

MATH 3010: TOPICS IN THE HISTORY OF MATHEMATICS, FALL 2019

- **Meeting:** MWF, 11:50AM-12:40PM, LCB 215.
- **Instructor:** Stefan Patrikis, office JWB 309,
- **E-mail:** patrikis at math.utah.edu
- **Office hours:** Monday 12:45-1:45, Wednesday 4:00-5:00.
- **Course Readings:** There is one short required book, Jacqueline Stedall's *The History of Mathematics: A Very Short Introduction*, Oxford University Press, 2012. Most of the course readings will be available on the Canvas course website (look under "Files," where the readings are listed alphabetically by author) or as electronic resources available (after login) through the Library. See the separate file on Canvas for the list of course readings and the daily plan. The following books are also on reserve in the Marriott Library:
 - Stedall, Jacqueline, *The History of Mathematics: A Very Short Introduction*, Oxford University Press, 2012.
 - Courant, Richard and Robbins, Herbert, *What is Mathematics*, 2nd edition revised by Ian Stewart, Oxford University Press, 1996.
 - Katz, Victor (ed.); with contributions by Imhausen, Annette; Robson, Eleanor; Dauben, Joseph; Plofker, Kim; and Berggren, Lennart, *The Mathematics of Egypt, Mesopotamia, China, India, and Islam, a Sourcebook*, Princeton University Press, 2007.
 - Katz, Victor, *A History of Mathematics: An Introduction*, 3rd edition, Addison-Wesley, 2009.

Aside from Stedall's book, there will be only a few very limited assigned readings from these books; but they are very good starting-points for further reading.

- **Course Description:** We will survey some of the principal themes in the history of mathematics, from antiquity to the early 20th century. This is a vast subject—at all times and in all places people have developed mathematics to suit their needs, and often their fancies—so our discussion will necessarily be highly selective. We will focus on topics that taken together give some sense of how modern conceptions and practices of mathematics have historically emerged. As we go back in time, a conundrum at the heart of this course quickly presents itself: to what extent are mathematical ideas—for instance, the “quadratic formula,” or a proof of the quadratic formula—historically stable, and to what extent must they be understood in a particular historical context and embedded in a particular practice of scientific communication? Reading primary sources is the only way to begin to appreciate these questions, and we will whenever practical emphasize the study of primary sources. The experience of reading mathematics from hundreds, even thousands, of years ago often combines a thrill of recognition, of common purpose and interest stretching across millennia; and a real sense of strangeness, at finding something written and understood in terms we no longer immediately recognize. Our goal in this class will be both to learn some exciting mathematics, and to experience and reflect on the tension of encountering it in historical context.
- **Prerequisites:** C or better in a 1200 or 1300-level math course (or equivalent advanced placement)
- **Requirement Designation:** Upper-division Communication/Writing *and* Physical and Life Science Intellectual Exploration. Please consult with your departmental adviser to confirm how this fits into your program requirements.
- **Coursework, Grading, and Expectations:**
 - You will complete daily readings, mostly of primary sources in the history of mathematics. Some of these will be difficult, and it is okay if you don't master them on first pass. Approach the texts with an open mind and be willing to ask questions, and remember that being confused is the starting-point of any interesting intellectual inquiry. We will discuss portions of most or all of the primary readings in class and together work toward some understanding of these materials.
 - The written work in this course will be a mixture of math problems and writing assignments that require you to reflect on primary readings in the history of mathematics. The goal of the math problems is not to tax your problem-solving skills, but to secure a basic proficiency in a few key course topics. The writing assignments will develop your skills in interpreting primary texts in the history of mathematics. Exams will test a combination of these mathematical and interpretive skills, as well as your familiarity with the assigned readings (you will always have some choice in the texts or passages you analyze on exams). The energy you invest *throughout* the semester in studying the primary readings will pay off in the quality of your papers and exams, so you should take the reading seriously for the whole term.

Here is the grading scheme. See the daily plan (separate file on Canvas) for all of the due dates; only the most significant ones are listed here. **The finer details of the daily plan will likely shift somewhat as the semester goes on, so please check the file on Canvas regularly, rather than downloading once and for all the pdf I have posted at the start of the term.**

- Problem sets (8 total): 30%. These will review basic aspects of the mathematical material covered in class and in reading assignments. You are welcome to work together on these, but you should write-up the solutions yourself and list on the top of your paper any collaborators. Please strive to make your solutions as neat and legible as possible: pen is often easier to read than pencil, and certainly do not erase and then write over text (we will see something about the challenges of reading a palimpsest when we come to Archimedes!).
 - Short writing assignments (3, including final paper proposal): 15%. Two of these will be short “response papers” of 1.5-2 pages each (see specific assignments for details). One will be a proposal for your final paper, including a general topic and an annotated reading list (again, see the specific assignment).
 - Final paper: 20%. A longer paper of 10-15 pages on a topic in the history of mathematics of your choosing. See the formal paper assignment. Due 12/4 (the last day of class).
 - Midterm: 10%. This exam will test your familiarity with the primary readings up to the midterm. You will be required to identify and interpret passages from your reading assignments. In-class on 10/18.
 - Final exam: 25%. This exam will be a mix of a few mathematical problems, close to those appearing on the homework, and analytical writing requiring you to reflect on a number of our readings (primary and secondary). The date is determined by the registrar for our course block: Friday, December 13, 2019, 10:30 am-12:30 pm.
- **Late or missed assignment policy:** Late assignments will not be accepted unless necessitated by severe illness or personal emergency; in either of those cases, contact me as soon as possible. If you have to miss a class in which an assignment is due, you must either drop the assignment off in my math department mailbox (JWB common room) or email it to me (at the address listed above) *by the beginning of that class*.
 - **Disclaimer:** Details of the syllabus are subject to change; I will notify you in advance in class and via email of any changes in assignments or due dates. The exact readings in the daily plan are likely to shift a little as the semester goes on, as noted above.
 - **ADA Statement:** The Americans with Disabilities Act requires that reasonable accommodations be provided for students with physical, sensory, cognitive, systemic, learning, and psychiatric disabilities. Please contact me at the *beginning* of the term to discuss any such accommodation for the course.
 - **Campus Safety:** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit <https://safeu.utah.edu>.
 - **Personal names/pronouns:** The University of Utah provides class rosters to instructors with each student’s legal name as well as “preferred first name” (if previously entered by you in the Student Profile section of your CIS account, which managed can be managed at any time). Please let me know if your preferred first name or pronoun is not as indicated in CIS.
 - **Addressing Sexual Misconduct:** Addressing Sexual Misconduct. Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, SSB 328, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677 (COPS).