EUCLIDEAN GEOMETRY (MAT-2320)

SPRING 2019

Instructor: Dr. Zita Toth, Department of Philosophy

Prerequisites: None

Meeting times: Section 1: MWF 8:30–9:23; Section 2: TR 10:15–11:33

Credit hours: 3 credits

Office: St. Maur, room A 002

Office hours: MW 10–11:30 a.m., and by appointment. To make an appointment, please go to http://zitavtoth.com/2_teaching/ and click on the desired slot.

Phone: 2924 (office extension); 917-544-3364 (cell; please use it with consideration).

E-mail: ztoth@conception.edu.

Expected time required outside class: Approximately 2 hours for every class hour.

Tutoring: Please inquire with Fiona Holly in the library.

Required Texts

Apart from a brief introductory material, all readings will be from Euclid's *Elements*. Recommended edition: Tr. Thomas L. Heath, ed. Dana Densmore, Green Lion Press, 2017. ISBN: 978-1-888009-19-4.

Description from the Catalog

A course in geometry designed for liberal arts students, based on reading Euclid's original work. The course examines Euclid's *Elements* both as a fine example of a system of geometry (with definitions, postulates, propositions, and proofs), and as an instance of Greek thought taken more broadly. Topics include triangles, circles, abstract proportions, geometric similarity, number theory, the notion of incommensurability, and solid geometry. Besides covering these particular geometrical topics, the course also highlights the connection between mathematics and philosophy as they were practiced in Ancient Greece, especially the author's connection to Plato and some Presocratic thinkers.

Objectives

- By studying geometry, students will form the mind in the understanding of the beauty and order of continuous quantity on the basis of which the entire material universe was created.

- Plato inscribed above the portal to his Academy the following words: "Let no one ignorant of geometry enter here." Following this tradition, Thomas Aquinas insists that a study of mathematics must precede the study of natural philosophy and metaphysics. Thus, students will be expected to see the connection between mathematics and the higher studies (philosophy and theology) to which it leads.
- The course will also reinforce what students had learned in logic, especially concerning various forms of demonstrations.

Grading

Grading scale:

Grade	GPA	Description
A	4.00	excellent, outstanding
A-	3.67	still excellent
B+	3.33	very good
B	3.00	good; solid, and above average
B-	2.67	good; still above average
C+	2.33	average
C	2.00	acceptable
C-	1.67	minimally acceptable
D	1.00	passing but unsatisfactory
F	0.00	failure

Grade break-down:

Component	Percentage
Class demonstrations	60%
In-class participation	15%
Midterm	10 %
Final exam	15%

Class demonstrations: Students are expected to come to class prepared to demonstrate the propositions of Euclid's Elements. For each proposition, a student will be selected randomly, who will then demonstrate the proposition for the class. The book cannot be used for this exercise, but students will be allowed to ask for help from the other members of the class, as well as to use a "cheat sheet." The cheat sheet should contain a list of the definitions, postulates, common notions, and previously demonstrated propositions.

Participation: Students are expected to be able to help out their colleague in course of a demonstration. Students may not use their book at any time during a demonstration, but they may use their notes (if any).

Midterm and final exam: Details will be discussed later. The final exam will cover all the material throughout the course.

Course Policies

Specific Tools: Every student in the class will be expected to have either a notebook *with plain paper*, or a collection of sheets of plain paper. Having a ruler and a compass, although not mandatory, will be helpful.

Free class day: Every student will be allowed to be excused from doing demonstrations for a single class period during the semester. If a student wishes to have a "free class" on a specific day, they must let me know at the very beginning of the class period. A free class does not grant exemption from attendance.

Attendance: Attendance is mandatory. Every unexcused absence will affect your participation grade by third of a letter grade. After your first excused absence, I will only consider an absence excused *either* if you have a green sheet for me to sign in advance, *or* if I get a note from your chaplain explaining your absence.

Electronic Devices: Electronic devices are not allowed in class. Everyone is expected to leave their devices (phones, laptops, tablets, etc.) at home or keep them turned off and out of sight during class time. Failing to do so will result in the confiscation of the device for the class period. For any special concerns about this policy, please ask me directly.

E-mail: There will be some official communication via e-mail, and everyone is expected to check their e-mail accounts regularly and read their e-mails carefully. You can expect me to read and answer my e-mails within 24 hours; please do not send me e-mails at midnight expecting a response by the next morning class.

Outside resources: You will not have to do outside research beyond the assigned readings for this course. If you feel you would like to practice more and you find it burdensome on paper, there is a free, quite great Geometry software that you can use, called Geogebra. (Just Google it.)

Academic integrity: Just like in every other discipline, if you use or copy a source without properly citing it, you commit plagiarism. Plagiarism is a form of stealing, whether it is intentional or not. It is very easy to detect, and will result in your automatic failure of the course.

Lateness: Late assignments will not be considered unless for very serious reasons. If you have such reasons, please let them know as soon as you can.

This course complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written request for accommodation to me and the Academic Dean before the fourth day of class.

Tentative Schedule

The schedule is *very* tentative, which means it might change at any point during the semester. I will post any changes and will call your attention to it in advance. You can also check the up-to-date version of the schedule on the course's web page: http://zitavtoth.com/2_teaching/Euclid In general, you can expect that we do three to five demonstrations in a short or long class period, respectively.

Week 1 (of Jan. 7)	Introduction
	Definitions, Postulates, Common notions
Week 2 (of Jan. 14)	I.1–10
Week 3 (of Jan. 21)	I.11–20
Week 4 (of Jan. 28)	I.21–30
Week 5 (of Feb. 4)	I.31–40
Week 6 (of Feb. 11)	I.41–48
Week 7 (of Feb. 18)	II.1–7
Week 8 (of Feb. 25)	II.8–14
Week 9 (of Mar. 4)	**Midterm**
Week 10 (of Mar. 11)	III.1–5
Week 11 (of Mar. 18)	III.6–10
Week 12 (of Mar. 25)	III.11–20
Week 13 (of Apr. 1)	III.21–30
Week 14 (of Apr. 8)	III.31–37
Week 15 (of Apr. 15)	IV.1–9
Week 16 (of Apr. 22)	IV.10–14
Week 17 (of Apr. 29)	IV.15–16
Week 18 (of May 6)	**Final TBA**