MHF 1407 Explorations in Mathematics

Spring 2026

Welcome to MHF 1407 Explorations in Mathematics

This course provides a glimpse of the amazing achievements of mathematics, from antiquity to modern times. Spanning topics from geometry, number theory, topology, and analysis, the course exposes students to the essence of mathematics and the people that made it happen. Topics are drawn from a list of great theorems, where students will come to understand and appreciate what drives mathematicians in the relentless pursuit of truth. The course will include lectures, short readings, videos, and interactive apps. In addition, some of the most famous "unsolved" problems and the progress in seeking their solutions, will be presented.

Instructor Information

Instructor: Dr. Hoffmeier, Office: IST 2020
Email: jhoffmeier@floridapoly.edu
Office Hours: MWF 11:00AM– 11:50AM or by appointment

Course Information

Course Number and Title: MHF 1407 Explorations in Mathematics
Meeting time: MWF 10:00– 10:50AM in IST 1044

Credit Hours: 3

Current Academic Term: Spring 2026

Official Catalog Course Description: This course provides a survey of significant mathematical theorems and problems from antiquity through modern times. Students gain an appreciation for the nature of mathematical work through selected readings, videos, and interactive apps.

Gordon Rule (6A-10.030): No

Prerequisites: None

Textbook Information:
N/A

Equipment and Material: Laptop computer and Internet access.

Course Objectives:

Through a survey of important mathematical results, students will gain an appreciation and understanding of the many sub-disciplines that make up mathematics. Students will learn about the nature of mathematical discovery and what constitutes mathematical proof. Students will learn about some of the methods and techniques that have been developed in pursuit of mathematical discovery. Students will also gain some sense of the history of mathematics and its impact on discoveries in other disciplines.

Course Learning Outcomes:

Upon completion of the course, students will be able to do the following:

1. Explain what is meant by theorem, axiom, and conjecture.
2. Explain what constitutes a counterexample in mathematics.
3. Characterize broad mathematical areas such as algebra, geometry, analysis, topology, number theory, and discrete mathematics through examples, problems, and results.
4. Describe and articulate essential properties of the integers, rational numbers, and real numbers.
5. Demonstrate understanding of famous theorems and conjectures.

Grading Criteria:

To obtain a grade of C or better the cumulative body of work submitted must show a reasonable level of competency. In addition, students must attend at least 90% of all class meetings, be an active participant in class, complete all projects or presentations assigned, take all quizzes, and complete at least 80% of any homework or essays assigned. A grade of A or B will be awarded based on scores earned on course assignments and graded events.

Assignment/Evaluation Methods

- Homework/readings (20%)
- Quizzes (20%)
- Project/presentation (20%)
- Essays (20%)
- Participation/discussion* (20%)

*You are expected to be in class and participate. Unless you are sick or at a medical appointment, you should attend class. Please do not be late for class. We will start promptly at 10am. Unexcused absences or excessive tardiness may result in a failing grade for the course.

Spring 2026 Calendar -

Week	Topic
Jan 12 - 16	Pythagorean's Theorem and related ideas
Jan 19 - 23	Pythagorean's Theorem and related ideas
Jan 26 -30	Number systems and Infinity
Feb 2 - 6	Number systems and Infinity
Feb 9 - 13	Prime numbers
Feb 16 – 20	Equations, roots, and curves
Feb 23 – 27	Lotteries, uncertainty, and games of chance
Mar 2 – 6	Lotteries, uncertainty, and games of chance
Mar 9 – 13	Celebration of Pi Day
Mar 16 – 20	Spring Break – No Classes
Mar 23 – 27	Graph theory and topology
Mar 30 – Apr 3	Graph theory and topology
Apr 6 – 10	Mathematics and the arts
Apr 13 – 17	Mathematics and the arts
Apr 20 – 24	The Story of Calculus
Apr 27 – May 1	Reading Day
May 4 – May 8	Final Exams

Communication:

Students with a concern or issue should feel free to email their instructor at jhoffmeier@floridapoly.edu. Instructors will make every reasonable effort to respond by the end of the next class day. If, after sending the instructor a follow-up email, the issue is not resolved, the student may email the department chair, Dr. Mike Brilleslyper at mbrilleslyper@floridapoly.edu. Students may request an appointment with the department chair for further discussion, if needed.

Civility and Collegiality

Faculty and students come to the university for the same reason, which is to participate in a highly professional educational environment. To that end, both students and faculty are expected to treat each other with mutual regard and civility. In more general terms, collegiality means respecting the right of both faculty and students to participate fully and fairly in the educational enterprise.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The Office of Disability Services (ODS), facilitates reasonable accommodations for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodations. If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the ODS student portal, and communicate with your instructor about your approved accommodations as soon as

possible. Arrangements for testing accommodations must be made in advance. Accommodations are not retroactive. If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible: DisabilityServices@floridapoly.edu; (863) 874-8770; https://floridapoly.edu/studentlife/disability-services/.

Accommodations for Religious Observances, Practices and Beliefs
The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See University Policy.)

Title IX
Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. Resources are available if you or someone you know needs assistance. Any faculty or staff member you speak to is required to report the incident to the Title IX Coordinator. Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University Ombuds Office, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment. The Title IX Coordinator is available for any questions to discuss resources and options available.

Academic Integrity
Violations of academic integrity regulation include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in sanctions up to and including expulsion from the university.

Recording Lectures
Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action). *Recording class activities including, but not limited to, lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is* ***prohibited***.

Academic Support Resources

- **Library**: Students can access the Florida Polytechnic University Library through the University website and Canvas, on and off campus. Students may direct questions to library@floridapoly.edu.
- **Tutoring and Learning Center**: The Tutoring and Learning Center (The TLC) provides tutoring to all Florida Poly students who may need additional academic support. The TLC is staffed by students who have excelled in the courses they tutor. They offer support by reviewing concepts and materials from class, clarifying points of confusion and providing assistance with learning strategies. While the focus of TLC is to provide support to students in freshman-level courses, upper-level courses are also tutored at the Center. The TLC is located in the IST Commons (second floor).
    - **Knack Tutoring**: Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. Florida Polytechnic University has partnered with Knack to provide students with access to verified peer tutors who have previously aced this course. To view available tutors, visit floridapoly.joinknack.com and sign in with your student account.
- **Academic Success Coaches**: All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center**: Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more detail, visit floridapoly.edu/writing center.