

MATH 2720W: History of Mathematics

Description: A history of the growth of the various fields of mathematics.

Prerequisites: (i) MATH 2110Q or 2130Q, and 2210 or 2410Q, or (ii) MATH 2144Q or 2420; and ENGL 1010 or 1011 or 3800. This course may not be counted in any of the major groups described in the Mathematics Department listing.

Introduction and Course Expectations

Welcome to the M2720W: History of Mathematics course syllabus. On this pages you will find information you need to know about the course.

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Course Website:

<http://www.math.uconn.edu/~gageonea/math2720f15>

Course Expectations

- You are expected to **attend** all classes and be on time. You are responsible for all the work discussed in each class so it is important that you attend and participate in class.
- You are expected to **be prepared** for each class – that is, to review your class notes, read the assigned material from the text(s) prior to coming to class and be ready to discuss and participate in discussions in class.
- You are expected to **complete all homework assignments on time**. In addition, writing assignments are to be completed and handed in on time and conform to the guidelines spelled out in each assignment.
- You are expected to **participate** in class – that is, to ask and answer questions in class. In order to learn and understand the material it is important that you are **actively involved and engaged** in the learning process – that is, in doing and discussing the mathematics and assigned readings during class.
- You are expected to take control of your own learning and to **seek out help** if you don't understand the material taught in class. There are a number of options available for extra help including the Q-Center.

Textbook

There are two required textbooks for the course:

- 1) Math Through the Ages--by Berlinghoff and Gouvea (Expanded Edition)
- 2) Journey through Genius--by Dunham

Both texts are available through the UConn Coop or can be found online. In addition, we will use the following online resource (browse to become familiar with the many biographies and mathematics topics available at this website):

[The MacTutor History of Mathematics Archives \(University of St Andrews\)](#)

Grading Policy

The course grade will be determined as follows:

Individual and Group-Work Homework Assignments: 20%

Paper 1 (3 pages): 20%

Paper 2 (5 pages): 25%

Paper 3 (7 pages): 35%

Each written assignment is to be submitted in 2 formats: hard copy in class AND as a .PDF file via email (please use your university account). The final version of each paper will be graded using the following grading scheme: 40% content (writing style, depth and elaboration of points, evidence of supporting research), 40% structure (organization and focus), 20% mechanics (grammar and citation style). For details see the [Paper Grading Rubric](#).

The Papers (1, 2 and 3) Consult these links before starting to work on your first writing assignment.

- Citation Style: [APA citation style \(Cornell University\)](#)
- Free Bibliography Generator (APA, MLA, and other styles): [EasyBib.com](#)
- Evaluating reliability of printed and online sources: [CRAAP test \(California State University, Chico\)](#)
- How to recognize plagiarism: [Tutorial and test \(Indiana University\)](#)
- Online Writing Lab: [Owl \(Purdue University\)](#)

UConn policies for W courses require that the combined lengths of the three papers (papers 1, 2 and 3), excluding bibliography, is at least 15 pages. Page length assumes a 12-point Times New Roman font, double-spaced, 1" margin page. There are about 250 words per page. Since typing-software affect page length, please use word count when calculating the length of your paper.

NO LATE SUBMISSIONS of proposals, drafts, or final versions of papers 1, 2 and 3 are accepted, unless there is a serious emergency for which you provide proof. Paper 3 is considered to be the final exam for this course and as such rescheduling its submission needs approval from UConn's Dean of Students Office, see [UConn Final Exam Policy](#).

Paper 1

Draft and Draft Cover Letter due: Last class meeting of week of September 7

Final Version and Final Version Cover Letter due: Last class meeting of week of September 21

Paper 2

Proposal due: Last class meeting of week of September 28

Draft and Draft Cover Letter due: Last class meeting of week of October 5

Final Version and Final Version Cover Letter due: Last class meeting of week of October 19

Paper 3

Proposal due: Last class meeting of week of October 26

Draft and Draft Cover Letter due: Last class meeting of week of **Nov** 9

Peer Review Forms due: Last class meeting of week of **Nov** 16

Final Version and Final Version Cover Letter due at Final Week Time time:

Due, Dec 15, 9:00-12:00, MSB 127

Extra Help: UCONN Writing Center

I encourage you to come to my office for help during office hours, and I will be happy to find other times when we can meet if my office hours schedule does not fit your schedule. Since part of the purpose of this course is to help you learn how to write effectively, you may also wish to consult the tutors at the [UCONN Writing Center](#).

