

University of Arkansas – Fort Smith
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General Syllabus

MATH 42073 History of Mathematics

Credit Hours: 3

Lecture Hours:

Laboratory Hours: 0

3 Prerequisite: MATH 25004 Calculus II

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

The history of mathematics from ancient times to the twentieth century with emphasis on the three aspects: the development of mathematics throughout the centuries, mathematics as a human endeavor, and the history of mathematics as an educational tool.

B. Course Description

This course is a requirement for mathematics and mathematics education majors. It may also be taken by students in other majors such as science, engineering and liberal arts as an elective credit.

II. Student Learning Outcomes

A. Subject Matter

Upon completion of this course, the student will be able to:

1. Trace the history of the various branches of mathematics.
2. Discuss the historical impact of mathematics, and the diverse ways in which intellectual, scientific and other societal stimuli have influenced its development.
3. Understand the development of mathematics through an examination of how mathematicians through the ages have created their work. This takes place through a problem-oriented study of original sources.
4. Understand how the history of mathematics may enhance the teaching of mathematics at various levels.

B. University Learning Outcomes

Communication Skills (written and oral)

Students will research a selected topic in the history of mathematics and effectively communicate their findings through written papers and classroom presentations.

Analytical Skills

Critical Thinking Skills: Students will research and evaluate library and internet resources on topics in the history of mathematics and will determine the reliability of this information and its importance to their research. Students will study the work of mathematicians in history. In addition, students will work actual problems of importance to the history of mathematics.

Global and Cultural Perspectives

Students will demonstrate the impact of the contributions by various Western and non-Western societies to the history of mathematics.

III. Major Course Topics

- A. Ancient mathematics
 - 1. Egyptian
 - 2. Babylonian
- B. Greek mathematics
 - 1. Early Greek mathematics
 - 2. Euclid, geometry, and axiomatic mathematics
 - 3. Archimedes
 - 4. Greek algebra
 - 5. Apollonius and conic sections
- C. The mathematics of non-Western cultures
 - 1. Indian mathematics
 - 2. Chinese mathematics
 - 3. Islamic mathematics
- D. The development of various branches of western mathematics including
 - 1. Algebra
 - 2. Geometry
 - 3. probability and statistics
 - 4. calculus
 - 5. analysis
 - 6. mathematical applications
- E. Overview of the philosophy of mathematics