



Course Number and Title: MAT 143 College Geometry

Campus Location:

Georgetown, Dover, Stanton, Wilmington

Effective Date:

2020-51

Prerequisite:

MAT 180

Co-Requisites:

None

Course Credits and Hours:

3.00 credits

3.00 lecture hours/week

0.00 lab hours/week

Course Description:

This course covers the elementary concepts of plane Euclidean geometry and supports the transition from algebra to precalculus. Special emphasis is placed on reasoning and proof, geometric constructions, two and three dimensional geometric shapes and measurement, angle relationships, triangle congruency, parallel lines, similarity, and circle relationships. Problem solving in geometry is emphasized throughout the course.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

Each student is required to have an electronic calculator capable of scientific calculations.

Schedule Type:

Classroom Course

Video Conferencing

Web Conferencing

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Apply geometric formulas to compute measurements of two and three dimensional geometric figures. (CCC 2, 6; PGC 1, 2)
2. Use direct and indirect proofs to establish geometric relationships. (CCC 2, 6; PGC 1, 2)
3. Use the concepts of congruency and similarity to solve algebraic and geometric applications. (CCC 2, 6; PGC 1, 2)
4. Use relationships involving angles, lines, and circles to solve applications. (CCC 2, 6)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Apply geometric formulas to compute measurements of two and three dimensional geometric figures.
 1. Use angular definitions and symmetry to define and name polygons.
 2. Solve for the vertex angle in any regular polygon.
 3. Use perimeter, circumference, and area of circles and polygons to solve two dimensional applications.
 4. Use surface area and volume to solve three dimensional applications.
2. Use direct and indirect proofs to establish geometric relationships.
 1. Given a conditional statement, write the associated converse, inverse, and contrapositive statements.
 2. Use a conditional statement and its convers to construct a biconditional statement.
 3. Validate an inferred conclusion using symbolic representation, law of detachment, law of syllogism, and law of contraposition.
 4. Formulate logical arguments using inductive and deductive reasoning to solve geometric applications.
 5. Use given conditions and established geometric definitions to prove conclusions.
 6. Prove various side and angle congruency theorems.
 7. Construct figures to demonstrate geometric theorems.
3. Use the concepts of congruency and similarity to solve algebraic and geometric applications.
 1. Solve applications using triangle congruence.
 2. Use ratios and proportions to indicate and solve for unknown measurements in similar geometric figures.
 3. Solve applications using triangle similarity.
 4. Solve similar triangle applications using angle-angle (AA), side-angle-side (SAS), and side-side-side (SSS) similarity theorems.
 5. Determine the six trigonometric ratios for a given acute angle of a right triangle.
 6. Solve triangle applications using trigonometric functions.
4. Use relationships involving angles, lines, and circles to solve applications.
 1. Use relationships among parallel and perpendicular lines to solve applications.
 2. Calculate angle measurements based on geometric relationships.
 3. Apply angle concepts to circles to determine geometric characteristics of arcs.
 4. Apply angle and line concepts to circles to determine geometric characteristics of chords.
 5. Use arcs, secants, and tangents to solve circular applications.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Employ mathematical strategies to solve algebraic, geometric, trigonometric, and calculus problems.
2. Analyze mathematical principles and theories as they relate to a variety of applications.
3. Utilize knowledge of the physical, social, emotional, and cognitive development of adolescents in designing and delivering instruction.
4. Access and implement educational technology.

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.