



## GEOMETRY

### Yearlong 2018-2019

#### **ELIGIBLE STUDENTS:**

**Grades:** 9-11

**Prerequisites:** Mastery of Algebra 1\*

*\*Please note: Students will be required to complete a placement exam in order to ensure that the class is a good fit. The exam will be provided after registration, and the successful completion of the exam will finalize the student's enrollment.*

#### **COURSE INFORMATION:**

**Course Instructor:** Mrs. Rebecca Jekel

**Instructor Email:** [rjekel@scholeacademy.com](mailto:rjekel@scholeacademy.com)

**Course Times:** Monday, Wednesday, and Friday from 12:30 - 1:45 pm (EST)

**Course Dates:** September 5, 2018 - May 24, 2019

**Course Text:** Euclid's *Elements* (translated by Heath)

**Required Materials:** compass and straight edge, digital tablet, notecards, notebook or notebook paper in a binder or folder, pencil and red pen, graph paper

**Office Hours:** Optional, offered one session per week for students to seek assistance, raise questions, or review material. The specific day and time will be announced the first week of school.

#### **COURSE SCHEDULE:**

**September** (11): 5, 7, 20, 12, 14, 17, 19, 21, 24, 26, 28

**October** (14): 1, 3, 5, 8, 10, 12, 15, 17, 19, 22, 24, 26, 29, 31

**November** (10): 2, 5, 7, 9, 12, 14, 16 [Thanksgiving Break], 26, 28, 30

**December** (2): 3, 5, 7, [Christmas Break]

**January** (11): [Christmas Break] 7, 9, 11, 14, 16, 18 [End 1<sup>st</sup> Semester], 21, 23, 25, 28, 30

**February** (9): 1, 4, 6, 8, 11, 13, 14 [Winter Break], 25, 27

**March** (13): 1, 4, 6, 8, 11, 13, 15, 18, 20, 22, 25, 27, 29

**April** (10): 1, 3, 5, 8, 10, 12 [Holy Week/Easter Break], 22, 24, 26, 29

**May** (11): 2, 4, 6, 8, 10, 13, 15, 17, 20, 22, 24 [End 2<sup>nd</sup> Semester]

*\*Please note the above dates and times are the anticipated class sessions for this course. However, all dates are subject to change as the instructor's circumstances might dictate (e.g. illness, family emergency). Any classes canceled by the instructor will be made up at an alternate time designated by the instructor.*

## **COURSE DESCRIPTION AND MAP:**

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This course offers a study of geometry through the lens of Euclid's epic work, the *Elements*. In this text from Ancient Greece, Euclid presents the core of modern geometrical theorems (in addition to much else that this course will not have time to cover), developing and proving each claim with unprecedented precision, creativity and insight.

Through the *Elements*, students will not only be exposed to the historical narrative from which modern geometry arose, but they will also study the art of proof-writing and deductive reasoning; learn how to construct geometrical objects using only a compass and a straight edge; explore and apply theorems about lines, angles, triangles, quadrilaterals, circles, and magnitudes; and exercise their own creativity in combining Euclid's geometry with modern algebra to solve problems and prove other theorems.

Studying a text like the *Elements* is no walk in the park! It requires time, care, and patience just to dissect each proposition, not to mention to apply that knowledge to new and challenging problems. But that is precisely what makes this journey worth it -- taking the time to embark on this study will broaden the students' mathematical perspectives, push them as independent and creative thinkers, and give them a taste of how beautiful and exciting mathematics can be!

The course map is as follows\*:

### **QUARTER 1:**

- Supplement: Introduction to proofs
- Book I (part 1): Triangles
- Book I (part 2): Parallels and Parallelograms

### **QUARTER 2**

- Supplement: Polygons
- Book III: Circles

### **QUARTER 3**

- Supplement: Coordinate Geometry

### **QUARTER 4**

- Book VI: Similarity
- Supplement: Triangle Trigonometry

*\*Please note that this map is a rough pacing plan. That actual scope and sequence of the course will be altered at the instructor's discretion to best fit the needs and abilities of the class.*

## STUDENT EXPECTATIONS

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**Participation:** Participation is both essential for each individual student's engagement with the course material and integral to the thriving of the entire class. Therefore, students are expected to be active participants during class every day.

