

Math 3140 – History of Mathematics Section 1 Fall 2005

Information contained in this syllabus, other than the grading, late assignments, makeup work, and attendance policies, may be subject to change with advance notice, as deemed appropriate by the instructor. Changes will be announced in class.

Instructor: Sarah Brown
Office: SC 120
Phone: 865-8173
Email: brown_s@suu.edu
Website: http://www.suu.edu/faculty/brown_s/
Prerequisites: Math 1220 Calculus II
Text: None
Other Materials: You will be using the internet extensively
Fees: None
Class Meetings: 1-1:50pm MWF SC 129
Office Hours: MTWThF 10-11am in SC 120

Course Description: (As found in the SUU 2005-2006 Undergraduate Catalog): A study of the development of mathematics and the people making significant contributions to mathematics.

Objectives: Students will

- Know about the lives and contributions of notable ancient and modern mathematicians
- Study number systems and mathematical focuses of various civilizations
- Learn about historical mathematical instruments: how they work, when and why they were developed
- Research the historical development of famous numbers; famous equations, axioms, and theorems; and fields of study
- Appreciate how religion has influenced mathematics and how mathematics has influenced religion
- Realize the interdisciplinary context in which much of mathematics has been discovered/created and also realize that pure mathematics has often found practical application much later
- Deteriorate mathematics by using history to add context to mathematics
- See mathematics that is not taught in traditional textbooks, such as mathematical games, paradoxes, notation, terminology, and famous mistakes
- Recognize the effects of economics, politics, prosperity, and war on mathematical progress
- Be conscious of influences on how math history is preserved, lost, taught, and misrepresented, including record keeping methods, war, climates, religion, and language barriers
- Study how and why methods of proofs have evolved from nonexistence to today's methods
- Find, summarize, and analyze journal articles about math history
- Work individually and in groups to research and present math history orally and in written form
- Use library and internet sources to learn about math history

Grading:

Homework	390 points (30 assignments, 15 points each, lowest 4 assignments dropped)
Person Presentation	150 points
Instrument Presentation	150 points
Article Presentation	60 points
Topic Presentation	250 points

A	930-1000 (93%-100%)	B-	800-829 (80%-82%)	D+	670-699 (67%-69%)
A-	900-929 (90%-92%)	C+	770-799 (77%-79%)	D	630-669 (63%-66%)
B+	870-899 (87%-89%)	C	730-769 (73%-76%)	D-	600-629 (60%-62%)
B	830-869 (83%-86%)	C-	700-729 (70%-72%)	F	0-599 (0%-59%)

This class is 3 credits. Expect to spend at least 6 hours on homework and research each week, i.e., 2 hours for every hour of class. Homework is graded by selecting a few of the assigned problems. Work must be shown to get credit. You are encouraged to work in groups but may not copy others' homework. Copying solutions will result in 0 credit. **Homework is collected at the end of class.** Late homework is not accepted unless there are extenuating circumstances as approved by the instructor. You are expected to be in class everyday although attendance will not be taken. Grades will be posted periodically on WebCT <http://www.suu.edu/it/webdev/redirect/webct.asp>.

Person presentation: This presentation is to be done individually. Choose a person who has made significant contributions to mathematics. The person does not necessarily have to be a mathematician. If you need ideas, the following website lists many mathematicians: http://www-history.mcs.st-andrews.ac.uk/history/Indexes/Full_Alph.html Give a 10-15 minute presentation to the class and submit a 4-8 page paper. Be sure to bring out any interdisciplinary aspects of the person's mathematics.
Topic 10 points, Sources 10 points, Rough draft 20 points, Class presentation 50 points, Write-up 60 points, Total 150 points.

Instrument presentation: This presentation is to be done in pairs. Choose a mathematical instrument or a group of related instruments. Examples are calculators, computers, encryption machines, abacuses, Napier's bones, quipus, etc. You may not do the slide rule or the compass, as we will cover these in class. Give a 10-15 minute presentation to the class and submit a 4-8 page paper. Everyone in the group will receive the same grade unless there are extenuating circumstances. If there are problems, please let me know so we can get them resolved quickly.
Topic & partner 10 points, Sources 10 points, Rough draft 20 points, Class presentation 50 points, Write-up 60 points, Total 150 points.

Article presentation:

Find an article in a professional journal relating to math history. Give a 5 minute presentation to the class on the important/interesting parts of the article and submit a 2-5 page summary and opinion. Please turn in a copy of the article. Possible resources are *Scientific American*, *School Science & Mathematics*, *Mathematics Teacher*, *Teaching Children Mathematics*, *Teaching K-8*, *Science News*, and other education and mathematics journals.

Suggestions:

- Browse through journals that SUU has. Look under education or mathematics
- Most journals are not subscribed to by SUU, so you may need to utilize interlibrary loan. Some online journals will let you view sample articles without subscribing.
- Go to education/math society websites and look for journals they publish. Examples: www.nctm.org, www.ams.org, www.maa.org

Title 10 points, Class presentation 20 points, Write-up 30 points, Total 60 points.

