

History of Mathematics

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What we will cover in the course:

- Renaissance mathematics: the recovery of classical mathematics and the birth of a “new mathematics”. Final point: Descartes’ *Géométrie* (1637).
- Reading original mathematical texts.
- Problems and methods in the history of mathematics.

General overview: The recovery of classical mathematics

- Recovery of ancient texts $\rightarrow$ philology: search for manuscripts, comparison of witnesses, selection of readings, translations into Latin, construction of a vocabulary for mathematics.
- Recovery of transmitted results $\rightarrow$ mathematics: reconstruction of the context, completion of proofs, clarification of missing or obscure passages.

Course topics: reading original texts

- Classical Greek mathematics: Euclid, Archimedes, Apollonius. Reading of selected propositions from Euclid's *Elements*, Archimedes' *Quadrature of the Parabola* and *On the Sphere and Cylinder*, and Apollonius' *Conics*. (March–April, 30 hours)
- The recovery of classical mathematics in the Renaissance and the medieval tradition: the case of Italy. The examples of Francesco Maurolico and Federico Commandino. (April–May, 20 hours)
- The beginnings of modern mathematics: Viète's algebra and Descartes' *Géométrie*. (May, 14 hours)

- Direct study of mathematical texts: manuscripts, printed editions, translations, and commentaries.
- Comparison of different versions and different witnesses of the same text, in order to identify its transformations over the course of history.
- Reconstruction of the cultural and mathematical context in which the texts were composed.

Reading a mathematical text historically: the problems

- Reconstructing the meaning of terms and procedures within the author's mathematical context, avoiding their immediate translation into modern mathematics.
- Avoiding interpretations based on later mathematical concepts.
- Comparing texts by different authors, identifying common sources and traditions.
- Reconstructing a text from its witnesses.

- Analysis of a mathematical text or of an author from the periods studied.
- Oral discussion of the assigned topic and of some of the general topics covered in the course, selected from a list provided by the instructor.