Syllabus for MAT 593 Fall 2015

Instructor: Terry McConnell

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Office hours: MW 2:30-3:30, and by appointment.

Class: MW 3:45-5:05 119 Carnegie

Text: *Mathematics and It's History, 3rd Edition*, by John Stillwell, Springer, New York, 2010.

Catalogue Description:

> MAT 593 **History of Mathematics** 3 IR Mathematical concepts in their historical perspective. Character and contributions of the great mathematicians and relation of mathematics to other sciences. Prereq: 12 credits of calculus and at least two 500-level mathematics courses.

Learning goals: The history of mathematics is a vast subject, and it is impossible to cover all of it in a single semester. We shall concentrate on the period extending from ancient greek times through the time period just before Newton and Leibniz, trusting that subsequent developments will be somewhat familiar to students through their other mathematical studies.

After successfully completing this course, students should be able to:

- Summarize the contributions of the major mathematical schools in distinct historical eras and geo-political regions
- Trace the historical development of key mathematical ideas
- Outline the contributions and life events of key individual mathematicians
- Frame mathematical developments within the larger context of historical events
- Discuss the interaction between mathematical cultures in different regions and eras

This course will require active participation. Each week (after the first), students will be expected to make presentations on the readings (Mondays) and to present solutions of problems (Wednesdays). For this purpose, I will divide the class into groups of 3 or 4 students. These groups will be changed from time to time. Each group will be assigned a section or sections of the text and problems to present the following week. It is up to the group to decide how to divide up the labor of making these presentations. I will also give brief presentations in each class on material that is not in the textbook. In addition, students will write up the solution to one or two problems in polished form and hand them in each Wednesday. This will provide some practise writing mathematics.

Since there are bigger gaps between our Wednesday and Monday classes than between our Monday and Wednesday classes, you would be well advised to plan ahead and take advantage of this in order to complete the assignments.

Prerequisite: 12 credits of calculus and at least two 500-level mathematics courses.

Grading: Students will recieve a letter grade on each assignment, and in addition I will communicate to each group a rating of its work each week along with any constructive criticism I may have. In addition, students will send me each week a brief evaluation of their own contributions and the contributions of other students in their group. These will, of course, be kept strictly confidential. The relative importance of the various assignments to the course grade is as follows:

- Oral presentations: 40%
- Written work: 40%
- Final Examination: 20%

Final Exam: Friday, December 18, 10:15-12:15, place: TBA

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 303 of 804 University Avenue, or call 315-443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see http://academicintegrity.syr.edu

Religious observances policy. SU religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice (Student Services -> Enrollment -> My Religious Observances) from the first day of class until the end of the second week of class.

Other Resources

Textbooks:

- *A History of Mathematics,* by Jeff Suzuki, Prentice Hall, Upper Saddle River, N.J., 2002.

  I used Suzuki's book the first time I taught the course. It is laid out in approximately chronological order and includes material on Egyptian and Babylonian mathematics (which our textbook lacks.) It is a rather difficult book because it relies on source material (in translation!) to a greater extent than other texts.

- *A History of Mathematics, 3rd Edition* by Victor J. Katz, Addison Wesley, Boston, 2009.

  I have also taught from this book. It is also presented in roughly chronological order. It has a rich collection of problems, some of them quite difficult.

- *An Introduction to the History of Mathematics 6th Edition*, by Howard Eves, Thomson, Pacific Grove, California, 1990.

  More thematically organized than the other texts. It has a wonderful section on the history of the number pi. Related problems are grouped into projects.

- *The Historical Development of the Calculus,* by C.H. Edwards, Jr., Springer, New York, 1979.

  A wonderful little book - highly recommended - but too narrowly focused on the calculus to serve as the primary textbook for a history course

Other Resources

- [The History Guide (web site)](#)

  European centric, but includes a very valuable set of lectures on ancient and medieval history for those of us (like me) who never took a history course in college.

- [Audio lectures on topics in History of Math (From the BBC)](#)

  Thanks to colleague Jack Ucci for providing this entertaining link.