

Math 320 Fall 2017
History of Mathematics
Meeting times: MWF, 11:00-11:50 in Boullion 112

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Office Hours: Monday and Wednesday 2:00–3:00 and Tuesday and Thursday 9:00–10:00. I'm also around other times quite a bit, so stop by! You can also make an appointment, and we'll find a time that works for both of us.

Course Description

This course is designed to help students learn the basic outline of the history of mathematics. One of the most important ideas in this class is that mathematics *has* a history. It is a human production, which was conceived, built, and developed by people who were products of their times and cultures. The theorems, definitions, and even the fields of interest to mathematics today have been the product of a lot of work, back-tracking, and fights over the last 4000 years or more.

Because we will survey the history of mathematics in a dozen countries over a period of 4000 years or more, it will not be possible to cover everything. Our main focus will be on the mathematics relating to what is today the standard high school curriculum. Our secondary focus will be on the mathematics taught today at the university.

The history of mathematics is an active area of study and research. (In fact, there are many things about math history that are still unknown!) I hope that by the end of this course, some of you will be sufficiently interested in the field to want to pursue its study further.

Goals and Objectives

In addition to understanding the big concepts discussed above, there are some specific skills I hope you will develop over the course of this term. When we're done, I hope that each of you...

- ... will know an overall outline of the history of mathematics and will be able to place events at the proper point of the development of the subject;
- ... will be able to locate and read the secondary literature in the history of mathematics and interact critically with it;
- ... will understand the relationship between the development of mathematics and culture.
- ... will be able to express the result of your research in written form;
- ... will know some fun stories about math history!

Required Texts:

1. William P. Berlinghoff and Fernando Q. Gouvêa, *Math through the Ages: a gentle history for teachers and others*, Expanded Edition.
(We will use this as an outline for the history of mathematics, and as a jumping off point for detailed study of some topics of interest to students in the class.)

2. William Dunham, *Journey through Genius: the great theorems of mathematics*.
(We will use this book to carefully examine the changing role of proof in the history of mathematics, and to examine proofs of some of its greatest theorems.)

What will happen in the course: For the most part, classes will combine lecture and discussion of the material in the readings. I will assign you something to read for every class. You will be responsible for writing a brief response to this reading every class day (see below).

Evaluation and Grading:

Three writing assignments: 20% each

Homework: 10%

Quizzes: 10%

Class participation and attendance: 10%

Reading responses: 10%

Reading Responses: Each day for which a reading is assigned, you are to send me a brief (3-5 sentence or so) email about the reading. This could summarize the reading, or tell me something that you found interesting or that still confuses you. These are due by 10:15 on the day of class (45 minutes before class starts), so that I can read them before I come to class. Your responses, summaries, and points of confusion will guide our discussion of the day.

Important: In order for me to receive for reading response, it must be sent in reply to an email you will get from me after class. This will allow me to collect all of your responses together, and read them before class.

Homework: Homework will be assigned on an irregular basis, and will be due every week on Friday. Homework will largely consist of problems from *Math through the Ages*, but will also take other forms. You are responsible for getting the homework assignment if you miss class.

Quizzes: Most Fridays in class will begin with a short (10-15 minute) quiz. A typical quiz will ask you for a brief explanation or description of two people or mathematical ideas, and ask you one mathematical problem from history.

Writing Assignments: There will be three writing assignments, all of which will require spending some time in the library and also some independent thought.

- a) The first assignment will be biographical. I will choose a mathematician for each student in the class and ask you to research and write up a short biography. This is harder than it sounds, and details will be given out early in class. A first draft is due on **October 9**.
- b) The second paper will focus on getting to know the historical literature. I will ask you to choose a published paper in the field of the history of mathematics, read it, and write a short summary. This will be due on **October 30**.
- c) Finally, the third paper will ask you to choose a historical topic, research it, and write about it. This will be by the end of our final exam period, **Thursday, December 7th, at 10:00 a.m.**. The paper will serve as our final exam.

I will be providing more information on each of these soon. For now, keep your eyes open for an interesting topic for paper three.

Attendance and Participation: Class attendance and participation are a required part of this course and will influence your grade. It is your responsibility to come to class having done the readings and given them serious thought and to be prepared to help the class discuss the material. After missing three classes, you will use one of your 10 “participation” points for each day you miss.

Cheating and Plagiarism: You are encouraged to interact with others as you do the readings (in fact, it will be a lot more fun doing it that way). Your papers, however, must be your own.

You may, of course, seek help from any and all sources, but in the end what you write must be a result of your own thought processes and your assessment of the source material. Do not quote without attribution, and do not state as fact the opinions of one of your sources. Footnotes and bibliographic references are required. Feel free to discuss any questions you have about this with me. Also, please read Central's policy on academic honesty as stated in the College Catalog.

Students with disabilities who wish to set up academic adjustments in this class should confirm with me that I have received a copy of their "Confirmation of Eligibility for Academic Adjustments" from the Center for Disability Services as soon as possible so we can discuss how the approved adjustments will be implemented in class. Students without this form should contact the Center for Disability Services, Barge 205 or DS@cwu.edu or 963-2214.

I reserve the right to change the policies contained in this syllabus as dictated by developments during the quarter.

A note on exams: Some people believe that history is a long list of facts and dates. Others expect that a history of mathematics exam will ask the student to recall these facts and dates. Nothing could be further from the truth. In fact, we will deliberately forbid all exams in this course. In particular, there will be no final exam.