiz to be answered and submitted on Brightspace, due Friday 11:55PM the week after the lecture (see class schedule or Brightspace for formal deadlines). Four of your lowest-scored assignments will be dropped.

#### <u>Quizzes</u>

Each lecture (excluding the special topics and review lectures) will have an associated topic quiz to be answered and submitted on Brightspace and are due Friday at 11:55PM the week after the lecture (see class schedule or Brightspace for formal deadlines). Marks are accorded for correctness (not completion). Please be sure to review the details of the quiz to see the academic integrity instructions, number of attempts allowed, and other details. You will receive your quiz grade as soon as possible after submission and answers will appear after the deadline. Your lowest 4 quiz marks will automatically be dropped before I calculate your final grade Topic quizzes consist of (usually) one or two questions to test whether you've understood the material well enough to do a question on it in a limited amount of time. These are open book/open notes/open internet but must be your own work.

Most topic quizzes can only be opened once. You will have a limited amount of time to complete the quiz - this varies from quiz to quiz, but you'll know what it is before you start the quiz.

**YOU WILL NOT BE ABLE TO ENTER AN ANSWER ONCE TIME RUNS OUT** so it's up to you to watch the timer. I will not re-open the quiz for you if you run out of time before entering an answer, and I will not mark your written work instead of your quiz if you run out of time.

You must open the quiz before the due date/time passes. I will not extend the due date/time for any reason, including health, technical difficulties, connection failures etc. I make the answer visible as soon as the due date/time passes (hence the "no extensions" policy!) To make up for being inflexible, I will drop the lowest four topic quiz marks, and base your topic quiz grade on the average of the rest. You can miss up to four of them, therefore, before you start losing marks for missed quizzes.

#### **Midterms**

The midterms and final exam will reflect the intended learning outcomes to date and all aspects of the course (e.g., assignments, topic quizzes, practice problems, lecture notes).

There will be two midterms in this course; each will cover nearly half of the course, worth 10%. The midterms will be handwritten on paper during class time, in our regular classroom. They will be closed-book, closed-notes format however, a periodic table, formulas and constants will be provided on the exam. You will need a calculator - programmable and/or graphing is acceptable, but cell phones or any other device with transmit/receive capabilities are not acceptable.

The midterm answers and grades will be returned to you - typically one to two weeks after they are written. I encourage you to check what you did right and wrong to prepare you for the final exam. The midterm dates are listed in the assessment breakdown figure above.

#### Final Exam

The final exam is mandatory - you must write it and obtain a mark of 40% or higher to pass the course. If you earn a lower mark than this on the final exam, your overall grade will be an F, regardless of what your numerical marks add up to.

The final exam is cumulative to the entire term. The exam format will be similar to the midterms; by the time you write the exam, you'll have had lots of practice with the format and question types.

The exam will take place in person, with the time, date and location set by university examination services. Exam dates and times are usually posted around the time of the reading week break. The exam period is listed in the <u>university calendar</u>. You must be available to write the exam on campus at any time during that period.

If you miss the exam for any reason, you'll have to apply to the University Registrar's Office to <u>request a</u> <u>deferred exam</u>.

Academic integrity is of paramount importance in this course. There is more information further down in the syllabus. Be sure to check the specific academic integrity instructions for each assessment.

#### **Re-correction Requests**

If there is an error in the correction of an assessment in the course (e.g., midterm), you may request a re-correction. Requests for re-correction of work must be submitted to me in-class, no later than 10 days from the first day marked work is available for review. Submissions after the deadline will not be considered. The new score could be lower, the same, or higher than your original score.

#### **Bonus Marks**

There will be a total of 3 bonus assignments that you can complete to earn an additional 1% for your final mark in this course.

#### Bonus Assignment 1: Diagnostic quiz and metacognitive assessments

Details on this bonus assignment are found in the module "Bonus Assignments > Bonus Assignment 1: Diagnostic Quiz and Metacognitive Assessment".

