UCONN
UNIVERSITY OF CONNECTICUT

Math 2710W - 002
Transition to Advanced Mathematics
Fall 2026

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Transition to Advanced Mathematics
Credits: 3
Mode/Format: In-Person
Prerequisites: MATH 1132Q or 1152Q. May not be taken for credit after passing MATH 2143. May not be taken out of sequence after passing 3150, 3210, 3230, 3240, 3260, 3270, 3330, or 3370.

Professor: Katie Hall, (You can call me Katie or Professor Hall)
Pronouns: (she/her/hers)
Office: MONT 408
Email: katie.hall@uconn.edu. You may also send me a message in HuskyCT. You can expect a response within 48 hours.

Office Hours/Availability:

- **(Tentative, might be updated) Monday 11:15-12:45, Wednesday 2-3:30 in MONT 408**

You are welcome to stop by to ask questions or discuss course material without an appointment during these times. If you are unavailable during these times, feel free to reach out to me and we can schedule an appointment to meet at another time.

Course Materials

Required Materials:

- Richard Hammack, Book of Proof: Third Edition. Available as a free online book. Or you can get a hardcopy.

Course Description

From the course catalog: Basic concepts, principles, and techniques of mathematical proof common to higher mathematics. Logic, set theory, counting principles, mathematical induction, relations, functions. Concepts from abstract algebra and analysis. Students intending to major in mathematics should ordinarily take this course during the third or fourth semester.

The main objective in this course is for you to learn to read and write proofs while gaining knowledge and skills in some math topics. You will be asked to transition from solving basic questions with a prescribed technique to thinking critically about what a question is asking and determining what the best approach is to solve it. We will explore the topics of logic, set theory, counting principles, mathematical induction, relations, functions, and analysis. We will learn what a proof is, what it entails, how we can go about thinking about writing one. We will also learn what types of statements we can and can't prove, how to determine if a statement is true and how to critically read proof. In addition to writing proofs, we will learn several techniques and definitions important for high level math courses.

Course Objectives

At the end of the course, you will

- be able to summarize the role of axioms, definitions, theorems and proofs in mathematics both orally and in writing.

- be able to summarize methods of proof (including direct proof, contrapositive, contradiction, and induction) and disproof (including the use of counterexamples) and be able to determine when each is applicable.
- be able to read a mathematical proof and summarize its main ideas and structure.

have a working understanding of basic set theory, basic number theory, relations, functions, cardinality, rational numbers, limits of sequences and functions and complex numbers.

Course Outline

Each week, there are several sections of material we will cover, outlined in the calendar below. The typical class structure will be as follows:

- Pre-class: there will be a few short videos for you to watch giving you an overview of the day's material.
- In class: we will spend the first 30 or so minutes of class going over questions from the day's material and some sample proofs. Then we will break into small groups for you to work on the weekly problems.
- At the end of the week (by Monday night of the following week), you must submit well-written write-ups of all weekly problem set problems.

Calendar

Week and Dates	Monday	Wednesday	Friday	Topics
1: 8/31–9/4	1.1	1.2-1.4	1.5, 1.6	Sets
2: 9/8–9/11	NO CLASSES	1.7, 1.8	1.9, 1.10	Sets
3: 9/14–9/18	2.1, 2.2	2.3, 2.4	2.5,2.6	Logic
4: 9/21–9/25	2.7, 2.8	2.9, 2.10 Part 1	2.10 Part 2, 2.11, 2.12	Logic
5: 9/28–10/2	**Practice Exam**	4.1-4.3	4.4,4.5	Direct Proof
6: 10/5–10/9	5.1-5.3	6.1-6.3	6.4	Contrapositive and Contradiction
7: 10/12–10/16	**Exam 1**	7.1-7.2	7.3-7.4	Proving Non-Conditional Statements
8: 10/19–10/23	8.1-8.3	8.4	9.1-9.4	Proofs with sets and disproof
9: 10/26–10/30	10.1	10.1 Cont, 10.2	10.3, 10.4	Induction
10: 11/2–11/6	3.1-3.3	3.4, 3.5	3.6	Combinatorics and more inductions
11: 11/9–11/13	**Exam 2**	11.1-11.3	11.4-11.6	Relations
12: 11/16–11/20	12.1-12.3	12.4, 12.5	12.6	Functions
Thanksgiving Break: 11/23–11/27	THANKSGIVING BREAK			
13: 11/30–12/4	13.1	13.2	13.3	Proofs in Calculus
14: 12/7-12/11	14.1, 14.2	14.3, 14.4		

