

Mississippi College
Department of Mathematics
MAT6501 Graduate Reading & Research

Catalog Description

MAT 6501 Graduate Reading & Research

Credits, 3 sem. hr.

A required seminar designed for students to explore/expand a mathematical topic by reading and research with the goal of presenting results of their exploration that will include a thorough review of the existing literature.

Rationale for Course: This course allows graduate students in mathematics to explore a single mathematical topic more deeply than can be done in other courses. The course will allow each student to improve his or her skills in researching a topic, reviewing the existing literature, synthesizing the information, expanding knowledge on the topic (if appropriate) and creating a tangible product. The product will be a written paper which will then be communicated in an oral presentation.

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

- use library resources to find accurate, reliable information
- read and understand the resources that are found
- review the existing literature on a single topic
- synthesize the material
- produce a tangible product which shows mastery of the material
- where appropriate, expand the knowledge base of the topic
- present and explain the tangible product to the class

Academic Integrity: Honesty and integrity are basic virtues expected of all students at Mississippi College. The [Mississippi College Tomahawk](#) lists the policies and penalties for plagiarism and cheating. See further explanation below.

Disability Accommodation: If you need accommodation due to a disability, please see the [information](#) available from MC Student Counseling Services.

Assessment: Assessment of the student's success will be based on:

- Meeting the deadlines listed below (20%)
- The quality of the tangible product (50%; see further information below)
- The quality of the presentation (30%)

according to the following scale:

| | |
|-----------|----|
| 90-100% | A |
| 85-89% | B+ |
| 80-84% | B |
| 75-79% | C+ |
| 70-74% | C |
| Below 70% | F |

Requirements:

The tangible product should be a paper of 10-20 pages on a narrowly focused topic from mathematics. Your paper should be written using LaTeX. The topic must be chosen in consultation with the instructor. The formatting of the article should follow that used in *Mathematics Magazine*. In particular, references should be given at the end of the paper listed alphabetically by the last name of the first author. The references should be numbered and then citations within the paper should use the number of the reference. For example consider this excerpt from Eisenberg and Sullivan's article "A Modification of Sylvester's Four Point Problem" in the June 2011 issue:

"There are more details about the history of this problem along with the historical references in Pfeifer [2] and Weisstein [4]."

In the REFERENCES section you will find:

2. Richard E. Pfeifer, The Historical Development of J. J. Sylvester's Four Point Problem, this MAGAZINE **62** (1989), 309-317. doi:10.2307/2689482

and

4. Eric W. Weisstein, "Sylvester's Four-Point Problem," from *MathWorld* – A Wolfram Web Resource, <http://mathworld.wolfram.com/SylvestersFour-PointProblem.html>

Your task is to research an appropriate mathematical topic by doing an extensive search of the literature on the topic and then synthesizing the information in an original paper. You are NOT required to produce new mathematical results. Instead you are to find, read, understand and synthesize the information that others have created. In writing your paper, you must be careful not to plagiarize the work of others. This means that if you include material that is not your own, you must properly cite it and reference the original author(s).

Your paper must include:

- Background material to explain the mathematical topic (including historical development if appropriate)
- At least one theorem and its proof
- Correct grammar and punctuation

- A summary statement similar to that found in *Mathematic Magazine* articles

In addition the project could include a teaching module if the topic is related to education, a widget or other app to demonstrate the concept or other appropriate materials beyond the paper itself.

The content of the paper should indicate that you have thoroughly researched the topic. Ideally, your references should include primary or secondary sources and come from a wide variety of sources: books, journal articles and web pages. You should not use tertiary sources such as Wikipedia articles in your references although you will find that the references given in a Wikipedia article may lead you to good secondary sources.

Resources:

The databases available at <http://library.mc.edu/resources/databases/> such as JSTOR and Academic Search Premier will be the primary source for articles. Additional resources may be obtained from the library's permanent collection or through interlibrary loan.

Presentations:

You will have 20 minutes to make a presentation to the class (and available faculty) about the results of your readings and research as found in your paper. You are welcome to use whatever format you think best allows you to communicate with the intended audience (computer/Latex presentation, board presentation, interactive activity, etc.)