

# MATHEMATICS

Cascade Campus  
Student Services Building (SSB), Room 313  
971-722-5578 or 971-722-5425

Rock Creek Campus  
Building 2, Room 210  
971-722-7696 or 971-722-7246

Southeast Campus  
Student Commons (SCOM), Room 214  
971-722-6148 and 971-722-6343

Sylvania Campus  
Science Technology Building (ST), Room 203  
971-722-4149

[pcc.edu/programs/math/](http://pcc.edu/programs/math/)

## DESCRIPTION

Mathematics includes the study of numbers, patterns, graphs, and abstract models using analytic reasoning and systematic problem solving skills. Mathematics and mathematical reasoning are used in situations as diverse as household budgeting and space shuttle design, subjects as different as art and law, and occupations as varied as nursing and computer programming. Mathematics can be used by everyone to enhance their understanding of the world.

PCC offers developmental and pre-college math courses (numbered below 100) that focus on algebraic skills and prepare students for certificate programs, two year degree programs, and college level coursework. Math courses at PCC numbered 100 and above are equivalent and transferable to the similarly numbered courses at Oregon's public universities. All math classes at PCC are designed to challenge students to improve their analytic reasoning, problem solving, and communication skills.

### **MTH 15. Conquering Math Anxiety. 1 Credit.**

Introduces the concept of math identity and explores attitudes, emotions, and barriers towards math. Covers learning strategies to enhance math success, including math study skills, learning styles, test taking strategies, and math class preparation strategies.

### **MTH 20. Fundamentals of Mathematics. 4 Credits.**

Develops arithmetic fluency and the conceptual basis, and applications of integers, fractions, decimals, percents, and measurements. A scientific calculator may be required. The TI-30XS or TI-30XIIS is recommended. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisite: (ABE 0782 or placement into MTH 20) and (placement into RD 80 or ESOL 250). Audit available.

### **MTH 25C. Fractions. 1 Credit.**

Covers the use of fractions to write, manipulate, interpret and solve applications and formulas. Introduces concepts numerically, graphically, symbolically, and in oral and written form. Scientific calculator required. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisites: (ABE 0782 or placement into MTH 20) and (RD 80 or ESOL 250). Audit available.

### **MTH 26C. Decimals. 1 Credit.**

Covers the use of decimals to write, manipulate, interpret and solve applications and formulas. Introduces concepts numerically, graphically, symbolically, and in oral and written form. Scientific calculator required. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisites: (ABE 0782 or placement into MTH 20) and (RD 80 or ESOL 250). Audit available.

### **MTH 30. Business Mathematics. 4 Credits.**

Applies arithmetic to a variety of problems found in the business field, including simple and compound interest, annuities, payroll preparation, pricing, invoice preparation, trade discounts, taxes, and depreciation. Scientific calculator required. Prerequisites: MTH 20 and (RD 80 or ESOL 250) or equivalent placement. Audit available.

### **MTH 58. Math Literacy I. 4 Credits.**

Explores how to clearly communicate arguments supported by quantitative evidence. Investigates contextual and open-ended mathematical problems. Develops mathematical reasoning skills through interpreting information, making conjectures, communicating effectively, and verifying results. Emphasizes an understanding of the role of mathematics and how it affects decision making in life. Uses collaborative learning through in-class group interaction. Uses technology throughout the course. Prerequisites: MTH 20 and (WR 80 or ESOL 252) and (RD 80 or ESOL 250) or equivalent placement. Audit available.

### **MTH 60. Introductory Algebra - First Term. 4 Credits.**

Introduces algebraic concepts and processes with a focus on linear equations, linear inequalities, and systems of linear equations. Emphasizes number-sense, applications, graphs, formulas, and proper mathematical notation. Recommended: MTH 20 be taken within the past 4 terms. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisites: MTH 20 and (RD 80 or ESOL 250) or equivalent placement. Audit available.

### **MTH 65. Introductory Algebra - Second Term. 4 Credits.**

Introduces algebraic concepts and processes with a focus on polynomials, exponents, roots, geometry, dimensional analysis, solving quadratic equations, and graphing parabolas. Emphasizes number-sense, applications, graphs, formulas, and proper mathematical notation. Recommended: MTH 60 or MTH 62 be taken within the past 4 terms. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisites: (MTH 60 or MTH 62) and (RD 80 or ESOL 250) or equivalent placement. Audit available.

