MTH 381: History of Mathematics – Spring 2023

Department of Mathematics and Applied Mathematical Sciences
University of Rhode Island

Quick Details

Instructor:	Dr. Michael Barrus
Email:	barrus@uri.edu
URI Office Location / Telephone:	101C Lippitt Hall / (401) 874-4430
Class Sessions:	MWF 12:00 – 12:50 pm Swan Hall, Room 211
Office Hours:	Drop-in (no appointment needed): Mon/Wed 3-3:50 pm. Other times available by appointment—please ask! Office hours held in 101C Lippitt Hall (though Zoom options are available upon request).
Prerequisites:	MTH 142 or equivalent

Course Description

General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. *–2022-2023 URI Undergraduate & Graduate Catalog*

Course Goals

You will become familiar with major events in the worldwide development of mathematics. Through reflection and discussion, you'll also see evidence of the past's effects in modern mathematical experience and formulate personal lessons that you can profitably take from history. Additionally, you will learn and practice mathematical content related to historical periods and themes we discuss.

Student Learning Outcomes

In harmony with the course goals above, a list of Learning Outcomes (i.e., content-specific skills and abilities you should develop through our coursework) will be created throughout the semester and provided in our classroom management system Brightspace. These Learning Outcomes should assist you in evaluating your learning and preparing for assessments, and they will be updated as the semester progresses.

Course Texts

There will not be a formal required textbook for the course. Instead, within our Brightspace site you will be provided with links to online texts and to digital resources.

Though our readings will come from many sources, some sources will appear most commonly. These include the following:

- **MacTutor History of Mathematics Archive** (https://mathshistory.st-andrews.ac.uk). This online resource is structured like an encyclopedia, with detailed biographies of more than 3000 mathematicians, bibliographies, and other resources.
- ***Convergence*** (https://www.maa.org/press/periodicals/convergence), a publication of the Mathematical Association of America.

For further reading, the following texts (which are not required) were consulted in the course's design and may be helpful:

- *A Concise History of Mathematics* by Dirk J. Struik. 4th revised edition, Dover Publications, 1987.
- *The History of Mathematics: An Introduction* by David M. Burton. 7th edition, McGraw Hill, 2010.

A copy of each of these latter texts will be available from the URI Library Reserves. Each may be checked out from the Circulation Desk (mention MTH 381) for a few hours at a time, for in-library use.

Classroom Protocol

Special statement on wearing masks: *Per URI guidance at this time, students are required to wear a well-fitting mask in all classroom settings unless the requirement is waived by the instructor. Guidance on mask-wearing requirements for MTH 381 will be given periodically during the semester and may be subject to*

change at any time. If you have any question regarding whether the masking requirement has been waived at any time, please contact me to ask.

Other health-related things to observe:
- Students who are experiencing symptoms of illness should not come to class. Please stay in your home/room and notify URI Health Services via phone at 401-874-2246.
- If you are already on campus and start to feel ill, go home/back to your room and self-isolate. Notify URI Health Services via phone immediately at 401-874-2246.
- If you are unable to attend any class, please notify your section's instructor prior to the start of class by phone or email or through the medium your instructor has established for the class.
- This syllabus describes our best-case scenario of in-person instruction. Depending on illness-related factors (including, but not limited to, widespread needs for isolation or instructor illness), the class modality and other details in this syllabus may change in a way that better fits current circumstances. If changes are made during the semester, these decisions will not be taken lightly and will be clearly announced via email and Brightspace.

Attendance and participation during class will be vital to the learning process, as classroom activities will be designed to provide needed practice and clarify misconceptions. No points will be directly attached to attendance in computing course grades, though class meetings will often allow some (though not all) of the class's opportunities for discussion, which will be assessed as part of the course grade. Attendance will be noted and may also be used (at the instructor's discretion) in justifying an upward adjustment of a grade at the end of the semester.

Students are responsible for being familiar with and adhering to the published "Community Standards of Behavior: University Policies and Regulations" which can be accessed in the University Student Handbook. As with most university courses, all class participants are expected to behave in a respectful and safe manner at all times throughout the semester. Please do your best not to inhibit the learning experience of anyone else, and please feel free to bring any issues you have with others' behavior to the attention of the instructor. Issues that may arise will be dealt with in as respectful and confidential a manner as possible.

Grading Policy

Much of the course will be dealing with a ***story*** (with several threads). It's a lot to take in, and assigned activities and assessments will help you to process what we see in class. Your course grade will be determined through a weighted average with categories and weights as follows:

20%   Reading/writing assignments

20% Homework problems
20% Two midterm exams, equally weighted
25% Individual project
15% Final exam

Each grade category's components and policies will be described in sections that follow. No extra credit is anticipated for this course.

Letter grades for the course will be determined by considering your overall weighted percentage according to the scale below:

A course percentage of at least	guarantees a letter grade of at least	A course percentage of at least	guarantees a letter grade of at least
93	A	77	C+
90	A-	73	C
87	B+	70	C-
83	B	67	D+
80	B-	60	D

A course percentage of less than 60% merits a grade of F.