Course Requirements and Grading

Category	Overview	Percent
Videos and Problems Sets	Watch Pre-Class Videos and complete video assignment, participate in in-class problem solving, submit problem sets	10%

	each week	
Quizzes (8)	There are 8 quizzes given on Fridays. You have 4 attempts at each topic.	10%
Writing Assignments (3)	There are three writing assignments.	10%*
Practice Exam	In class on Sept 28. Can do corrections after.	5%
Exam 1	In class on Oct 12.	20%
Exam 2	In class on Nov 9.	20%
Final Exam	In-person, at day and time schedule by university	25%

*According to university-wide policies for W courses, you cannot pass this course unless you receive a passing grade for its writing components.

Videos and Problem Sets

There are three ways to earn points in this category. (You should do all three)

1. Before each class period, you will be asked to watch one to three short videos and take a video quiz. Each set of videos and video quizzes completed will earn you one point.
2. In class, I will do a quick overview of what was covered in the videos and answer questions students have. Then you will be asked to work in groups on problems from the weekly problem set. Active participation in class earns one point a day.
3. Each week, you will submit your solutions to each question in the problem set by Monday night. Problem sets will be graded for mathematical correctness, correct writing style and completion. They are graded out of three points.
4. There are also some challenge problems presented in the videos or in the problem sets. You can earn up to two extra points each week by doing these.

There will be about 150 points available in this category. You must earn at least 100 to get full credit. You can earn up to 110 to get extra credit. Points over 110 will not count towards your final grade, but whoever has the most at the end of the semester gets a special prize.

Quizzes

There will be quizzes each Friday. The topics of the quizzes are listed below with a tentative schedule.

1. Sets (offered weeks 2-5)
2. Logic (offered weeks 3-6)
3. Direct Proof (offered weeks 5-8)
4. Contrapositive and Contradiction (offered weeks 6-9)
5. Proofs with Sets (offered weeks 8-11)
6. Induction (offered weeks 9-12)
7. Relations and Functions (offered weeks 11-14)
8. Proofs in Calculus (offered week 13 and MWF week 14)

The quizzes are out of ten points. You can earn

- 10 points – mathematically correct and well-written (complete sentences and paragraphs, grammatically correct)

- 9 points – mathematically correct and only small writing issues
- 6 points – right idea but has some writing or mathematical issues (3rd and 4th attempt only)
- 0 points – redo

Each quiz is offered 4 times in class. No out-of-class make-ups are offered, except in extraordinary circumstances. Your highest quiz score on each topic counts towards your final grade.

Writing Assignments

This is a writing intensive (W) course so you must complete a minimum of 15 pages of editing written work. This will be separated into three different writing assignments.

1. Magazine Article about a math topic of your choice (minimum 3 pages, include a half-page "About the Author"). Weeks 1-4
2. Perfect Proof Portfolio (minimum 8 pages, include all proof techniques we've learned. Must be typed in LaTeX. Week 5-11
3. Final Project (Students Choice, more details to come) (minimum 4 pages) Weeks 12-14

Practice Exam

There will be an in-class practice exam on Monday, September 28 for the full class period. The exam is meant to give you an idea of how you are doing in the class and if your study techniques are effective. It will be graded for correctness, but you will have the opportunity to do corrections after the exam to earn points back. This is worth 5% of your final grade.

Exams

There are two midterm exams and a cumulative final exam. The exams are:

- Monday, Oct 12 covering Chapter 1, 2, 4, 5, and 6
- Monday, November 9 covering Chapter 7, 8, 9, 10 and 3.
- Final Exam Date TBA, Cumulative, Chapters 1-14.

The final exam will replace your lowest score from the previous exams if it is higher.

For additional information on undergraduate grading policies see here: https://registrar.uconn.edu/grades/

Grading Scale:

Grade/ Points Earn	Letter Grade	GPA
93-100	A	4.0
90-92.9	A-	3.7
87-89.9	B+	3.3
83-86.9	B	3.0
80-82.9	B-	2.7
77-79.9	C+	2.3
73-76.9	C	2.0
70-72.9	C-	1.7
67-69.9	D+	1.3
63-66.9	D	1.0
60-62.9	D-	0.7
<60	F	0.0

Due Dates and Late Policy

All homework due dates will be published on each assignment. Late homework will not be accepted.

Feedback and Grades

I will make every effort to provide feedback and grades within one week. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Weekly Time Commitment

You should expect to dedicate 9 to 12 hours a week to this course. This expectation is based on the various course activities, assignments, and assessments and the University of Connecticut's policy regarding credit hours. (More information related to hours per week per credit can be accessed at the Online Student website).