### **MTH 70. Review of Introductory Algebra. 4 Credits.**

Reviews algebraic concepts and processes with a focus on linear equations and inequalities in one and two variables, linear systems, properties of exponents, polynomials, radicals, quadratic equations, and functions. Emphasizes applications, graphs, formulas, and proper mathematical notation. Recommended: MTH 63 or MTH 65 be taken within the past 4 terms. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisites: (MTH 63 or MTH 65) and (RD 80 or ESOL 250) or equivalent placement. Audit available.

### **MTH 95. Intermediate Algebra. 4 Credits.**

Introduces algebraic concepts and processes with a focus on factoring, functions, rational expressions, solving equations (quadratic, rational, radical, absolute value), and solving inequalities. Emphasizes number-sense, applications, graphs, formulas, and proper mathematical notation. Recommended: MTH 63 or MTH 65 or MTH 70 be taken within the past 4 terms. The PCC math department recommends that students take MTH courses in consecutive terms. Prerequisites: (MTH 63 or MTH 65 or MTH 70) and (RD 90 and WR 90) or IRW 90 or equivalent placement. Audit available.

### **MTH 98. Math Literacy II. 4 Credits.**

Covers formulating and clearly communicating arguments supported by quantitative evidence with emphasis on data analysis. Uses data to collaboratively engage with contextual and open-ended mathematical problems. Emphasizes use of mathematical and statistical reasoning through interpreting information, making conjectures, communicating effectively, and verifying results. Emphasizes an understanding of the role of mathematics and how it affects decision making in life. Uses collaborative learning through in-class group interaction. Uses technology throughout the course. Prerequisites: (MTH 58 or MTH 63 or MTH 65 or MTH 70) and (RD 90 or ESOL 260) and (WR 90 and ESOL 262) or IRW 90 or equivalent placement. Audit available.

### **MTH 105. Math in Society. 4 Credits.**

Explores concepts and applications of logic rules, basic probability and statistics as well as personal finance models. Investigates problem solving techniques (algebraic and nonalgebraic) as well as some nontraditional mathematics topics such as social choice or discrete mathematics. Integrates technology where appropriate. The PCC Mathematics Department recommends that students take MTH courses in consecutive terms. Prerequisite: (MTH 95 or MTH 98) and (RD 115 and WR 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAOT, Science, Math, Computer Science/ASOT-B.

**MTH 111. College Algebra. 5 Credits.**

Explores relations and functions graphically, numerically, symbolically, and verbally. Examines exponential, logarithmic, polynomial, and rational functions. Investigates applications from a variety of perspectives. Graphing technology is required, such as Desmos and/or GeoGebra which are available at no cost. The PCC math department recommends that students take MTH courses in consecutive terms. Recommended: MTH 95 taken within the past 4 terms. Prerequisite: MTH 95 and (RD 115 and WR 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/ASOT-B.

**MTH 112. Elementary Functions. 5 Credits.**

Investigates trigonometric functions, equations and identities. Examines right and oblique triangles, vectors, polar coordinates, parametric equations, and complex numbers. Explores topics graphically, numerically, symbolically, and verbally. Graphing technology is required, such as Desmos and/or GeoGebra which are available at no cost. The PCC math department recommends that students take MTH courses in consecutive terms. Recommended: MTH 111 or MTH 111B or MTH 111C taken within the past 4 terms. Prerequisite: (MTH 111 or MTH 111B or MTH 111C) and (RD 115 and WR 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAOT.

**MTH 211. Foundations of Elementary Math I. 4 Credits.**

Examines the conceptual basis of K-8 mathematics using collaborative learning through in-class group interaction. Provides opportunities to experience using manipulatives to model problem solving, numeration systems, operations, patterns and change, and number theory. Emphasizes quantitative and algebraic reasoning. Includes content and mathematical practices based on the Common Core State Standards. Prerequisite: MTH 95 or MTH 98 or higher, and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAOT.

