MATH 1020Q Problem Solving: Spring 2024 Syllabus

Excluding materials for purchase, syllabus information may be subject to change.

Always refer to the syllabus linked in HuskyCT for the most up-to-date information.

Course and Instructor Information

Prerequisites: Recommended preparation: MATH 1010 or the equivalent. Not eligible for course credit by examination. Not open for credit to students who have passed any mathematics course other than MATH 1010, 1011, 1030, 1060 or 1070.

Instructor: Corrie Ingall (Please call me Corrie! However, if that feels too informal you can call me Professor Ingall instead.)

Pronouns: she/her/hers

Email: corrie.ingall@uconn.edu (make sure to include course section number in emails)

Office Location: MONT 322 (Monteith, see map: https://maps.uconn.edu/m/map/MONT). The door of the office says “Graduate Students.” You should be able to see me at my desk through the window on the door.

Office Hours: During my office hours I'm available to answer questions about WebAssign, projects, or general course topics. No appointment is needed for the below times, just stop by my office.

- Mondays 11 am – 12 pm
- Thursdays 2 – 3 pm
- Friday 10 – 11 am

You can also get in touch with me to set up a separate appointment.

Note that some of these office hours may need to be rescheduled or moved to Webex. Notice will be given in advance on HuskyCT or in class.

Getting in touch with me: Email is the best way to get in touch with me. Feel free to email me anytime, though I generally do not check my email late at night or on the weekends. **Please don't contact me through HuskyCT's contact instructor feature**. It can take HuskyCT up to 24 hours to notify me about these messages. Using my UConn email directly is the best method.

Course Description

An introduction to the techniques used by mathematicians to solve problems. Skills such as Externalization (pictures and charts), Visualization (associated mental images), Simplification, Trial and Error, and Lateral Thinking learned through the study of mathematical problems. Problems will be drawn from combinatorics, probability, optimization, cryptology, graph theory, and fractals. Students will be encouraged to work cooperatively and to think independently.

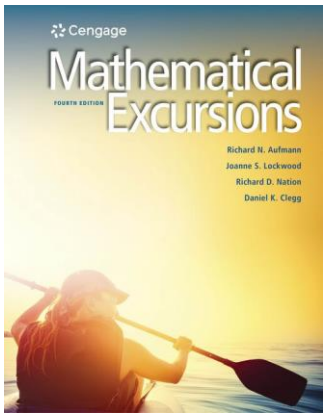
Course Objective

This course will offer you strategies on how to solve challenging problems, in mathematics and any other endeavor. These strategies will be particularly useful when you can't decide where to begin in solving a problem.

Course Materials

E-Textbook: Mathematical Excursions, 4th edition, by Aufmann, Lockwood, Nation and Clegg

Options for purchase:



1. Husky Book Bundle https://bookbundle.program.uconn.edu/ costs $285 for the semester. This option will give you access to the ebook and WebAssign you need for this class, in addition to your course materials for all your other UConn classes.

2. Digital textbook rental costs $129 for the semester through UConn's bookstore https://uconn.bncollege.com/ or $90 direct from Cengage. This option will give you access to the e-book and WebAssign for this class only.

3. Cengage Unlimited https://www.cengage.com/unlimited/ costs $125 for the semester. This option will give you access to the ebook and WebAssign for this class, and any of your other classes using Cengage course materials.

To register and access WebAssign, simply log into your HuskyCT account (lms.uconn.edu), navigate to the page for MATH 1020Q, then follow the link on the left-hand side for WebAssign.

Course Expectations

1. My number one expectation for this class is that we will all treat each other with respect. We are all here to learn. There are no “stupid questions” and we all make mistakes (including me!) I expect everyone to be kind to themselves and each other as we take on the challenges in this course. Always feel free to ask questions and be open to both learning from your peers and learning by teaching your peers. Both will boost your understanding.

2. Each student has the right to decide how will they will engage with this course. However, if anyone's behavior in class is significantly disrupting other students’ opportunities to learn and focus, I may ask them to leave the classroom and/or meet with me separately to discuss the issue.

3. You are expected to come to class each week. When you skip class, you have to spend more time outside of class trying to catch up, so you should not be skipping class unless you are sick! If you are sick, make sure to get the notes from a classmate or review the class outline on HuskyCT. If you need to miss multiple classes in a row because you are sick, please email me to let me know.

4. You should expect to do much of your learning outside the classroom, generally spending around 4-6 hours a week working on this class. Problem solving, like most subjects, is learned by doing. Most of all, it is expected that you will get excited about what you are learning and take delight in your own, perhaps unexpected, ability to solve intriguing problems.

5. Take all course components (quizzes, projects, homework, exams) seriously. Don’t wait until the last minute to start the homework or projects, they take time to complete!

6. Put your best effort forward. If you find yourself falling behind, take advantage of the office hours and ask for help.

