

# 2018-2019 TTC Catalog - Mathematics (MAT)

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## **MAT 001 - MAT 001**

**Lec: 0 Lab: 0 Credit: \***

Indicates credit given for rigorous calculus-track mathematics course work transferred from another college for which there is no equivalent course at TTC. \*Hours vary depending on external course.

**Division:** Science and Mathematics

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## **MAT 002 - MAT 002**

**Lec: 0 Lab: 0 Credit: \***

Indicates credit given for transfer-level mathematics course work transferred from another college for which there is no equivalent course at TTC. \*Hours vary depending on external course.

**Division:**

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## **MAT 031 - Developmental Mathematics Basics**

**Lec: 3.0 Lab: 0 Credit: 3.0**

This course includes the study of whole numbers, fractions, decimals, ratios, proportions and percents. Concepts are applied to real-world problem solving.  
appropriate placement

**Grade Type:** Pass/Fail

**Division:** Science and Mathematics

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## **MAT 032 - Developmental Mathematics**

**Lec: 3.0 Lab: 0 Credit: 3.0**

This course includes the study of integers, rational numbers, percent, basic statistics, measurement, geometry and basic algebra concepts. Application skills are emphasized.

**Prerequisite**

MAT 031

or

appropriate placement

**Grade Type:** Pass/Fail

**Division:** Science and Mathematics

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## **MAT 101 - Beginning Algebra**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes the study of rational numbers and their applications, operations with algebraic expressions, linear equations and applications, linear inequalities, graphs of linear equations, operations with exponents and polynomials, and factoring.

### **Prerequisite**

MAT 032

or

appropriate placement

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 102 - Intermediate Algebra**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes the study of linear systems and applications; quadratic expressions, equations, functions, and graphs; and rational and radical expressions and functions.

### **Prerequisite**

MAT 101

with a minimum grade of C

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 109 - College Algebra with Modeling**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course is an approach to algebra that incorporates mathematical modeling of real data and business applications. Emphasis is on linear, quadratic, piecewise defined, rational, polynomial, exponential and logarithmic functions. Includes inequalities and

matrices. MAT 109 is designed for the student with plans to use college algebra as a terminal course or take MAT 130 after completion. Focus is placed more on applications rather than theoretical mathematics.

**Prerequisite**

MAT 102

with a minimum grade of C or appropriate placement.

**Grade Type:** Letter Grade

**Restrictions:** Students who receive credit for MAT 109 may not also receive credit for MAT 110.

**Division:** Science and Mathematics

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## **MAT 110 - College Algebra**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes the following topics: polynomial, rational, logarithmic and exponential functions; inequalities; systems of equations and inequalities; matrices; determinants; and solutions of higher degree polynomials.

**Prerequisite**

MAT 102

with a minimum grade of C.

**Grade Type:** Letter Grade

**Restrictions:** Students who receive credit for MAT 110 may not receive credit for MAT 109 or MAT 112.

**Division:** Science and Mathematics

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## **MAT 111 - College Trigonometry**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes the following topics: trigonometric functions, trigonometric identities, solution of right and oblique triangles, solution of trigonometric equations, polar coordinates, complex numbers including De Moivre's Theorem, vectors, conic sections and parametric equations.

**Prerequisite**

MAT 110

with a minimum grade of C.

**Grade Type:** Letter Grade

**Restrictions:** Students may not receive credit for both MAT 111 and MAT 112.

**Division:** Science and Mathematics

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## **MAT 112 - Precalculus**

**Lec:** 5.0 **Lab:** 0 **Credit:** 5.0

This course includes algebraic, exponential, logarithmic and trigonometric functions and their graphs; analytic trigonometry; analytic geometry; and applications of trigonometry.

### **Prerequisite**

MAT 102

with a grade of B or higher or appropriate placement.

**Grade Type:** Letter Grade

**Restrictions:** Students who receive credit for MAT 112 may not receive credit for MAT 109, MAT 110 or MAT 111.

**Division:** Science and Mathematics

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## **MAT 120 - Probability and Statistics**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes introductory probability and statistics, including organization of data, sample space concepts, random variables, counting problems, binomial and normal distributions, central limit theorem, confidence intervals and test of hypothesis for large and small samples, type I and type II errors, linear regression, and correlation.

### **Prerequisite**

MAT 101

with a minimum grade of C or appropriate placement

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 123 - Contemporary College Mathematics**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course provides an appreciation and understanding of the mathematics underlying several topics in contemporary society. Topics may include voting methods, apportionment problems, Euler and Hamilton circuits, population growth and fractals.

### **Prerequisite**

MAT 102

with a minimum grade of C or appropriate placement

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 130 - Elementary Calculus**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes differentiation and integration of polynomials; rational, logarithmic and exponential functions; and interpretation and application of these processes. This is a terminal course designed for students who do not wish to take additional calculus courses. Its transferability usually depends on the student's major.

### **Prerequisite**

MAT 109

or

MAT 110

or

MAT 112

with a minimum grade of C.

**Grade Type:** Letter Grade

**Restrictions:** Students may not receive credit for both MAT 130 and MAT 140.

**Division:** Science and Mathematics

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## **MAT 140 - Analytic Geometry and Calculus I**

**Lec:** 4.0 **Lab:** 0 **Credit:** 4.0

This course includes derivatives and integrals of polynomials; rational, logarithmic, exponential, trigonometric and inverse trigonometric functions; curve sketching; maxima and minima of functions; related rates; work; and analytic geometry.

### **Prerequisite**

MAT 111

or

MAT 112

with a minimum grade of C.

**Grade Type:** Letter Grade

**Restrictions:** Students may not receive credit for both MAT 140 and MAT 130

**Division:** Science and Mathematics

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## **MAT 141 - Analytic Geometry and Calculus II**

**Lec:** 4.0 **Lab:** 0 **Credit:** 4.0

This course continues calculus of one variable, including analytic geometry, techniques of integration, volumes by integration and other applications, infinite series including Taylor series, and improper integrals.

### **Prerequisite**

MAT 140

with a minimum grade of C.

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 155 - Contemporary Mathematics**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes techniques and applications of the following topics: properties of and operations with real numbers, elementary algebra, consumer mathematics, applied geometry, measurement, graph sketching, interpretations and descriptive statistics.

### **Prerequisite**

MAT 032

or

appropriate placement

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 170 - Algebra, Geometry and Trigonometry I**

**Lec:** 3.0 **Lab:** 0 **Credit:** 3.0

This course includes elementary algebra, geometry, trigonometry and applications.

### **Prerequisite**

MAT 032

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 240 - Analytic Geometry and Calculus III**

**Lec:** 4.0 **Lab:** 0 **Credit:** 4.0

This course covers multivariable calculus including vectors, partial derivatives and their applications to maximum and minimum problems with and without constraints, line integrals, multiple integrals in rectangular and other coordinates, and Stokes' and Green's theorems.

### **Prerequisite**

MAT 141

with a minimum grade of C.

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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## **MAT 242 - Differential Equations**

**Lec:** 4.0 **Lab:** 0 **Credit:** 4.0

This course includes solution of linear and elementary nonlinear differential equations by standard methods with sufficient linear algebra to solve systems, applications, series, Laplace transform and numerical methods.

### **Prerequisite**

MAT 141

with a minimum grade of C.

**Grade Type:** Letter Grade

**Division:** Science and Mathematics

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