Syllabus, Homework Assignments, and Reading Assignments

The actual pace of the course may be slightly different than listed in the outline below. It will depend on the students' response to the material. Working as individuals and/or student groups you will be required to lead a discussion of assigned readings and problems in class and hand in and present assignments from the readings. Assignments will be given in class every week. These will consist of both individual and group-works that will be completed at home and/or during class. Updates to the syllabus, as well as information, updates, and links to reading and homework assignments, will be posted on a weekly basis as we progress through the course. Please check the course's website on a weekly basis.

Tentative Outline: course's website on a weekly basis.

Notes: * Below we will denote by: D = [Journey through Genius](#) by W. Dunham, B&G = [Math through the Ages](#) by W. P. Berlinghoff and F. Q. Gouvêa, MTM = [The MacTutor History of Mathematics Archives](#).

- Aug 31
- Overviews of the history of mathematics
- The history of numerals
- The history of zero

- * Important historical names, dates, and events
- * Mathematical Periods

MTM: An overview of the history of mathematics

B&G: Sketch 1 (p 65-70), Sketch 3 (p 79-82)

- Sept 7
- Babylonian
- mathematics
- Egyptian mathematics

- * An overview of Babylonian mathematics
- * An overview of Egyptian mathematics

Sept 14
Early Greek
Mathematics
Euclid's Elements:
Geometry

D: Chapter 2 (p 27- 60, you may skip the proof of propositions 1.15, 1.16, 1.26, 1.27, 1.3 AAA)

theory
Sept 21
Euclid's Elements:
Number theory

D: Chapter 4 (p 84-112)
 * Archimedes Cattle Problem (Not required. Read for fun!)
 B&G: Sketch 19 (p 193-198)

Sept 28
Archimedes and the
circular area
Euclid's Elements:
Geometry Non-
Euclidean geometries

* Archimedes Cattle Problem (Not required. Read for fun!)

Oct 5
Greek mathematics
After Archimedes
The history of π

MTM:

- * An overview of Arabic mathematics

B&G: Sketch 10 (p 127-130), Sketch 8 (p 113-118)

- * The man who counted by Malba Tahan (recommended, but not required)
- * Earliest Uses of Various Mathematical Symbols (Not required. Check for fun.)

Oct 12
Algebra
Arabic mathematics
The classic art

- * An overview of Arabic mathematics
B&G: Sketch 10 (p 127-130), Sketch 8 (p 113-118)
- * The man who counted by Malba Tahan (recommended, but not required)
- * Earliest Uses of Various Mathematical Symbols (Not required. Check for fun.)

Oct 19 B&G: Sketch 11

B&G: Sketch 11

Italian Renaissance: olutions to cubic and uartic equations	
Week 9 Oct 26 Gems from Isaac Newton	D: Chapter 7 (p 155-174 and 177-183) B&G: Sketch 13 (p147-152)
Week 10 Nov 2 Calculus: Newton, Leibniz, and the Bernoullis Fermat's Last Theorem	D: Chapter 8 (p 184-206)
Week 11 Nov 9 Euler and his legacy	D: Chapter 9 (p 207-222) and Chapter 10 (p223-235, you may skip the proofs)
Week 12 Nov 16 Cantor and the challenge of the infinite	D: Chapter 11 (p 245-266) B&G: Sketch 25 (p 237-242)
Thanksgiving Break Nov 23	Happy Turkey Day! Relax and have fun!
Week 13 Nov 30 Cantor and the transfinite	D: Chapter 12 (p 267-283) Presentations!!!
Week 14 Dec 7 A brief look backward and forward Catch-up and wrap-up	
Final Exam Week	Presentations!!! Journal of Mathematics and the Arts: * <u>Poetry Inspired by Mathematics: A brief journey through history</u> FINAL PAPER DUE: Dec 15 90:00-12:00 MSB 127

Academic Integrity

A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgment of the research and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned. Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, and examinations); any attempt to influence improperly (e.g. bribery, threats) any member of the faculty, staff, or administration of the University in any matter pertaining to academics or research; presenting, as one's own, the ideas or words of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved. A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code.

Student Support Services

- Counseling and Mental Health Services 486-4705 (after hours, use 486-3427)
- Career Services 486-3013
- Alcohol and Other Drug Services 486-9431
- Dean of Students Office 486-3426
- Center for Students with Disabilities 486-2020 (voice), 486-2077 (TDD)