Course Grade Breakdown:

13 WebAssign Assignments	20%
9 Quizzes and Projects	50%
1 Midterm Exam	15%
1 Final Exam OR Project	15%

Course Grade Scale:

Final Percentage	Letter Grade
93 -100	A
90.00-92.99	A-
87.00-89.99	B+
83.00-86.99	B
80.00-82.99	B-
77.00-79.99	C+
73.00-76.99	C
70.00-72.99	C-
67.00-69.99	D+
63.00-66.99	D
60.00-62.99	D-
<60	F

WebAssign:

WebAssign homework will be assigned weekly and will be based on the material learned each week. Homework is to be done outside of class and we will not devote extensive class time to the discussion of homework problems. It is your responsibility to get help if you can't complete an assignment. You can come to my office hours, work with other students, or email me.

You will get a limited number of attempts for each question so choose carefully! After each attempt, you will be told whether your answer is correct or not. If you are not able to get the correct answer after your initial attempts, we recommend that before your final attempt, you seek help from your instructor, the Q-Center, a tutor, or another student.

Late homework will be accepted with a 20% deduction to your score. To access late homework in WebAssign, you need to click on “Past Assignments” to request an automatic extension.

Quizzes:

Quizzes will be given in class roughly every other week on Friday (see course schedule on HuskyCT for dates and topics). Throughout the semester you will take 3-6 quizzes (more information below).

Quiz Makeup Policy: If you **miss a quiz** because you are ill or due to some other extenuating circumstance, you must contact your instructor before the original quiz time, or within 24 after the original quiz time. If your instructor approves you for a makeup quiz, then you must take the quiz within 1 week of the original quiz time. If you do not follow these procedures, then you will receive a score of zero on the missed quiz unless you have proper documentation of an extenuating circumstance.

Projects:

Projects will be due roughly every other week on Sundays (see course schedule for dates). These projects were designed to help you think critically about problem solving and to introduce to you how the math we learn about in class can be applied in real world settings. Throughout the semester, you will complete 3-6 projects (more information below).

You should start these projects well in advance of when they are due. We will often spend some time during class the week a project is due to ask me and your peers questions about the project, and that time is most useful if you have started the project beforehand.

Late Project Policy: Projects are graded out of 20 points. For every day you submit a project late, you will lose 1 point. If you need an extension on a project due to extenuating circumstances, you must contact your instructor to make arrangements **BEFORE** the project due date. **NO SUBMISSIONS ALLOWED AFTER THE LAST DAY OF CLASSES (APRIL 26).**

Skipping Quizzes and/or Projects:

Throughout the semester, 6 quizzes will be given, and 6 projects will be assigned. You will "skip" any 3 of these of your choosing (**except for** the first quiz and the first project). You can use all your skips on projects, all your skips on quizzes, or some combination of both. For example, a student who struggles with tests may decide to use all 3 skips on quizzes, which means that student would complete 3 quizzes and 6 projects throughout the course of the semester.

You are allowed to start a quiz and then decide partway through to skip it. However, **once a quiz or project has been submitted, you are not allowed to skip it!**

Midterm Exam:

We will have one midterm exam in this class (see course schedule on HuskyCT for dates and exam information tab on HuskyCT for topics).

Exam Makeup Policy: If you **miss the midterm exam** because you are ill or due to some other extenuating circumstance, you must contact your instructor before the original exam time, or within 24 hours after the original exam time. If your instructor approves you for a makeup midterm, then you must take the midterm within 1 week of the original midterm time. If you do not follow these procedures, then you will receive a score of zero on the midterm unless you have proper documentation of an extenuating circumstance.

Final Exam/Project:

You will have a choice to take a final exam or complete a final project. If you choose to take the final exam, the final exam will only cover topics introduced **after** the midterm. If you choose to do the final project, you will need to choose a topic and fill out the final project topic proposal form at least one week before the due date. If you do not turn in the final project proposal form in time, you will have to take the final exam instead.

The date of our final exam remains to be determined by the university. If you choose to do a final project instead, the due date will be on the same day as the final exam. UConn's Spring 2024 final exam week takes place from Monday, April 29th to Saturday, May 4th. Students are required to be available for their exam/project during the stated time. If you have a conflict with this time, you must contact the Dean of Students Office to discuss the possibility of rescheduling this exam. Please note that vacations, previously purchased tickets or reservations, social events, misreading the exam schedule and over-sleeping are not acceptable excuses for missing a final exam. If you think that your situation warrants permission to reschedule, please contact the Dean of Students Office with any questions.

Wellness

For the wellbeing of yourself and everyone else, please stay home when you are not feeling well. As is current UConn policy, masks are optional in classroom spaces. If UConn's guidance on masking changes during the semester I expect all students to compile with new policies when they are in effect.

Observance of Religious Holidays

After reviewing the syllabus carefully, students must notify the instructor if they foresee a conflict between the due date for an assignment and their religious observations so arrangements can be made.

Q Center

The Quantitative Learning Center (Q Center) is a free resource for all UConn students providing drop-in peer tutoring and review sessions. The Q Center is located on the 3rd Level of Homer Babbidge Library. See the Q Center website for up-to-date information https://qcenter.uconn.edu/

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

To provide students with disabilities the appropriate accommodations, CSD must send an official letter to your instructor. If your accommodations require you to take quizzes and/or exams in a separate space, it is your responsibility to schedule an appointment with CSD's testing center through MyAccess at least one week before each quiz/exam date.

