Math 2710W, Section 3, Transitions to Advanced Mathematics, Spring 2019 Syllabus

McHugh 308 Tuesdays and Thursdays 9:30 - 10:45

This syllabus contains the policies and expectations that the instructor has established for this course. Please read the entire syllabus carefully before continuing in this course. These policies and expectations are intended to create a productive learning atmosphere for all students. Unless you are prepared to abide by these policies and expectations, you risk losing the opportunity to participate further in the course.

Instructor: Prof. Matthew Badger (`matthew.badger@uconn.edu`)
Office: Monteith 326
Office Hours: Mondays 1:30-2:30, Wednesdays 10:00-11:00

Course Description

This course is designed to prepare students for upper division mathematics courses, which require the ability to read and write proofs. This section of the course counts towards the university-wide W course requirements (writing requirement).

Topics to be covered include:

(1) Elementary logic: Truth tables, Negation, Converse and contrapositive, Necessary and suffi- cient conditions, Basic math notation, proof techniques.
(2) Set Theory: Notation, Unions and intersections, Cartesian products.
(3) Basic Number Theory: Divisibility, Division Algorithm, Euclidean Algorithm, Prime numbers, Euclids theorem.
(4) Induction and Binomial Theorem.
(5) Rational and real numbers.
(6) Functions: Injective, surjective, bijective functions. Graphs of simple functions. Basic cardinality notions, Cantors diagonal argument.
(7) Prelude to analysis: sequences, convergence, simple limit theorems.
(8) Introduction to complex numbers: Algebraic properties of $\mathbb{C}$, polar form, Eulers formula.

Required Resources

- **Course Webpage:** `https://badger.math.uconn.edu/` → Link to Math 2710W, Section 3
- **HuskyCT:** `huskyct.uconn.edu` — for class announcements and grade sheet
- **Textbook:** Chartrand, G., Polimeni, A.D., and Zhang, P. Mathematical Proofs: a Transition to Advanced Mathematics. 3rd Edition. Pearson Education, Upper Saddle River, NJ, 2013. xiii+400 pp. ISBN: 0-321-79709-4. (Preferred version for the class is the 3rd edition, although you may use the 4th edition, if necessary.)

Graded Components

- **Exams**: There will be two midterm exams to be announced in class.
- **Portfolio** (Writing Component): In lieu of homework and a final exam, you will prepare a writing portfolio consisting of proofs illustrating essential concepts and techniques learned throughout the course. Portfolio problems will be assigned in stages throughout the course. Drafts will be collected, returned with feedback, and must be revised for the final portfolio. Details will be announced in class. The completed portfolio is due in class on the day of the last lecture.
- **Participation**: You will receive a participation grade based on several components, which may include in-class quizzes, in-class writing workshops, and in-class presentations.

The *final grade* for the class will be based on your course average (see below) and your progress in the course. Your *course average* will be determined by the following calculation:

- 40% Exams, 50% Portfolio (20% Drafts, 30% Revisions), 10% Participation

In accordance with university-wide W course policy, you may not receive a passing grade in the course without earning a passing grade on the Portfolio (Writing Component).

Many upper division math courses such as Analysis I, Abstract Algebra I, Introduction to Number Theory, which may be required for a math major plan of study, require a grade of 'C' or higher in Math 2710(W) as a prerequisite; a grade of 'C-' or lower is not sufficient.

Disability Support Services

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Center for Students with Disability:

⟨`http://www.csd.uconn.edu/`⟩.

They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Academic Integrity

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instance of academic dishonesty to Community Standards. For more comprehensive information on academic integrity, please refer to the Undergraduate Academic Integrity Policy:

⟨`http://community.uconn.edu/the-student-code-appendix-a/`⟩.

Syllabus Revision

The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class and changes to this syllabus will be posted on the course website.