How to Succeed in this Course

To become a successful proof writer, you must take some time to write proofs! But before you can write the proof, you must know what you need to show (and how to show it). Practice starting from a statement you haven't seen before and thinking about how to prove it. Try something. If you get stuck, you should go back up and try again. Don't be afraid to go down the wrong path. Even if it doesn't get to where you want to go, you might see something interesting along the way.

You should practice writing out proofs for problems, even if they aren't assigned to you. Compare what you write to what is posted. How are they the same and how are they different? Being able to look at someone else's proof and determine if it is valid will help you do the same for yours.

This class requires different skills (and more creativity and complex thinking) than other classes you've probably taken. There are going to be times when it feels hard! That's OK! Reach out. I am here to help you.

(From CETL, but I believe and support it) All students can succeed in this course, and I am here to help you along the way. Please do not hesitate to ask questions or attend office hours. All questions are important here. Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Additional support is available here: Dean of Students Office, Academic Achievement Center, Writing Center, Quantitative Learning Center, Center for Students with Disabilities, Title IX Office, Student Health and Wellness -- Mental Health, etc.

Importance of Inclusivity

Throughout this course, you will be asked to interact with me and your classmates in different ways. Through these interactions, it is important to be mindful of the diversity of background and experience each of us brings to the class. I will do my best to ensure that each student in the class has equitable access to the course material as well as opportunities to earn credit. I ask that when you are working with other students you create a good environment for your classmates. This might take the form of using someone's preferred pronouns, acknowledging differences in learning styles or background knowledge, or respecting someone's choice to maintain physical distance in the classroom space. If you feel that you or someone around you is not being treated respectfully, please do not hesitate to let me know.

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, 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. 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 also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor,** or contact the office at **(860) 486-4705, or** **https://studenthealth.uconn.edu/** for services or questions**.**

Accommodations for Illness or Extended Absences

Please stay home if you are feeling ill and please go home if you are in class and start feeling ill. If illness prevents you from attending class, it is your responsibility to notify me as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with me to determine how you will complete coursework during your absence.

If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support. Regional campus students should email the Student Services staff at their home campus to request support and faculty notification.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
  - Academic Integrity
  - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

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/.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from Blackboard's website)

Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- Equipment Recommendations (https://remotework.uconn.edu/equipment-recommendations/)
- HuskyCT/Blackboard (HuskyCT/ Blackboard Accessibility Statement, HuskyCT/ Blackboard Privacy Policy)
- Adobe Acrobat Reader (Adobe Reader Accessibility Statement, Adobe Reader Privacy Policy)
- Google Apps (Google Apps Accessibility, Google for Education Privacy Policy)
- Microsoft Office (free to UConn students through uconn.onthehub.com) (Microsoft Accessibility Statement, Microsoft Privacy Statement)

- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- WebCam

Privacy Statement: For information on managing your privacy at the University of Connecticut, visit the University's Privacy page. NOTE: This course has NOT been designed for use with mobile devices.

Help

Technical and Academic Help provides a guide to technical and academic assistance.

This course uses the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents.

Student Technology Training

Student technology training is now available in a new HuskyCT short course created by students for students. It will prepare you to use the IT systems and services that you will use throughout your time at UConn, whether learning online or on-campus. It is available at https://lms.uconn.edu/ultra/courses/_80016_1/cl/outline .

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.
- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.

Evaluation of Course Experience

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes.

Additional informal formative surveys and other feedback instruments may be administered within the course.

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)." Visit this site for more information: https://policy.uconn.edu/2023/07/11/academic-scholarly-and-professional-integrity-and-misconduct-aspim-policy-on/.

Generative AI models, like ChatGPT, Gemini and Copilot aggregate the ideas and insights of many researchers without giving them credit. Submitting ChatGPT-generated text, images or other work as your own work would be an act of plagiarism insofar as it would involve passing off the work of others as your own. For these reasons, you are not allowed to use this ChatGPT or other similar tools to produce

academic work for this class, unless otherwise explicitly permitted to do so. You may use these to ask questions and get ideas but the work that is submitted by you should be yours and reflect your individual understanding. If you do use these tools to help in your work, you must provide an acknowledgement statement stating how they were used.

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. You are allowed to work on homework with other students, but your submissions should reflect your 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 will result in a zero on the assignment. Repeat offences or other more serious offences will lead to a grade of F in the course. If you have questions about academic integrity or intellectual property, please consult with your instructor.