Math/Hist Sci 473: History of Mathematics, Spring 2023

Course Information

Course Description: An historical survey of the main lines of mathematical development.

Credits: 3.

Course Designations and Attributes:
Breadth – Either Humanities or Natural Science
Level – Advanced
L&S Credit – Counts as Liberal Arts and Science credit in L&S

Requisites: Consent of instructor.

Meeting Time and Location: MWF: 09:55pm–10:45pm in Social Science Hall, room 6240.

Instructional Modality: In-person.

Instructor: Mikhail Ivanov, Teaching Faculty, *Email:* mivanov@wisc.edu

Instructor Office hours: MW: 13:10pm–14:10pm in Van Vleck Hall, room B127.

Grader: TBA.

Course Learning Outcomes

By the conclusion of this course, students are expected to be able to:

- Understand the historical development of various mathematical concepts (e.g. geometry, number theory, analysis, and algebra);
- Distinguish mathematical concepts by their particular historical origins throughout history;
- Identify important theorems and concepts from history, recall historical arguments for their validity (including empiricism, rationalism, and logic);
- Interpret the progression of mathematical concepts through history and various civilizations (including understanding the influences of culture, philosophy, and science on mathematics);
- Communicate historical concepts in mathematics (in English) using appropriate terminology and notation (both orally and written).

How Credit Hours are Met by the Course

This class meets for three 50-minute class periods each week over the spring semester and carries the expectation that students will work on course learning activities (e.g. reading, problem sets, papers, and studying) for about two hours outside of classroom for every class period. The syllabus includes more information about meeting times and expectations for student work.

Required Textbook, Software and Other Course Materials

- John Stillwell. Mathematics and Its History. Springer. A Concise Edition. Book is available online through the university library.
- We will use extended edition of the book above and other available online resources for some topics.
- Your investigation of other resources, including other books, manuscripts, and online material, is highly encouraged, but it is your responsibility to verify and determine the accuracy of any resource outside of this course.

Exams, Quizzes, Papers, Homework and Other Assignments

Homework. Weekly homework assignments can be accessed through the Canvas website. Written assignments will be several questions long and will be assigned weekly usually due on Fridays. The way assignments will be submitted (online or in-person) is to be determined by grader.

Each problem should be completed with neat, understandable, detailed solutions and explanations. Your explanations and proofs must be sound and rigorous, paying attention to detail and clarity.

Since it is quite likely that during the semester you will either experience a technical difficulty (e.g., missed the deadline, your computer shut down as you were submitting it, internet outage, etc) or a personal emergency (being sick, attending a funeral, etc), the two lowest HW scores will be dropped. You do not need to contact your instructor if such a situation does come up.

Discussions. Each week there will be a BBC Radio 4 In Our Time podcast about relevant topics to listen to on Canvas. You will then be directed to participate in a discussion board after listening to the podcast. You will be expected each week to engage in a conversation about the podcast as well as reply to other students' responses thoughtfully and respectfully by making a minimum of one comment and one response. Try connecting topics from the course materials with the conversation on those podcasts. The lowest two discussion scores will be dropped from your overall score.

Papers. There will be two papers to complete during the semester. First (Mid-semester) paper due on Friday, February 24 and Second (Final) paper due Friday, May 5.

The topic for the first paper will be a biography on a particular historical mathematician. The topic for the second paper will be about an important mathematical theorem or concept and the historical context surrounding its discovery. The topic must be approved by the instructor. More details about these papers and their topics will be available later in the semester.

Presentation. There will be a short, 10 minutes presentation in class during the last week of the semester. The topic of the presentation is the topic of your final paper.

Exam. There will be the exam on Wednesday April 12, during class. Exam will cover material up to inventing Calculus.

Participation. This course depends on students' active participation in class discussions and group works. You are expected to engage your fellow classmates in relevant discussions, work on the assigned problems, ask questions, share your approach to problems, keep on task by contributing ideas and analyze material of lectures after class. Your attendance and attention are important to your success in this course. Please remove any distractions while attending this course. If you experience long-term absence due to a serious illness with verification or accommodations from the McBurney Center, then contact your instructor.

Grading

In this course, you will be evaluated based on components described above with their corresponding percentages:

Homework	25%
Paper 1	15%
Paper 2	15%
Presentation	5%
Discussions	10%
Exam	20%
Participation	10%

Grading Scale. The following scores correspond to the guaranteed grades in this course. The scores may be lowered at the end of the semester by the instructor.

$$\text{A} \geq 93\% > \text{AB} \geq 89\% > \text{B} \geq 82\% > \text{BC} \geq 78\% > \text{C} \geq 70\% > \text{D} \geq 60\% > \text{F}$$

Participation grade. Will be given as a combination of questions during class, answer to questions on piazza, being the notetaker for a day.

Make-up and late work. Late Homework a subject to 10% penalty per day. Notetaking can be used (with instructor permission) as an additional way to increase your final grade. Final Exam slot (May 10, 12:25PM–14:25PM) will be used for Makeups.

Regular and Substantive Student–Instructor Interaction

- Participation in regularly scheduled learning sessions (where there is an opportunity for direct interaction between the student and the qualified instructor).
- Provide personalized comments (in any medium) for an individual student's assignment or exam.
- Actively facilitate an online discussion.
- Instructor posts announcements about academic aspects of the class. All important course information will be relayed through Canvas. It is your responsibility to read any Canvas announcements.

Course Website and Digital Instructional Tools

- Our Learning Management System is Canvas. All important course information will be relayed through Canvas. It is your responsibility to read any Canvas announcements.
- We will use Piazza. This page is a forum for you to discuss the material of this class with other students and your TAs and/or instructor. Posts to this page should be confined to questions regarding the material and logistical questions about the class (e.g., exam dates and locations). Any posts containing comments (either positive or negative) about the instructors, the class, the students, or anything else, will be deleted. Unprofessional conduct may result in disciplinary action. Please do not use email for math questions.

Academic Policies and Statements

- Teaching and Learning Data Transparency Statement
- Privacy of Student Records and the Use of Audio Recorded Lectures Statement
- Campus Resources for Academic Success
- Course Evaluations and Digital Course Evaluations
- Students' Rules, Rights and Responsibilities
- Diversity and Inclusion Statement
- Academic Integrity Statement
- Accommodations for Students with Disabilities
- Academic Calendar and Religious Observances