**MTH 212. Foundations of Elementary Math II. 4 Credits.**

Examines the conceptual basis of K-8 mathematics using collaborative learning through in-class group interaction. Provides opportunities to experience using manipulatives to model operations with rational numbers including fractions, decimals, percents, and integers. Explores the set of irrational numbers, the set of real numbers, proportional reasoning, and simple probability and statistics. Includes content and mathematical practices based on the Common Core State Standards. Prerequisite: MTH 211 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAOT.

**MTH 213. Foundations of Elementary Math III. 4 Credits.**

Examines the conceptual basis of K-8 mathematics using collaborative learning through in-class group interaction. Provides opportunities to experience using manipulatives to model problem solving, explore patterns and relationships among geometric figures and develop spatial reasoning. Explores informal geometry, transformational geometry, and measurement systems. Includes content and mathematical practices based on the Common Core State Standards. Prerequisite: MTH 211 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/ASOT-B.

**MTH 241. Calculus for Management, Life and Social Science. 4 Credits.**

Includes limits, continuity, derivatives, and integrals. Investigates applications from science, business, and social science perspectives. Graphing calculator required. TI-89 Titanium or Casio Classpad recommended. Prerequisite: (MTH 111 or MTH 111B or MTH 111C) and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

**MTH 243. Statistics I. 5 Credits.**

Introduces displaying data with graphs, numerical descriptions of data, producing data, elementary probability, probability distributions, confidence intervals and significance testing. Investigates applications from science, business, and social science perspectives. Graphing calculator with advanced statistical programs and/or computer software required; see instructor. Recommended: MTH 111. Prerequisite: MTH 95 or MTH 98 or higher, and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

**MTH 244. Statistics II. 4 Credits.**

Includes confidence interval estimation; tests of significance including z-tests, t-tests, ANOVA, and chi-square; and inference for linear regression. Investigates applications from science, business, and social science perspectives. Graphing calculator with advanced statistical programs and/or computer software required; see instructor. Prerequisites: MTH 243 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

**MTH 251. Calculus I. 4 Credits.**

Includes limits, continuity, derivatives and some applications of derivatives. Graphing technology is required, such as Desmos and/or GeoGebra which are available at no cost. Prerequisites: (MTH 112 or CMET 131) and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAOT, Science, Math, Computer Science/ASOT-B.

**MTH 252. Calculus II. 4 Credits.**

Includes antiderivatives, the definite integral, topics of integration, improper integrals, and applications of differentiation and integration. Graphing technology is required, such as Desmos and/or GeoGebra which are available at no cost. Prerequisite: MTH 251 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAOT.

**MTH 253. Calculus III. 5 Credits.**

Includes infinite sequences and series (including Taylor series), vectors, and geometry of space. Graphing calculator required. TI-89 Titanium or Casio Classpad 330 recommended. Prerequisite: MTH 252 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

**MTH 254. Vector Calculus I. 5 Credits.**

Includes multivariate and vector-valued functions from a graphical, numerical, and symbolic perspective. Applies integration and differentiation of both types of functions to solve real world problems. Graphing calculator required. TI-89 Titanium or Casio Classpad 330 recommended. Prerequisite: MTH 253 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/AAOT.

**MTH 256. Differential Equations. 5 Credits.**

Includes a variety of differential equations and their solutions, with emphasis on applied problems in engineering and physics. Differential equations software will be used. Students communicate results in oral and written form. Graphing calculator required. TI-89 Titanium or Casio Classpad 330 recommended. Recommended: MTH 254. Prerequisites: (MTH 252 and MTH 261) and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit Available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/ASOT-B, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS.

**MTH 261. Applied Linear Algebra I. 5 Credits.**

Covers elementary linear algebra with a focus on n-space and applications. Includes linear systems, vectors in n-space, vector space properties of n-space, and matrix algebra, including eigenspaces. Required: Matrix-capable calculator. Recommended: TI-89 Titanium or Casio Classpad 330. Prerequisite: MTH 252 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available. This course fulfills the following GE requirements: Science, Math, Computer Science/AAOT, Science, Math, Computer Science/AS, Science, Math, Computer Science/AAS, Science, Math, Computer Science/AGS, Science, Math, Computer Science/ASOT-B.