Graduate Student Research Projects
MAT 518 – Fall 2026

Due date: Thursday, Dec 3, 2026

As part of the emphasis on research methods for graduate courses, each student in MAT518 is required to do a brief report on a topic which is not covered in the course, but is related in some way to the course material.

Some suggested topics are: (a brief overview only)

1. HRTF (Head-Related Transfer Function) in spatial audio
2. Ambisonics using spherial harmonics in spatial audio
3. Microphone polarity patterns
4. Pointwise vs Uniform Convergence of Fourier Series
5. Comparison of BIBO Stability with method of poles inside unit circle
6. Minimum phase filters
7. Short Time Fourier Transform and the Overlap and Add Method
8. Phase vocoder

The report is expected to be between two and five pages, including a basic explanation and example or application. If time permits, reports may be presented to the class. In any of the above topics, only a simple overview is possible. It is possible to go into more depth, at the expense of summarizing the whole topic, if desired.

Scores for the report will be incorporated into the homework grade, counting as one more homework assignment.