Topic presentation: This presentation is to be done in groups of three. You may choose a number (e, i, 0, golden ratio, etc.), a theorem (Fermat's last theorem, Pythagorean theorem, etc.), an axiom (Axiom of Choice, Euclid's 5th Axiom, etc.), a famous problem (Traveling Salesman Problem, Riemann Hypothesis, etc.), a sequence (Fibonacci, etc.), or a field (statistics, set theory, math biology, etc.). You may not use topics covered extensively in class (pi, logarithms, etc.). Give a 15-20 minute presentation to the class and submit an 8-15 page paper. Be sure to bring out any interdisciplinary aspects of the topic. Everyone in the group will receive the same grade unless there are extenuating circumstances. If there are problems, please let me know so we can get them resolved quickly.

Topic & group list 10 points, Sources 10 points, Outline & task division 10 points, Rough draft 20 points, Class presentation 100 points, Write-up 100 points, Total 250 points.

Guidelines for presentations:

- More than one person/group may not present the same thing. I will have a sign-up sheet in class. First come, first serve.
- Cite sources correctly. Unknowingly plagiarizing is still plagiarizing.
- Use correct grammar and spelling.
- Use several kinds of sources, such as magazines, books, and the internet. Be aware that anyone can put pretty much anything on the internet, so it is not always reliable. Films should be documentaries, as Hollywood colors the facts. For example, *A Beautiful Mind* is not an accurate portrayal of John Nash's life.
- The presentations in class should be done on overhead transparencies or a computer. I will bring a laptop to class. It does not have an A drive, but it does have a CD drive and a USB port. We also have internet access.
- Please make the class presentations interesting and understandable.
- If possible, submit the write-ups via email.
- If you'd like me to look over your final draft & correct it, I'd be glad to do so. Give me enough time before the due date.

University Policies: Scholastic dishonesty will not be tolerated and will be prosecuted to the fullest extent. You are expected to have read and understood the current issue of the student handbook (published by Student Services) regarding student responsibilities and rights, and the intellectual property policy, for information about procedures and about what constitutes acceptable on-campus behavior.

Students with medical, psychological, learning, or other disabilities desiring academic adjustments, accommodations or auxiliary aids will need to contact the Disability Support Center, Room 205D, Sharwan Smith Center, phone (435) 865-8022. The Disability Support Center determines eligibility for and authorizes the provision of these services and aids.

Additional Resources: The Student Success Center <http://www.suu.edu/ss/success/> in the Sharwan Smith Center has free writing tutoring <http://www.suu.edu/ss/success/tutoring.html>.

Schedule

Date	Assignment due
29-Aug	
31-Aug	Topic of person presentation due 5pm Hw 1 (all homework is due at the end of class)
2-Sep	Sources for person presentation due 5pm Hw 2
5-Sep	Labor Day Holiday
7-Sep	Hw 3
9-Sep	Hw 4
12-Sep	Hw 5
14-Sep	Rough draft of person presentation due 5pm
16-Sep	Hw 6
19-Sep	Hw 7
21-Sep	10-15 min. person presentation given to class
23-Sep	10-15 min. person presentation given to class
26-Sep	4-8 page write-up of person presentation due 5pm
28-Sep	Topic and partner of instrument presentation due 5pm Hw 8
30-Sep	Sources for instrument presentation due 5pm Hw 9
3-Oct	Hw 10
5-Oct	Hw 11
7-Oct	Hw 12
10-Oct	Hw 13
12-Oct	Rough draft of instrument presentation due 5pm
14-Oct	Hw 14
17-Oct	Hw 15
19-Oct	Hw 16
21-Oct	10-15 min. instrument presentation given to class
24-Oct	Harvest Day Holiday
26-Oct	4-8 page write-up of instrument presentation due 5pm
28-Oct	Article title due 5pm Hw 17
31-Oct	Hw 18
2-Nov	Hw 19
4-Nov	5 min. article presentation given to class
7-Nov	2-5 page summary and opinion of article due 5pm
9-Nov	Topic and group list for topic presentation due 5pm Hw 20

11-Nov	Sources for topic presentation due 5pm Hw 21
14-Nov	Hw 22
16-Nov	Outline of topic presentation write-up Task division among group members of topic presentation Hw 23
18-Nov	Hw 24
21-Nov	Hw 25
Nov 23-25	Thanksgiving Holiday
28-Nov	Hw 26
30-Nov	Hw 27
2-Dec	Rough draft of topic presentation due 5pm
5-Dec	Hw 28 Reminder: Complete student evaluations online
7-Dec	Hw 29 Reminder: Complete student evaluations online
9-Dec	Hw 30 Reminder: Complete student evaluations online
12-Dec	Study Day
15-Dec	1-2:50pm 15-20 min. topic presentation given to class
16-Dec	8-15 page write-up of topic presentation due 5pm