On the second day of class, we will be running a diagnostic quiz to figure out what your incoming chemistry knowledge is, and to give you experience taking in person tests in a university environment. Before this test, there will be an online metacognitive assessment you can choose to complete. Finally, at the end of the course there will be an online reflection available. Their due dates are as follows:

- Metacognitive Assessment: Online, by Sunday September 8th at 11:55PM
- Diagnostic Quiz: In class, on Monday September 9th
- Post Course Reflection: Online, by Friday December 6th at 11:55PM

If you do the diagnostic quiz, metacognitive assessment, and post course reflection by their associated due dates, you will receive a bonus 1% for your final grade. If you miss any, you will not receive a bonus. All or nothing.

#### **Bonus Assignment 2: Chemistry in Microelectronics**

Details on this bonus assignment are found in the module "Bonus Assignments > Bonus Assignment 2: Chemistry in Microelectronics".

Find and summarize a peer reviewed article that describes how chemistry / chemical concepts can be used in the fabrication of microelectronics. You must explain how this article relates to concepts discussed in this course. If you are having a difficult time finding a peer reviewed articles, you can access the research help desk at the MacOdrum library:

https://library.carleton.ca/services/research-help

Do NOT copy anyone else's report, and do not give yours to anyone else. They will be checked for plagiarism (and standard consequences for plagiarism will be applied)

If you complete this assignment and submit by November 26th at 11:55PM you will receive a bonus 1% for your final grade.

#### Bonus Assignment 3: Excel Bonus Assignment

Details on this bonus assignment are found in the module "Bonus Assignments > Bonus Assignment 3: Excel Bonus Assignment".

Set up an excel file and keep a record of your marks in it. There are VERY specific requirements given with the assignment and videos to show you the various excel features that you must use. The free-ware

version of excel doesn't have these features. As a Carleton student, you have access to Microsoft 360 at no cost to you; you will need to use this to do the assignment:

https://carleton.ca/its/help-centre/get-microsoft-office-for-students/

If you complete this assignment and submit it by October 18th at 11:55PM you will receive a bonus 1% for your final grade.

### **University Policies**

In accordance with the Carleton University Undergraduate Calendar Regulations, the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A- = 80-84	B- = 70-72	C- = 60-62	D- = 50-52

F = <50

WDN = Withdrawn from the course

DEF = Deferred

### **Communication in this course**



After class Using the chat or in person. I try to have 15 minutes available after

each class.



Email Use for confidential messages. Please put CHEM1101A in the subject line. I do my best to respond within one business day.



Student hours

DATE & TIME TBA During student hours (formerly known as office hours), you can ask questions or simply listen.



Questions - Slack

ask general questions about the course concepts or structure. You can get the app or work in a browser.



Meeting

If the other ways don't work for you, please connect with a TA (details below).



#### **Online Community Expectations for Social Platforms**

We will be using Slack as an online platform to connect with other classmates and ask questions about course concepts. Therefore, it is important to keep in mind that university codes of conduct still apply to the behaviours of students online. Please be considerate and respectful while engaging with peers and remember that we are all humans, and that your words matter. If any student witnesses or experiences harassment, I encourage you to reach out to me. Alternatively, you can contact <u>Ombuds Services</u> or <u>Carleton Equity and Inclusive Communities.</u>

Online communities can be highly beneficial to students and can help to facilitate learning within the course. I encourage people to ask questions, learn from one another, and have open discussions about class material. That said, any acts of academic misconduct (i.e., cheating) will not be tolerated and will result in serious consequences ranging from a grade reduction to expulsion (*see academic integrity violations*).