Academic Honesty Policy

This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. UConn defines academic misconduct as “dishonest or unethical academic behavior that includes, but is not limited to, misrepresenting mastery in an academic area (e.g., cheating), failing to properly credit information, research, or ideas to their rightful originators or representing such information, research, or ideas as your own (e.g., plagiarism).” Below is a list of examples of academic misconduct in this course:

1. **Cheating or helping others cheat on a quiz or an exam.** Using unauthorized materials on quizzes or exams including looking at your neighbors’ papers, your notes, books, or electronic devices is cheating. Communicating with any other human being (besides the instructor) during a quiz or an exam is cheating.
2. **Cheating or helping others cheat on a project or homework.** Turning in work on a project that was not written up independently by you and your partners is cheating. All work submitted should represent you and your partners’ honest understanding of the material.
3. **Distributing your instructor’s materials to students’ outside of this course, including posting materials on the internet.** You are forbidden from sharing or posting projects, exams, quizzes, and homework problems created by your instructor. You are also forbidden from sharing or posting your solutions to projects, exams, quizzes, and homework.

Any student who commits an act of misconduct will be reported to the university. Violations of this policy may range from a zero on the assignment to a grade of F in the course. If you have questions about academic integrity or intellectual property, you should consult with your instructor.

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the **Student Health and Wellness-Mental Health (SHaW-MH) office** located in Storrs on the main campus in the Arjona Building, 4th Floor. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern. Mental health services are included as part of the university’s student health insurance plan and partially funded through university fees. If you do not have UConn’s student health insurance plan, most major insurance plans are also accepted. Please visit https://studenthealth.uconn.edu/ or call (860) 486-4705 if you have questions.

Course Schedule

Class Dates	Sections Covered	Assignments/Quizzes/Exams
Week 1: **January 17 & 19**	1.1 Inductive and Deductive Reasoning 9.1 First Degree Equations and Formulas	**Friday January 19th:** Homework 1 on 1.1
Week 2: **January 22, 24 & 26**	9.1 First Degree Equations and Formulas Continued 1.2 Problem Solving with Patterns 1.3 Problem-Solving Strategies	**Friday January 26th:** Quiz 1 on 1.1 & 9.1 Homework 2 on 9.1 and 1.2
Week 3: **January 29, 31, & February 2**	1.3 Problem-Solving Strategies Continued 7.3 Perimeter and Area of Plane Figures	**Friday February 2nd:** Homework 3 on 1.3 **Sunday February 4th:** Project 1 Due
Week 4: **February 5, 7, & 9**	7.8 Fractals 6.3 Different Base Systems	**Friday February 9th:** Quiz 2 on 1.2 & 1.3 Homework 4 on 7.3
Week 5: **February 12, 14, & 16**	5.1 Graphs and Euler Circuits 5.4 Graph Coloring	**Friday February 16th:** Homework 5 on 6.3 **Sunday February 18th:** Project 2 Due
Week 6: **February 19, 21, & 23**	5.4 Graph Coloring continued 9.2 Rate, Ratio, and Proportion	**Friday February 23rd:** Quiz 3 on 6.3 Homework 6 on 5.1 and 5.4

Week 7: **February 26, 28 & Mar 1**	9.3 Percent Midterm Exam Review	**Friday March 1st:** **MIDTERM EXAM**
Week 8: **March 4 & 6**	9.3 Percent continued 2.4 Applications of Sets **NOTE: There will be no class meeting on Friday. There may be a video posted or other resources that can be reviewed asynchronously.**	**Friday March 8th:** Homework 7 on 9.2 and 9.3 **Sunday March 10th:** Project 3 Due
Spring Break **March 11-15**	None	None
Week 9: **March 18, 20, & 22**	11.1 Simple Interest 11.2 Compound Interest	**Friday March 22nd:** Homework 8 on 2.4 **Sunday March 24th:** Project 4 Due
Week 10: **March 25, 27, & 29**	11.3 Credit Cards and Consumer Loans 12.1 Counting Principle	**Friday March 29th:** Quiz 4 on 2.4 Homework 9 on 11.1 and 11.2
Week 11: **April 1,3, & 5**	12.1 Counting Principle continued 12.2 Permutations and Combinations	**Friday April 5th:** Homework 10 on 11.3 **Sunday April 7th:** Project 5 Due
Week 12: **April 8, 10 & 12**	12.3 Probability and Odds	**Friday April 12th:** Quiz 5 on 11.1 and 11.2 Homework 11 on 12.1 and 12.2

Week 13: **April 15, 17, & 19**	12.6 Expectation	**Friday April 19th:** Quiz 6 on 12.1 and 12.2 Homework 12 on 12.3
Week 14: **April 22, 24 & 26**	Final Exam Review / Time for Projects	**Friday April 26th:** Project 6 Due Homework 13 on 12.6
Week 15: **April 29 – May 4**	None	**Date TBA:** **FINAL EXAM / FINAL PROJECT DUE**