**MATH 160 OUTLINE**

**PRECALCULUS MATHEMATICS**

**TEXT: PreCalculus:, 11eth Ed. by Michael Sullivan**

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| **MATERIAL TO BE COVERED** | **SECTIONS**  **FROM TEXT** | **TIME**  **LINE** |
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| Definition and graphs of functions, difference quotient, properties of functions, combining functions, piece-wise defined functions transformation of functions, composition of functions. Modeling with functions. | 2.1 – 2.6 | 6 Hours |
| Linear and quadratic functions and models. Polynomial functions, inequalities involving quadratic functions | 3.1 – 3.5 | 2 Hours |
| Polynomial and rational functions, graphing polynomial and rational functions, polynomial and rational inequalities, real and complex zeros of polynomial functions, Fundamental Theorem of Algebra. | 4.1-4.7 | 6 Hours |
| One - to - one and inverse functions. Exponential and logarithmic functions; Properties of logarithms, exponential and logarithmic equations and application. | 5.1-5.9 | 6.5 Hours |
| The unit circle and angle measure, trigonometric functions of angles and real numbers. Linear velocity, angular velocity. Graphs of trigonometric functions. Properties of trigonometric functions. . | 6.1-6.5 | 4 Hours |
| Inverse trigonometric functions. Trigonometric equations. Trigonometric identities, sum, difference, multiple and half angles. | 7.1-7.7 | 6 Hours |
| Applications of right triangles. | 8.1 | 1 Hour |
| Vectors, the dot product and applications. Parabolas, ellipses, hyperbolas. | 9.4- 9.5  10.1-10.4 | 6 Hours |
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| Systems of non - linear equations, partial fractions. | 11.5-11.6 | 3.5 Hours |
| Infinite sequences and summation notation, arithmetic and geometric sequences, mathematical induction, the Binomial Theorem. | 12.1-12.5 | 7 Hours |
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| Optional sections: (At least one of the following topics) Polar coordinates, polar equations and graphs, limits, derivatives, Riemann Sum, Integrals. | 9.1-9.2  14.1-14.5 | 3 Hours |
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4-unit class: hours total 57.5 (15 x 3 hours 50 minutes) – hours for exams + 2.5 hour final

This outline allows for 4 hours of exams.

This course is a prerequisite for Math 180 (Calculus) and, consequently, it is important that the students develop sufficient skills and background to increase their chance of success in calculus.

Submitted by: Arellano, Beydler, Birca, Kim, Kojima, Lee, Morales, Perez, Tamayo, Tran, Wohlgezogen.

Math Department Policy can be found at: [https://www.mtsac.edu/math/departmentpolicy.html](about:blank)