Reading/writing Assignments and Homework Assignments

During most class periods of the semester, you will be assigned to read and respond to a provided text. Except when otherwise noted, each day's assigned reading and response should be submitted in Brightspace Assignments before the next class period begins.

Additionally, there will be an assignment available in Brightspace that consists of additional writing prompts and a set of mathematical problems connected to what has been discussed in class. These assignments will typically be due by **Tuesday evening at 7 pm** during the following week. (Early submissions are allowed and encouraged!)

Reading/writing assignments must be submitted via Brightspace's Assignments tool. For most weekly homework assignments, submissions may be made either on paper, during class meetings, or as a file upload in Brightspace in the Assignments tool. *(File uploads should consist of only **one** PDF file, not as a series of photo files—please use one of the many available tools to convert your images or word processing file into a single PDF file. Any exceptions should be discussed with Prof. Barrus ahead of time.)*

I am happy to review your graded homework after it is passed back to you. Any requests for regrading (on either homework or exams) must be brought to my attention within 2 weeks of the item's evaluation in Brightspace.

Late homework

Please respect the deadlines for assigned work as much as possible and expect that I will strictly enforce the policy stated here. Reading/writing assignments and homework assignments form a **vital** part of the class's instruction, so none of these scores will be dropped in calculating your course grade. This means that it is very important that you complete each assignment as correctly and as punctually as you can.

Late written homework may be accepted for 90% if turned in up to one class period after it is due, and up to 80% of its original value up until 10 University class days after it is due, after which the percentage that can be earned may be capped at 50%. (On occasion, I may be delayed in grading an assignment; when this happens, any assignments turned in before I begin grading will be counted as on time.) By University policy, **coursework assignments may not be accepted after May 1 at 12:50 pm** (the end of our last class meeting).

When written assignments must be turned in late, you are encouraged to turn them in *as soon as possible*, even if it is not a class day. Using Brightspace to digitally submit a late assignment may allow you to turn homework in sooner for a reduced penalty.

Group work

Group work can be a wonderful thing, and I encourage it (while also encouraging everyone to follow safe health practices). However, do not simply copy someone else's work verbatim or submit work that you do not understand; I consider this dishonest, and it is rarely beneficial to anyone's learning. Please make sure that you inject your own unique take on everything that you submit.

Please seek help early (from me, a classmate, etc.), if you need it to be able to complete assignments, and when you do receive help from someone besides yourself, be sure to clearly acknowledge that help with a statement on your homework.

There is an important exception to the above two paragraphs. During exams in this class, and while working on your individual project, you may not communicate with anyone other than Prof. Barrus about material related in any way to the exam. This includes looking things up from online sources—don't do it. Likewise, while preparing your individual project, you may not submit work that has been composed by other individuals, other than paraphrased or quoted portions of works for which you have provided a complete bibliographic reference. The purposes of the exam and the individual project are to allow me to assess how *you* as an individual are doing in our class, and what *you* as an individual are gaining

from it. No matter what the result is, please give me an honest picture of your individual, non-collaborative work on these items.

Individual Project

There is far too much to the history of mathematics for us to do more than scratch the surface, and our class will necessarily make some choices that limit our exposure to certain very interesting topics. During the individual project, you will be asked to choose an activity to complete independently based on your own preferences or historical questions, subject to instructor approval. A list of requirements, guidelines, and sample project ideas will be provided in Brightspace within three weeks of the semester's beginning. Projects will be due on Monday, April 24 (and, if turned in late, must be submitted no later than the end of our last class meeting on May 1).

Midterm Exams

There will be two midterm exams, given in class on the following dates:
(1) Friday, February 24;
(2) Wednesday, April 5.

Both exams will be held in our classroom during our usual class period. (Each exam may possibly have a take-home written portion as well, to be determined closer to the exam date.) Each will be worth 10% of your course grade. While the primary focus of the second midterm will be on the material covered after the first exam, you are expected to retain important information from the material tested by the first exam. No notes, texts, calculators, or aids of any kind will be allowed on any exam without written instructions from the instructor.

The best way to prepare for each exam will be to frequently test yourself on assigned writing prompts and homework exercises and the associated concepts and learning outcomes (recorded in the learning outcomes document). More specific information will be given for each exam as it approaches.

Final Exam

The final exam will be comprehensive, though emphasis may be given to material covered since the latter midterm exam. Unless otherwise suggested by the instructor and agreed upon unanimously by the class, the exam will be offered in our classroom at the University-appointed time, namely, **Friday, May 5, from 3:00 to 5:00 pm**. University policies concerning the final exam will be strictly adhered to. More information on the final will be given towards the end of the semester.

