

MAT 491 Mathematics Capstone I

Department of Mathematics

Southern Connecticut State University

I. Catalog Description

In the first semester of the capstone project, senior-level mathematics majors read professionally written mathematics papers and increase their proficiency in communicating mathematics. In consultation with a supervisor, the student should choose a mathematical topic to study for the capstone project.

II. Purpose

This seminar aims to teach senior-level mathematics majors how to read professionally written mathematical or mathematics education articles, develop proficiency in coherent mathematical writing, and effectively present their mathematical findings orally.

III. Credit

MAT 491 carries one semester-hour of university credit. It is required of mathematics majors.

IV. Prerequisites

Mathematics major with senior status

V. Format

MAT 491 meets for 1 contact hour per week throughout a standard academic semester and is conducted primarily in a discussion format.

VI. Course Objectives

Upon completion of MAT 491 students should:

- A. Read professionally written mathematical or mathematics education articles;
- B. Develop proficiency in coherent mathematical writing using an appropriate typesetting program (e.g., \LaTeX or R Markdown);
- C. Demonstrate the ability to effectively communicate mathematics orally and using Beamer;
- D. Have chosen a mathematical topic to study for the capstone project;
- E. Make a short presentation of a topic proposal.

VII. Outline:

- A. Reading Papers: Read journal articles selected by instructor to assist in learning how to read technical arguments.
- B. Topic: Select a suitable topic, in consultation with the instructor, possibly finding papers related to the topic.

- C. Guidelines for Authors: Learn how to structure a mathematics paper, use L^AT_EX and R Markdown effectively, and cite your resources appropriately, including how to write mathematical proofs in your own words.

VIII. Assessment

To help ensure that the student is doing appropriate work and is maintaining progress in completing the project, the student and project advisor will meet regularly at mutually agreed upon times. The grade for the first semester of the capstone project is largely a reflection of how well this has been demonstrated and to what degree the above course objectives have been met.

Possible Grading Scheme:

Selecting a Topic	10%
Attendance and Participation	10%
Typesetting Work	10%
Oral Presentation of the Topic	20%
Written Presentation of the Topic	50%

IX. Recommended Texts

None

X. Waiver Policy

This course may be waived.

XI. Bibliography

- A. https://www.hmc.edu/mathematics/wp-content/uploads/sites/49/2018/09/thesis_handbook_2019.pdf

XII. Preparation

Proposed outline prepared by K. Kruczek and A. Clark, Fall 2022.

Approved by the MDCC, October 4, 2022

Approved by the Mathematics Department, October 20, 2022