

MATH 207 \diamond History of Mathematics \diamond Spring 2008

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Office hours: By appointment and

Monday	1:30 - 2:20
Wednesday	9:30 - 10:20
Friday	11:30 - 12:20

Course Content. We will read and discuss the content of Burton's book "The History of Mathematics" according to the following tentative schedule. At the stated dates take-home quizzes will be given that will essentially force you to read certain parts of the book.

Ch. I, pp. 1-27:	1/18	Ch. XII, pp. 668-687	1/25	Ch. II, pp. 33-58:	2/01
Ch. II, pp. 58-78:	2/08	Ch. III, pp. 85-136:	2/15	Ch. IV, pp. 143-182:	2/22
Ch. IV, pp. 185-209:	2/29	Ch. V, pp. 215-262:	3/07	Ch. VI, pp. 271-299:	3/14
Ch. VII, pp. 303-333:	3/19	Ch. VII, pp. 339-430:	4/04	Ch. VIII, pp. 339-430:	4/11
Ch. IX, pp. 439-489:	4/18	Ch. X, pp. 497-555:	4/25	Ch. XI, pp. 561-643:	5/02
Ch. XII, pp. 690-704:					

Every student will complete a **special project** that could be a report on a chosen mathematician of historical importance and (some of) his work, or some topic, innovation, or breakthrough in the history of mathematics. A list of sample topics is attached. The project must, at a minimum, suffice for an in-class presentation, and hopefully for a talk in the Undergraduate Seminar. In addition to internet sources and the Burton text, the project must at least utilize one book on the chosen subject. The project must include some mathematics and not just story.

Project proposal	due Wednesday, January 30
First draft	due Wednesday, February 27
Second draft	due Monday, March 31
Final draft	due Monday, April 28

Exams and Grading. There will be 15 quizzes worth 10 points each and the final worth 50 points. The special project will be worth 150 points. Homework will also be assigned and is due, without saying, at the next class. "Exam points" will count for 75% of the grade and homework points for 25%. Your "course percentage" will be computed according to the following formula.

$$\text{course percentage} = 75 \cdot \frac{\text{your exam points}}{350} + 25 \cdot \frac{\text{your homework points}}{\text{possible homework points}}$$

Your course grade will be based on this percentage.

Final exam Friday, May 16, 9:45-11:45 am, K414

Questions and Help. You are encouraged to ask questions anytime, and to see me to clear up uncertainties. We will arrange one-on-one consultation for the special projects.

Sample Projects

- (1) Life and work of any mathematician of your choice
- (2) Archimedes and the method of exhaustion
- (3) Archimedes: The Sand Reckoner
- (4) Archimedes: The Cattle Problem
- (5) Leonhard Euler, what's in his book "Algebra"?
- (6) Richard Dedekind: Continuity and Irrational Numbers, "Dedekind cuts"
- (7) Richard Dedekind: The Nature and Meaning of Numbers
- (8) René Descartes "Géométrie".
- (9) Euclid's Elements and the Greek concept of numbers.
- (10) Isaac Newton and the method of fluxions
- (11) Gottfried Wilhem Leibniz and differential calculus
- (12) Babylonian or Egyptian or Chinese or Indian or Japanese mathematics
- (13) Book reports (Constance Reed, Hilbert in Goettingen; A beautiful mind ...)
- (14) Proofs of the theorem on similar triangles, in particular, Euclid's proof
- (15) Compass and ruler constructions
- (16) Diophantine equations
- (17) Presentation of numbers (enumeration systems)
- (18) Proofs of the Pythagorean theorem
- (19) The Pythagoreans and number magic
- (20) Pythagorean triples
- (21) The five Platonic solids
- (22) The Golden Section
- (23) Historical curves (cissoid, conchoid, spiral, limaçon, trisectrix, ...)
- (24) The Sieve of Eratosthenes, sieve methods
- (25) The Fibonacci sequence
- (26) Solutions of polynomial equations, the Fundamental Theorem of Algebra
- (27) Napier and Logarithms
- (28) Felix Klein and the Erlangen Program