A Request

   In an effort to improve my teaching in future semesters, I'd like to hold on to copies of some student work to use as examples for students in future semesters of this course and possibly related courses. For these purposes it is helpful to have both "usual" examples and "unusual" ones. At times I may contact you (probably by email) asking if you will allow me to use copies of your submitted work, in an anonymous way, as part of an example in my future teaching. You will be free to ask questions and/or decline, and I will never directly use your work for these purposes without your consent. However, if you are willing to help me and future semesters of students in this way, I will gratefully and respectfully use your (anonymized) work to help me clearly and effectively show students how to learn this course's material. (And of course, if there are unwelcome issues in your work, I'll do my best to help you overcome those, too, no matter whether you grant me permission to save it or not.)

Accommodations for Special Needs

   Section 504 of the Rehabilitation act of 1973 and the Americans with Disabilities Act of 1990 require the University of Rhode Island to provide academic adjustments or the accommodations for students with documented disabilities. The student with a disability shall be responsible for self-identification to the Office of Disability, Access, and Inclusion (DAI), providing appropriate documentation of disability, requesting accommodation in a timely manner, and follow-through regarding accommodations requested. It is the student's responsibility to make arrangements for any special needs and the instructor's responsibility to accommodate them with the assistance of the DAI office.

   Any student with a documented disability is welcome to contact me as early in the semester as possible so that we may arrange reasonable accommodations. As part of this process, please be in touch with the DAI office at 302 Memorial Union, phone: 401-874-2098, URL: https://web.uri.edu/disability/.

Academic Honesty

   All submitted work must be your own. If you consult other sources (articles or books, including digital versions, resources belonging to other students from this or other universities/semesters, or online resources—including so-called "homework help" sites) these MUST be properly documented with a written comment on your assignment giving bibliographic information, or you will be charged with plagiarism/academic dishonesty and will receive a penalty for the assignment, up to and including a full loss of credit. In some cases, this may result in a failure of the course as well. In addition, the charge of academic dishonesty will go on your record in the Office of Student Life. If you have any doubt about what constitutes

plagiarism, visit the URI Student Handbook and University Manual sections on Plagiarism and Cheating at http://www.uri.edu/facsen/8.20-8.27.html.

For example, academic dishonesty includes (but is not limited to) the following actions:

• Using material, directly or paraphrasing, from published sources (print or electronic) without appropriate citation

• Using automated tools

• Claiming disproportionate credit for work not done independently

• Unauthorized possession or access to exams

• Unauthorized communication during exams

• Unauthorized use of another's work or preparing work for another student

• Taking an exam for another student

• Altering or attempting to alter grades

• The use of notes or electronic devices to gain an unauthorized advantage during exams

• Fabricating or falsifying facts, data or references

• Facilitating or aiding another's academic dishonesty

• Submitting the same paper for more than one course without prior approval from the instructors.

If you are unsure about whether an action you have taken or are considering is academically honest, ***please ask*** (sooner, rather than later).

Inappropriate Use of Course Materials

All course materials (e.g., outlines, handouts, syllabi, exams, quizzes, slideshows/presentations, lectures, audio and video recordings, etc., whether in tangible or digital form) are proprietary unless otherwise indicated by an explicit license presented with the material. In order to preserve the value of course materials and the educational experiences of later students, and to maintain appropriate copyright status for instructor creations, students are prohibited from posting online or selling any such course materials without express written permission from the instructor.

Statement on equity and inclusion

As a University and as a class, we respect the rights and dignity of each individual and group. We reject prejudice and intolerance, and we work to understand differences. We believe that equity and inclusion are critical components for campus community members to thrive.

If you are a target or a witness of a bias incident, you are encouraged to submit a report to the URI Bias Response Team at www.uri.edu/brt. There you will also find people and resources to help.

Religious Holidays

It is the policy of the University of Rhode Island to accord students, on an individual basis, the opportunity to observe their traditional religious holidays. Students desiring to observe a holiday of special importance must provide written notification to each instructor.

MTH 381 History of Mathematics, Spring 2023
Tentative Course Schedule

The following schedule is subject to change with fair notice to be given in class and through Brightspace. Class topics will be structured around the text's organization but may include material in supplementary texts and resources.

Date	Topics, Readings, Important Dates
Jan. 23-27	History and historians (what, how/how not, and why)
Jan. 30-Feb. 3	Prehistoric Concepts
Feb. 6-10	Mathematics in the Ancient East
Feb. 13-17	*(Mon 2/13: Deadline to drop with no transcript entry)* Ancient Greece
Feb. 20-24	*(Mon 2/20: Presidents Day; no classes held)* Review / catch up **Friday, February 24: Exam 1**
Feb. 27-Mar. 3	The East after Greek Society
Mar. 6-10	*(Mon 3/6: Deadline to drop courses in e-Campus)* The Beginnings in Western Europe
Mar. 13-19	*Spring Break (no classes held)*
Mar. 20-24	The 1600's
Mar. 27-30	The 1700's
Apr. 3-7	Review / catch up **Wednesday, April 5: Exam 2** Project discussions
Apr. 10-14	The 1800's
Apr. 17-21	1900-1950s
Apr. 24-28, May 1	1950s to the Present! Conclusion
May 5	**Final Exam, 3:00 pm - 5:00 pm** in Swan Hall Room 211 (our classroom)