



蘇州大學
Soochow University

MAT 319 Advanced History of Mathematics

Winter 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email:TBA

COURSE OBJECTIVES

This course is a comprehensive study of the development of mathematics from the 17th century to the present day. The course explores the contributions of notable mathematicians and their influential works during this period. Topics will include counting, space, randomness, approximation. Through an examination of mathematical ideas, techniques, and theories, students will gain a deeper understanding of the evolution of mathematics and its impact on various fields. This course is designed for mathematics majors and students with a strong interest in the history and development of mathematics.

Upon Completion of this Course, students will be able to:

1. Analyze and explain the major mathematical developments from the Renaissance to the modern era
2. Identify and describe the contributions of significant mathematicians during this period
3. Recognize the interconnections between mathematics and other scientific disciplines during this time
4. Engage in independent research and effectively utilize library and online resources to investigate historical topics in mathematics
5. Apply critical thinking skills to analyze and interpret primary sources in mathematics

PREREQUISITES

MAT 237 Applied Linear Algebra



GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
Quizzes	20 Points
Midterm 1	15 Points
Midterm 2	15 Points
Project	20 Points
Final Exam	30 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Burton, David, *The History of Mathematics: An Introduction*, 7th Edition, McGraw-Hill, 2011.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Early Number Systems and Symbols Topic 2: Mathematics in Early Civilizations Topic 3: The Beginnings of Greek Mathematics Topic 4: The Neighborhood Spaces of Hausdorff Assessments: Quiz#1



Module 2	<p>Topics: Topic 5: Frechet’s Metric Spaces Topic 6: Banach and Normed Linear Spaces Topic 7: The Alexandrian School: Euclid Topic 8: Approximating the Area of a Circle</p> <p>Assessments: Quiz#2 Project</p>
Module 3	<p>Topics: Topic 9: Counting the Infinite Topic 10: The First Awakening: Fibonacci Topic 11: The Renaissance of Mathematics: Cardan and Tartaglia Topic 12: The Mechanical World: Descartes and Newton</p> <p>Assessments: Midterm#1 Project</p>
Module 4	<p>Topics: Topic 13: Cantor’s Theory of Infinite Sets Topic 14: Restoring the Algebraic Tradition: Robert Recorde Topic 15: The Algebraic Aspect Topic 16: The Development of Probability Theory: Pascal, Bernoulli, and Laplace</p> <p>Assessments: Midterm#2 Project due</p>
Module 5	<p>Topics: Topic 17: The Revival of Number Theory: Fermat, Euler, and Gauss Topic 18: Nineteenth-Century Contributions: Lobachevsky to Hilbert Topic 19: Transition to the Twentieth Century: Cantor and Kronecker Topic 20: Extensions and Generalizations: Hardy, Hausdorff, and Noether</p> <p>Assessments: Final Exam</p>

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student’s frequent missing of class to the Soochow



University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.



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DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.