Examples of **appropriate** peer-to-peer sharing/learning vary from course to course. In this course appropriate peer-to-peer sharing includes:

- identifying the proper formula to use
- identifying an incorrect or missing step in a person's work
- brainstorming potential reasons behind a concept
- suggesting helpful sites and videos for learning a concept
- Posting your own work showing only a specific step or process for illustrative purposes (note: this is very different from posting your work and solution for others to simply copy)

Examples of **unacceptable** peer-to-peer sharing includes

- Posting or sharing the answers to quiz or assignment questions
- Indicating which answers are correct on assignments
- Sharing links to solutions
- Posting your own complete work for a question/solution

General Rules & Guidelines

- No bullying or harassment (towards other students, or teaching assistants)
- No encouraging harassment
- No personal attacks
- No racism, sexism, homophobia or hate speech of any kind

There may be specific situations not covered by these rules, and there may also be certain cases where a rule does not apply. If you are concerned, confused, or conflicted over something, please reach out to a TA or me through email for help. Let's do our best to support one another in this class and keep the online experience a safe, inclusive, and positive experience for everyone.

# Academic Accommodations, Regulations, Plagiarism, Etc.

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the Academic Accommodations website (students.carleton.ca/course-outline)

- Deferred/missed term work for short-term accommodation (5 days or less): [stipulate the process by which the student may gain informal accommodation for short term incapacitation (i.e., via submitting a <u>self-declaration form</u>, a written email to the professor, TA, etc.), and the appropriate accommodation (e.g., extension, alternate assignment, etc.).]
- Deferred/missed term work for longer term incapacitation (5 days or longer); [It would be helpful to include a statement to indicate to the student to email you (the instructor) for guidance. The student will need to go to the Registrar's Office for support, but it is important that the instructor is apprised of the long-term accommodation needs.] If you require accommodations for this course that are longer than the 5-day (short-term) period, please email me to discuss how/whether accommodation needs could be met for this course.

### **Student Resources**

Career Services: <u>https://carleton.ca/career/</u>

Writing Services: <a href="https://carleton.ca/csas/support/">https://carleton.ca/csas/support/</a>

Peer Assisted Study Sessions (PASS): <u>https://carleton.ca/csas/group-support/pass/</u>

Math Tutorial Centre: <u>https://carleton.ca/math/math-tutorial-centre/</u> Science Student Success Centre: <u>https://sssc.carleton.ca/</u>

# **Mental Health**

If you are struggling, please do not hesitate to reach out. I am happy to listen, and/or direct you to resources that might help. In terms of class, if you need extra help or missed a lesson, don't stress! Email me and we will set a time to meet. I'll work with you, I promise. Remember that Carleton also offers an array of mental health and well-being resources, which can be found <u>here</u>.

# Chat GPT/Generative Artificial Intelligence (AI) usage

Al Use in this course: Students may use Al tools for basic word processing and formatting functions, including:

- Grammar and spell checking (e.g., Grammarly, Microsoft Word Editor)
- Basic formatting and design suggestions (e.g., Microsoft Word's formatting tools, PowerPoint Design editor)

**Documenting AI Use**: It is not necessary to document the use of AI for the permitted purposes listed above. If you have questions about a specific use of AI that isn't listed above, please consult me.

Why have I adopted this policy? This policy ensures that student voices and ideas are prioritized and authentically represented, maintaining the integrity of the work produced by students while allowing basic support to enhance clarity, correctness, layout, and flow of ideas. The goal of adopting a limited use of AI is to help students develop foundational skills in writing and critical thinking by practicing substantive content creation without the support of AI.

Limitations. Students may not use AI for the following tasks:

- Writing assignments
- Answer mathematical problems (ChatGPT is a language model, not a calculator. It can easily fumble simple algebra, or be "persuaded" to give inaccurate answers.)



**Alternatives**: If you need help with unit conversions, I recommend using **WolframAlpha** it is a far better tool for scientists and engineers.

### **Academic Integrity**

Academic Integrity is upholding the values of honesty, trust, respect, fairness, responsibility, and courage that are fundamental to the educational experience. Carleton University provides supports such as academic integrity workshops to ensure, as far as possible, that all students understand the norms and standards of academic integrity that we expect you to uphold. Your teaching team has a responsibility to ensure that their application of the Academic Integrity Policy upholds the university's collective commitments to fairness, equity, and integrity. (Adapted from <u>Carleton University's Academic Integrity</u> Policy, 2021).

