MTH 291 Mathematical Snapshots, Spring 2015
Course Syllabus

Instructor: Robert Bell (rbell@math.msu.edu)
Lecture: Th 10:20 a.m. - 12:10 p.m. in A-330 Wells Hall
Instructor’s Office: C-305 Wells Hall
Instructor’s Office Hours: W 2-3 p.m., Th 12:30 - 2 p.m., and by appointment

Required Course Materials and Resources.

Piazza: You will receive an e-mail invitation to join our online class discussion forum hosted by Piazza:
https://piazza.com/

Course Web Page: I will not use Desire To Learn (D2L). Instead, all course materials are posted on our course web page:
http://www.math.msu.edu/~robertbe/mth291ss15.html

Course Description. The official course description is as follows:

Course: MTH 291 Mathematical Snapshots
Prerequisite: MTH 132, MTH 152H, LB 118, or approval of department
Topics: Selected topics in mathematics and its applications. Emphasis will be on important and intriguing ideas in mathematics without indulging in technical details.

We will have guest lectures throughout the semester. The topics which will be introduced include singular value decomposition & image compression, calculus of variations, cryptography, Julia and Mandelbrot sets, and Google PageRank.

Learning Objectives. The learning objectives of this course are as follows:

1. Improve your mathematical communication skills (both written and oral).
2. Learn to use computer programs and web search engines to experiment with and learn about mathematical ideas.
3. Broaden your perception of what is possible with a mathematics degree and develop an appreciation for what is mathematics and what it is that mathematicians do.
Homework. Some exercises will be given after each lecture. The exercises will have a due date, usually two weeks after they are assigned. There will also be discussion problems and projects which have more flexible due date.

Exams. There are no exams.

Projects. Each student is required to complete a course project. You may do this as an individual or as part of a group of 2-3 students. The project can be a research project inspired by one of the topics discussed in class, or it can be a more in depth study of one of the exercises. Your group will turn in a report and give a presentation on your project at the end of the semester during the last week or two of class or during the final exam time slot (Thursday, May 7, 7:45-9:45 a.m.).

Grading Criteria. In general, all of your work in the course will be graded according to three criteria: Does your work clearly communicate your reasoning and methods? Does your work completely address the question posed? Does your work correctly answer the question posed? Solutions which ineffectively communicate your ideas, which omit or incompletely address the questions posed, or which include inaccuracies or errors will be penalized.

Grading Policy. Grading is very low-key and flexible in this course. But you need to show that you are fairly serious about the course to earn a 4.0. Here are the guidelines:

- To get a 2.5, you just need to show up in class. Attendance will be taken in each class. If you attend at least 11 lectures, then you have earned a base grade of 2.5. If you attend 7 or fewer lectures, then, no matter what else you do in the course, the maximum grade you can earn is 2.0.
- To improve your base score to 3.0, you need to be part of a project team and get a passing grade for the project.
- To improve your base score to 3.5, you will additionally need to do many of the exercises correctly. Discussion/project problems count extra.
- To get a 4.0, you need to additionally have done more homework problems, perhaps including some discussion/project problems, earn a good grade on the project, learn how to use LATEX and type some of your work using it, and search the literature and come up with recommendations for the class.

Other Policies. No laptop computers, tablets, or phones are to be used during class unless specifically approved to take notes or to run computer programs related to the current lecture.