Objective

The objective of this course is not merely to know what mathematics was discovered when and by whom, but to understand how the development of mathematical ideas was influenced by knowledge and notation available, realize the intellectual struggles involved in the development of new mathematical concepts, and appreciate mathematics as a part of human culture.

Assessment

Your grade will be based on two tests (held during regular class periods), each worth 75 points, the final, worth 150 points, and 3 projects worth a total of 200 points.

Tests

The tests will contain both historical and mathematical questions. Some questions on each test will be taken from the homework (numbers may be changed). Some questions will be based on lectures and/or class discussions. The tentative dates of the tests are given in the schedule below. Students missing a test with an approved excuse will have the results from their comprehensive final weighted more heavily in determination of their final grade, with an emphasis on the material pertaining to the missed test. Approved excuses include University sanctioned activities, any illness serious enough to require a visit to a doctor, or inclement weather (other than heat) sufficient to close the public schools. If you need to miss a test due to a University sanctioned excuse (e.g., athletic trip) you need to arrange this with me preferably one week ahead, but at least 1 class period before the test. For unforeseen excuses, (e.g., illness), you need to notify me of the reason for missing the exam as soon as possible (e-mail me or leave a phone message at 294-8168, with a phone number where I can reach you during and after the test). Books, notes, etc. are prohibited on tests. All electronic devices except calculators and clocks/watches are prohibited (must be turned off and out of sight). Any calculator used must NOT contain any program or notes (flush the memory before the test- I reserve the right to examine any calculator you use). Calculators and clocks/watches used must not have wireless ability to communicate with other devices during the test. Cheating is a serious offense and will result in a referral to the Dean of Students for Academic Dishonesty and a penalty ranging from 0 on the test to failure of the entire course.

Projects

- Project 1: A written discussion of a mathematical problem (see list), including both a brief historical setting of the problem and a mathematical solution (2-4 typed pages*).
- Project 2: An intellectual biography of a mathematician, including a brief discussion of life and cultural setting and more extensive discussion of his/her mathematics (4-8 typed pages*).
- Project 3: Participation in a panel discussion tracing a single mathematical concept through history and/or across cultures, or a debate about a priority dispute. Each participant will be responsible for a particular part, and the entire panel will be responsible for making a coherent whole from the pieces.

Projects 1 and 3 are worth 50 points each. Project 2 is worth 100 points.

* For Projects 1 and 2: double spaced pages, 12 point font, 1” margins, exclusive of figures. The paper may include hand drawn diagrams, formulas and symbols (although typeset formulas/symbols are preferred). Although the paper may contain formulas, the written part should be well written, using correct grammar, spelling, and punctuation. It should be written as a paper (essay), not merely a list of questions and answer, even if that is the format of the Project 1 description. The paper should include a list of sources consulted (if any). It is not necessary to consult sources for some of the Project 1 topics; at least 3 reputable sources excluding the text should be consulted for Project 2 (the text may be an additional source).

Projects will be due at the beginning of the class period on the due-date. However, they will be accepted without penalty up to the beginning of class on the grace date. No excuse except documented incapacitating emergency covering the entire grace period will be accepted for lateness (beyond the grace
date) of projects 1 and 2, as your project should be prepared well ahead of the due-date. Projects may be submitted in advance if desired.

Any diagram you did not personally make must state the source with the diagram. Any entire sentence that is quoted must be in quotation marks and state the source. Failure to properly cite material from taken other sources is a serious offense and will result in a referral to the Dean of Students for Academic Dishonesty and a penalty ranging from 0 on the project to failure of the entire course.

Lectures/ Class discussions/ Reading Lectures will summarize themes and present the relevant mathematics. Facts are of course the basis for discussion, and will be used as such, but not all historical details from the reading will be covered in the lecture; students are responsible for reading this material in the text, on the schedule shown below. This is your principal source of facts. Read the assigned material for historical background, people involved, and general overview of the mathematics BEFORE the lecture. You do NOT need to worry about the details of the mathematics until after the lecture covering that material. The lecture will highlight the mathematical details for which you are responsible. After the lecture you should reread text material specific to the mathematics covered in the lecture.

Reading Schedule (tentative- see web page for up-to-date schedule)

# date Chapter of the text project due dates
1 Jan. 11 Ch. 1 (skim), Ch. 2.1
2 Jan. 13 Ch. 2.2
3 Jan. 18 Ch. 3.1
4 Jan. 20 Ch. 3.2, 3.3
5 Jan. 25 Ch. 4
6 Jan 27 Ch. 5
7 Feb. 1 Ch. 6
8 Feb 3 Ch. 7.1, 7.2
9 Feb. 8 Ch. 7.3, 7.4, 7.5 project 1 due
10 Feb. 10 Ch. 8 project 1 grace date
11 Feb. 15 review and catch-up
12 Feb. 17 test 1
13 Feb. 22 Ch. 9.1, 9.2
14 Feb. 24 Ch. 9.3, 9.4
15 Mar. 1 cubic contest
16 Mar. 3 Ch. 10
17 Mar. 8 Ch. 11.1, 11.2, 11.3
18 Mar. 10 Ch 11.4, 11.5
19 Mar. 22 Ch. 12.1, 12.2, 12.3
20 Mar. 24 Ch 12.4, 17.1, 17.2 project 2 due
21 Mar. 29 Ch. 17.3, 17.4 project 2 grace date
22 Mar. 31 Ch 14
x April 4 review 9-10 PM Carver 150
23 Apr. 5 test 2
24 Apr. 7 Ch. 16
25 Apr. 12 Ch. 15
26 Apr. 14 Ch. 19
27 Apr. 19 Ch. 20
28 Apr. 21 Ch. 13, 18
29 Apr. 26 Project 3 presentations
30 Apr. 28 Project 3 presentations

Homework Homework will be assigned daily and discussed in class. Many test questions will come from the homework.

Iowa State University complies with the American with Disabilities Act and Section 504 of the Rehabilitation Act. See statement on class web page:
http://www.math.iastate.edu/lhogben/classes/math489.html