Examples of actions that do not adhere to Carleton's Academic Integrity Policy include:

- Plagiarism
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams
- Using artificial intelligence tools such as ChatGPT when your assessment instructions say that it is not permitted

Please review the checklist <u>linked here</u> to ensure you understand your responsibilities as a student with respect to academic integrity and this course.

#### Sanctions for Not Abiding by Carleton's Academic Integrity Policy

A student who has not upheld their responsibilities under Carleton's Academic Integrity Policy may be subject to one of several sanctions. A list of standard sanctions in science can be found <u>here</u>.

Additional details about this process can be found on <u>the Faculty of Science Academic Integrity website</u>. Students are expected to familiarize themselves with and follow the Carleton University <u>Student Academic</u> <u>Integrity Policy</u>. The Policy is strictly enforced and is binding on all students.

#### **Students' Rights and Responsibilities**

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the <u>7 Rights and Responsibilities Policy</u> for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

### **Student Concerns**

If a concern arises regarding this course, **your first point of contact is me:** Email or drop in during student hours and I will do my best to address your concern. If I am unable to address your concern, the next points of contact are (in this order):



Note: You can also bring your concerns to Ombuds services.

Chapter	Monday	Tuesday	Wednesday	Thursday	Friday				
September									
Ch.1	2	3	Lecture 1 4 1:05pm-2:25pm	5	6				
Ch. 2-3	Diagnostic Quiz 9 1:05pm-2:25pm	10	Lecture 2 11 1:05pm-2:25pm	12	Assignment/Quiz 1 13 Due 11:55pm				
Ch. 4-5	<i>Lecture 3</i> 16 1:05pm-2:25pm	17	Lecture 4 18 1:05pm-2:25pm	19	Assignment/Quiz 2 20 Due 11:55pm				
Ch. 6-7	Lecture 5 23 1:05pm-2:25pm	24	Lecture 6 25 1:05pm-2:25pm	26	<i>Assignment/Quiz 3+4</i> <b>27</b> Due 11:55pm				
	October								
Ch. 6 & 9	<i>Lecture 7</i> 30 1:05pm-2:25pm	1	Lecture 8 2 1:05pm-2:25pm	3	Assignment/Quiz 5+6 4 Due 11:55pm				
Ch. 12	Lecture 9 <b>7</b> 1:05pm-2:25pm	8	MIDTERM 1 9 1:05pm-2:25pm	10	Assignment/Quiz 7+8 Due 11:55pm				
Review	HOLIDAY 14	15	<i>Lecture 10</i> <b>16</b> 1:05pm-2:25pm	17	Assignment/Quiz 9 Due 11:55pm				
No Classes	Fall Break 21	Fall Break 22	Fall Break 23	Fall Break 24	Fall Break 25				
Ch. 15	<i>Lecture 11</i> 28 1:05pm-2:25pm	29	Lecture 12 30 1:05pm-2:25pm	31	Assignment/Quiz 10 Due 11:55pm				
	November								
Ch. 16	<i>Lecture 13</i> <b>4</b> 1:05pm-2:25pm	5	Lecture 14 6 1:05pm-2:25pm	7	Assignment/Quiz 11+12 Due 11:55pm				
Ch. 24	<i>Lecture 15</i> <b>11</b> 1:05pm-2:25pm	12	Lecture 16 13 1:05pm-2:25pm	14	15 Assignment/Quiz 13+14 Due 11:55pm				
Ch. 25	<i>Lecture 17</i> 18 1:05pm-2:25pm	19	MIDTERM 2 20 1:05pm-2:25pm	21	<b>22</b> Assignment/Quiz 15+16 Due 11:55pm				
Ch. 28	Special topics 1 25 1:05pm-2:25pm	26	Special topics 2 27 1:05pm-2:25pm	28	Assignment/Quiz 17 29 Due 11:55pm				
December									
Ch. 27	<i>Review 1</i> 2 1:05pm-2:25pm	3	Review 2 4	5	Last Day of Classes Review 3 1:05pm-2:25pm				