Modern Computational Math

Meeting Times (in Tomson 184):

Math 242A: Monday, Wednesday, and Friday, 11:50am – 12:45pm

Math 242B: Monday, Wednesday, and Friday, 12:55pm – 1:50pm

Office Hours (in RMS 405): Mon. 8:00–8:55 & 2:15–3:15, Wed. 2:30–3:30, Thurs. 9:30–10:30, Fri. 10:30–11:30, whenever the door is open, or by appointment

Contact info: wright5@stolaf.edu

Web Site

The course web site is:

http://math242.mlwright.org/

You will refer to this web site frequently for homework assignments and course files.

In addition, the course will use *Moodle* for grades and password-protected resources, and *Piazza* for an online discussion forum about course topics.

Text

There is no textbook for this course. However, the course will involve a variety of assigned readings, which will be available online.

Course Objectives

1. To understand how computation and mathematics inform each other.
2. To develop and/or improve ability to work computationally in various programming environments, especially *Mathematica* and *R*.
3. To use computational experiments to formulate precise conjectures about mathematical processes.
4. To better understand how to think mathematically and to apply mathematical thinking to real-world problems.

Software

The primary computational tools for this course will be *Mathematica* (available for St. Olaf students) and *R* (freely available online). Other programming languages, such as Python, may be used as well. No prior programming experience is assumed, though a desire to learn through experimentation will be essential.

Grading

Your final grade will be a weighted average of the following:

Minor Assignments:	10%
Projects:	65%
Final Project:	25%

Minor Assignments

This course will involve various small assignments, such as:

- The Syllabus Quiz, available on *Moodle* at the beginning of the course.
- Attend two MSCS Colloquia or Research Seminars, and complete the questions on *Moodle* about how computation relates to the subject of the talk.
- Questions to accompany reading assignments. These will be announced in class and posted on the course web site.

Projects

The main component of this course will be computational projects, which will build on computational work done in class. Project assignments, due dates, and grading information will be announced in class and posted in the course web site.

Final Project

The final project will be an opportunity to investigate a topic in computational mathematics that goes beyond what we study as a class. Projects may be completed individually or as a small group. Projects will involve reading mathematical papers and doing computational experiments. Each project will result in a written report and a brief presentation, to be delivered during the final exam period.

Strategies for Success

- Complete the readings and assigned questions before each class.
- Attend class faithfully and participate in class activities.
- Keep up with the projects. Avoid doing an assignment just before it is due.
- Don't give up when your code doesn't run or doesn't produce the desired output. Writing good code often requires many revisions. Understand that mistakes are opportunities for your brain to grow.
- If you are having trouble, seek help! Prof. Wright is happy to talk with you.

Academic Integrity

Claiming someone else's work as your own will earn you a failing grade on the work in question. Don't do it. For more information, see the *Academic Integrity* section of *The Book* (wp.stolaf.edu/thebook/academic/integrity).

Disability and Access

Prof. Wright is committed to supporting the learning of all students. If you have already registered with Disability and Access (DAC) and have your letter of accommodations, please meet with the professor early in the course to discuss, plan, and implement your accommodations in the course. If you have or think you have a disability please contact the Disability and Access office at 507-786-3288 or wp.stolaf.edu/asc/dac.