Mathematics

- **Offered Fall 2015**

- **MTH 045 Cr. 2** transcript*  (*This fundamental math course may be needed, depending on ACT and placement test scores.*)

**Pre-Statistics**
A preparatory course for elementary statistics. Topics include introductory treatment of algebra, inequalities, interval notation, mathematical formulas and notation, variables, descriptive statistics, elementary probability, normal probability distributions, and the concept of statistical inference. Letter grade, but only "F" calculated in GPA.  *Transcript credit counts toward full-time status but does not count toward graduation.*

- **MTH 050 Cr. 3** transcript*  (*This fundamental math course may be needed, depending on ACT and placement test scores.*)

**Basic Algebra**
A review of beginning algebra. Topics include an elementary treatment of real numbers, polynomials, linear equations, inequalities, rational expressions, systems of linear equations, radicals, and quadratic equations. Letter grade, but only F calculated in GPA.  *Transcript credit counts toward full-time status but does not count toward graduation.*

- **MTH 051 Cr. 2** transcript*  

This fundamental math course may be needed, depending on ACT and placement test scores.

**Topics in Intermediate Algebra**
A course to enhance the student’s skills in selected areas of intermediate algebra; areas covered include polynomials, rational expressions, exponents, equations, and inequalities. Prerequisite: MTH 050 or an appropriate placement test score. Letter grade, but only F calculated in GPA.  *Transcript credit counts toward full-time status but does not count toward graduation.*

- **MTH 135 Cr. 4**  *Math/Logical Systems and Foreign Languages*

**Mathematics for Elementary Teachers I**
This course is designed for prospective elementary teachers. Content strands include number and operations and algebra and functions. Number and operations topics include set theory and pre-number concepts, place-value and numeracy, multiple representations and algorithms for arithmetic, number theory (e.g. divisors, multiples), and proportional reasoning. Algebra and functions topics include the concepts of variable and function, algebraic thinking, linear, polynomial, rational, and exponential functions, mathematical models, rates of change, and multiple representations of relations. Aligned with state and national standards, this course will emphasize problem solving, communication, reasoning, and representation in mathematics. Prerequisite: MTH 050 or satisfactory placement test score; Early Childhood Education or Elementary-Middle Level Education major plan.
Mathematics for Elementary Teachers II
This course is designed for prospective elementary teachers. Content strands include geometry and measurement, data analysis and statistics, and probability and discrete math. Topics from these strands include: properties of geometric figures, geometric measurement (length, area, volume), congruence and similarity, and transformations; descriptive statistics, sampling design and statistical comparisons, randomness and variability, inferential statistics (including the normal distribution); counting techniques, uniform and nonuniform distributions, and representations and calculations of probabilities for simple and compound events. Aligned with state and national standards, this course will emphasize problem solving, communication, reasoning, and representation in mathematics.
Prerequisite: MTH 135 with a grade of C or better

Elementary Statistics
An introductory course covering fundamentals of modern statistical methods. Topics include descriptive statistics, the binomial and normal distributions, estimation, and hypothesis testing. The z, t, F and chi-square test statistics are introduced. Instruction in computer use is included, and statistics software is used throughout the course for analyzing data files and carrying out statistical procedures. Prerequisite: MTH 050 or an appropriate placement test score.

College Algebra
A college algebra course on the properties, graphs, and applications of elementary functions. Topics include the real and complex numbers, concepts from analytic geometry, solutions to equations and inequalities, the elementary algebraic functions, and the logarithmic and exponential functions. Prerequisite: MTH 051 or two years of high school algebra and an appropriate placement test score. (Successful completion of MTH 151, 175 or 207 precludes taking MTH 150 for credit.)

Precalculus
A precalculus course on properties, graphs, and applications of elementary transcendental functions. Topics include concepts from analytic geometry; theory of equations; the logarithmic, exponential, trigonometric, and inverse trigonometric functions; and analytic trigonometry. Prerequisite: MTH 150 or two years of high school algebra and an appropriate placement test score. (Successful completion of MTH 151 precludes taking MTH 150 for credit. Successful completion of MTH 207 precludes taking MTH 151 for credit.)

Applied Calculus
Basic concepts and methods from differential, integral, and multivariate calculus. Logarithmic and exponential functions are included, but not trigonometric functions. Emphasis of the course is on models and applications in business and the social, life, and physical sciences. Prerequisite:
MTH 150 or two years of high school algebra and an appropriate placement test score. (Successful completion of MTH 175 precludes taking MTH 150 for credit. Successful completion of MTH 207 precludes taking MTH 175 for credit.)

- **MTH 207**  
  **Cr. 5 Math/Logical Systems and Foreign Languages**  
  **Calculus I**  
  A rigorous introduction to calculus. Topics include limits, derivatives of algebraic and trigonometric functions, and integration. Applied problems from related rates, extrema, volumes. Prerequisite: MTH 151 or four years of high school mathematics, including trigonometry. (Successful completion of MTH 207 precludes taking MTH 151 or 175 for credit.)

- **MTH 208**  
  **Cr. 4 Math/Logical Systems and Foreign Languages**  
  **Calculus II: Calculus with Linear Algebra and Differential Equations**  
  A continuation of Calculus I with an introduction to linear algebra and differential equations. Topics include: differentiation and integration of transcendental functions, indeterminate forms, improper integrals, techniques of integration, applications to the physical sciences, first order linear differential equations, and an introduction to vectors, matrices, and systems of linear equations. Prerequisite: MTH 207.

**MTH 265**  
**Cr.4 Math/Logical Systems and Foreign Languages**  
**Mathematical Models in Biology**  
An introduction to the use of calculus and stochastic based models to the biological sciences. Mathematical tools such as discrete and continuous differential equations, linear algebra, phase portraits, probability theory and descriptive and inferential statistics that are necessary to analyze and interpret biological models will be covered. Biological topics may include single species and interacting population dynamics, modeling infectious diseases, enzyme kinetics, and quantitative genetics. Prerequisite: MTH 175 or MTH 207