Excellent participation involves the following four executive function skills:

- **engagement:** a sense of wonder and depth of inquiry, especially demonstrated in the student's willingness to ask questions and share ideas both during class discussion and group or partner work
- **note-taking:** a habit of writing down and annotating all the important information shared during class, doing so in a manner that the student can and will consult independently for application on future assignments
- **preparedness:** a consistent adherence to the guidelines and requirements of the course's day-to-day operations, exemplified by the student's independent conformation to the expectations set for the class
- **initiative:** a willingness to seek out clarification and feedback, necessitating that the student ask questions and attend office hours when necessary as well as employ any critiques offered for individual growth

**Homework:** Homework assignments provide an opportunity for students to review and practice what was covered in class, through that process solidifying their understanding and mastery of the course material and/or revealing what further or clarifying questions need to be asked. Therefore, students are expected to diligently complete all of their homework assignments, taking reasonable time to attempt all assigned problems and showing all work neatly and clearly.

Homework assignments will be graded at the instructor's discretion for accuracy and/or completion. To receive full credit, all problems must be attempted with work revealing thoughtful effort to apply what has been learned in class. No work = no credit! All assignments will be due prior to the start of class each day, scanned, uploaded and submitted into the appropriate folder on the course's Schoology page (photographs of completed assignments will not be accepted as they are incredibly difficult to read). Homework turned in late without an excuse (such as an illness) will be worth a maximum of 50%.

**Tests and Quizzes:** Tests and quizzes allow for both the teacher and the student to gauge the individual's degree of understanding and level of mastery over the course material. Therefore, such exams will be given frequently.

Quizzes will not be announced in advance and will pertain to recent material that, given diligent homework completion and active participation, each student should have mastered. Any areas of confusion that these quizzes reveal are important to immediately address, whether by asking questions at the appropriate time or attending office hours.

Unit tests will be given periodically and will be announced in advance. Students are expected to prepare for these exams in order to demonstrate thorough content mastery.

Students will sometimes take tests and/or quizzes privately at home. Students are on their honor to abide by [Scholé Academy's Learning Philosophy](#) which assumes the personal cultivation of Student-Virtues described in the Student-Parent Handbook.

**Absences and Make-up Work:** Students are responsible for all course material even if they miss class. Therefore, students are expected to both review the recording of any missed class period (more information about accessing this will be given to students at the beginning of the school year) as well as complete and turn in all work assigned or due on the day(s) absent.

Students will receive a one-class-period extension for make-up work. For example, if a student is absent on Monday, he/she must turn in any assignment due Monday by Wednesday and any assignment assigned on Monday by Friday.

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## STUDENT EVALUATION

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Learning Geometry through Scholé Academy should be restful, but grades also provide an excellent opportunity for feedback and are necessary for those students preparing a college transcript. However, it's a delicate balance to achieve both restful learning and excellent academic performance, and earning a specific grade should never overshadow achievement goals for mastery of this discipline.

The course instructor will assign the following grades to each student's level of achievement: *magna cum laude* (with great praise); *cum laude* (with praise); *satis* (sufficient, satisfactory) and *non satis* (not sufficient). Ideally, every average student working diligently should do praiseworthy work (*cum laude*). Those who excel beyond this expectation can earn *magna cum laude*. Students who do adequate but not praiseworthy work be designated *satis*. *Non satis* means lacking sufficiency or adequacy.

A student who completes this course earning *cum laude* will not only have mastered the course material but also will have consistently fulfilled the student expectations outlined above. Such a student will also exemplify the student virtues outlined in the student-parent handbook.

Traditional percentage grades will also be provided and can be readily accessed on the Geometry Schoology page (more detailed information about the course page will be given to students at the beginning of the school year). Additionally, the course instructor will provide a transcript of that grade to the requesting parent at the end of the year. The students' percentage grades will be comprised of the following components: Participation (30%), Homework (30%), Tests and quizzes (40%).

## **THE VIRTUAL CLASSROOM:**

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We will be using the free online “virtual classroom” software provided by Zoom, one of the leading companies that provides such software. The virtual classroom will provide students with interactive audio, text chat and an interactive whiteboard in which texts, diagrams, video and other media can be displayed and analyzed. We will provide students with a link (via email) that will enable students to join the virtual classroom.

Specific information regarding the technology used by Scholé Academy (including required technology) can be found by visiting the [Technology in the Classroom](#) section of the Student Parent Handbook.

## **ABOUT THE INSTRUCTOR**

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Rebecca Jekel is a graduate of the Templeton Honors College at Eastern University in Pennsylvania, where she earned a double major in mathematics and PPE (philosophy, politics, and economics). Upon graduation, Rebecca moved to Phoenix, Arizona, where she taught high school mathematics at a classical charter school for several years. This experience gave her a deeper appreciation for both the challenge of teaching and the beauty of mathematics. In the fall of 2017, she moved back to Pennsylvania, where she and her husband currently reside. As she continues her career as a classical high school mathematics educator, Mrs. Jekel is thankful to be doing work that is beautiful, challenging, and rewarding.