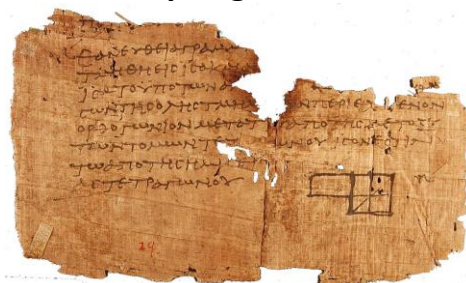# Mathematics 67-718
History and Philosophy of Mathematics (3 credits)
Spring 2020

Prerequisites: Graduate Status or Consent of Instructor

Course Objectives: This course focuses on understanding and exploring three questions:

- What *is* mathematical behavior?
- How do people learn mathematics?
- How has mathematics developed as a human discipline?

Based on our reading and discussion of work on these questions, you will better understand the nature of mathematics; its development; and the ways in which you can use this knowledge as an educator.

Instructor: Dr. Jennifer Szydlik

Class Meetings: Fourteen Tuesdays from 5:00 – 8:00 pm, face-to-face.

Office: 218 Swart, **phone**: 424-7350 **email**: szydlik@uwosh.edu

Office Hours: Monday: 3:00 – 4:00, Wednesday: 11:30 – 12:30, and Thursday 12:00 – 1:00. I am happy to meet with you. Let me know any time if you would like an appointment.

Text: *Journey through Genius* by William Dunham. Penguin Books, 1990. The rest of the course materials will be handed out in class or will be available online.

Instructional Methodology: This material is best suited to a seminar format. Typically class will be composed of three hour-long parts: a student-led lesson on the Dunham reading; a class activity on history or philosophy, and an hour of mathematics. Students are expected to read and prepare the assignments carefully prior to coming to class and to participate fully in the discussion and activities.

Evaluation: You will be evaluated based on two lesson presentations, one paper, and weekly assignments.

You will each prepare (in pairs) two hour-long lessons for the class (activity, discussion, and presentation) using a chapter of Dunham's book. The goal here will be to both present the mathematics from the chapter and to provide historical context for the work. You are encouraged to be creative. Each lesson is worth 25% of your grade. The following questions will guide my evaluation of your lesson:

1) Was the mathematical content of the lesson clear, important, appropriate and accurate?
2) To what extent did the lesson succeed in conveying that content to the class?
3) To what extent did the leaders provide an accurate historical context for the work?

4) Were the lesson leaders prepared for the questions and ideas that arose from the lesson?
5) To what extent were we expected and encouraged to be active participants in the lesson?

You will write a 6-8-page paper on a philosophical or historical topic of your choice based on ideas from the readings we will complete during the first 5 weeks of the course. This paper will be a scholarly synthesis and extension of the work done in class. This paper is worth 25% of your course grade.

Finally, your careful reading of assigned chapters and papers, and your daily preparation for and contribution to the class discussions is very important. It is your obligation to demonstrate to me that you have both completed and *thought about* the readings and assignments (otherwise I will assume you have not). You will do this in two ways: First, you will contribute knowledgeably to the class conversation. Second, you will complete all weekly assignments and quizzes based on the readings. This facet is worth 25% of your course grade.

Summary:	25%	Philosophical or Historical Paper
	25%	Lesson Presentation #1
	25%	Lesson Presentation #2
	25%	Participation, Quizzes, and Homework
	100%	

The grading scale will be as follows (after rounding to the nearest percent):

A	93 - 100% of the course points
A-	90 - 92%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D	60 - 69%
F	0 - 59%

A Word about Attendance: Remember that each class meeting represents an entire week of class. The format of the class makes it vital that you attend in person. If this is impossible on a particular day, make sure to let me know so that we can make other arrangements. Poor attendance will result in a poor grade.

The Legal Stuff:
You are expected to behave with integrity and honor. Here is the official UWO policy regarding academic misconduct: https://www.uwosh.edu/deanofstudents/university-policies-procedures/academic-misconduct

It is the policy and practice of UW Oshkosh to create inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your inclusion, please notify me as soon as possible. You are also welcome to contact Services for Students with Disabilities at 920-424-3100 or dean1@uwosh.edu. For more information, visit the Services for Students with Disabilities website at http://www.uwosh.edu/deanofstudents/disability-services.

Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990: https://uwosh.edu/financialaid/consumer-information/

Date	Dunham Chapter	Lesson Leaders
February 11	*Hippocrates Quadrature of the Lune*	_____Jen_____
February 18	*Euclid's Proof of the Pythagorean Theorem*	_____
		_____
February 25	*Euclid and Infinitude of Primes*	_____
		_____
March 3	*Archimedes' Determination of Circle Area*	_____
		_____
March 10	*Heron's Formula for Triangular Area*	_____
		_____
March 17	*Cardano and the Solution of the Cubic*	_____
		_____
March 31	*A Gem from Isaac Newton*	_____
		_____
April 7	*The Bernoullis and the Harmonic Series*	_____
		_____
April 14	*The Extraordinary Sums of Leonhard Euler*	_____
		_____
April 21	*A Sampler of Euler's Number Theory*	_____
		_____
April 28	*The Non-Denumerability of the Continuum*	_____
		_____
May 5	*Cantor and the Transfinite Realm*	_____
		_____