University of Arkansas – Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913–3649
479–788–7000

General Syllabus

MATH 4992 Senior Project

Credit Hours: 2 Independent Study Hours: 8

Prerequisite: mathematics major in senior standing or consent of instructor

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

The student will work with a faculty advisor on a research project in mathematics. Based on the interests of the student and the available expertise of the faculty, the project may involve research in pure mathematics, mathematics education, the history of mathematics, or an application of mathematics to another discipline.

B. Additional Information

This project provides the student with a unique opportunity to actually create mathematics, rather than simply repeating the mathematical discoveries of others. Project results will be graded on the completeness and validity of the solution, the sophistication of the mathematics required, and the effectiveness of the presentation of project results.

II. Student Learning Outcomes

A. Subject Matter:

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

1. Clearly state a problem in mathematics.
2. Identify and understand mathematical results relevant to the problem solution.
3. Utilize advanced mathematical skills in the solution of a complex problem.
4. Effectively communicate research results to both a professional and a general audience.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will identify and execute a project which applies and extends their analytical/mathematical skills beyond the level they learned in other undergraduate classes. Students will perform a literature search related to their project and will research, evaluate, and compare information from multiple resources and extend it to complete their projects. Students will generate solutions to the problems that they have posed. Students will make use of appropriate technology in the solution of their problems and presentation of their results. They will make connections among the various parts of their project with the mathematics that they have learned in earlier classes and with applications in other fields where appropriate. They will make used of sophisticated mathematical reasoning and will include clear proofs or other appropriate justification of important results.

Communication Skills (written and oral)

Students will generate a final written paper which gives an appropriate presentation of their project. It will include a title page, abstract, statement of the problem, background, and their findings and conclusions. Students will also present their work orally in public at the middle and end of the semester.

Ethical Decision Making

Students will identify and resolve ethical dilemmas related to the project as appropriate to the project.

Global and Cultural Perspectives

Students will reflect upon implications of their project across multiple cultures.

III. Major Course Topics

A. Identifying and clearly stating the problem
B. Research into related results
C. Identification of appropriate steps in the solution process
D. Problem solution
E. Effective communication of results