Professor: David McClendon (152 Science Center, phone x5727 (610-690-5727 off campus), hours W 2-3, Th 2-4 or by appointment, email: `dmcclen1@swarthmore.edu`)

Lectures: 10:30 AM-11:20 PM in Science Center 158.

Textbook: *A First Course in Discrete Dynamical Systems*, 2nd Edition, by Holmgren, ISBN 0-387-94780-9.

Other references: *An Introduction to Chaotic Dynamical Systems*, 2nd Edition, by Devaney, ISBN 0-201-13046-7.
Nonlinear Dynamics and Chaos by Strogatz, ISBN 978-0738204536.

Web: There will be a Blackboard page accessible at `https://blackboard.swarthmore.edu` and additional information may be posted at my personal Math 53 webpage which is `http://www.swarthmore.edu/NatSci/dmcclen1/math053.html`. Check the Blackboard page regularly for announcements.

Prerequisites: Freshman calculus (Math 15), linear algebra (Math 27 or 28), and enthusiasm towards mathematics.

Course material: We'll start with the basic constructs of dynamical systems: fixed and periodic points for maps of a real variable, bifurcations, chaos, and symbolic dynamics. After that, topics will be determined by student interest; they may include fractals and Hausdorff dimension, recurrence and Ramsey theory, higher dimensional dynamics, kneading theory, etc.

Grading policy: Homework: 20% Presentations: 20% Midterm: 25% Final: 35%

Homework: Homework assignments will be posted to Blackboard under the "Assignments" tab. You may (and probably should) work with others on homework assignments, but you must write up your own solutions.

Presentations: Each student will be responsible for at least two presentations during the quarter. The length of the presentations, and whether you will work alone or in pairs/groups, depends on how many people sign up for the course.

Midterm: There is one midterm, which you will do at home the week before Spring Break. It is open-note and open-book, but you may not seek help from other individuals.

Final exam: The final is cumulative and will be done at home after the end of lectures. It is open-note and open-book, but you may not seek help from other individuals.

Technology usage: Some familiarity with *Mathematica* is useful but not required; homework assignments and exams may require you to use Mathematica.

Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements must register with the Student Disability Services office. Students who qualify for services should bring their letter of accommodations to me as soon as possible.

Academic dishonesty: Papers will be monitored for "magic answers". Issues with academic dishonesty are taken very seriously and will be referred directly to the College Judiciary Committee.