**MATH 160 OUTLINE**

**PRECALCULUS MATHEMATICS**

**TEXT: Precalculus (OpenStax) by J. Abramson**

[**https://openstax.org/details/books/precalculus**](https://openstax.org/details/books/precalculus)

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| ***Approved: August 23, 2019*** | | ***Effective: Fall 2019*** | | | |
| **MATERIAL TO BE COVERED** | | **SECTIONS FROM TEXT** | | **TIME LINE** | |
| Definition and graphs of functions, average rate of change, transformation of functions, combining functions, one-to-one and inverse functions; (Modeling with functions is found throughout the book.) | | 1.1-1.5, 1.7 | | 7 Hours | |
| Linear functions and models; Quadratic functions and models; Polynomial functions, Zeros of polynomials; Rational functions | | 2.1-2.3 3.1-3.8 | | 7.5 Hours | |
| Exponential and logarithmic functions; Logarithmic properties; Exponential and logarithmic equations; Exponential and logarithmic models | | 4.1 - 4.7 | | 6.5 Hours | |
| The unit circle and angle measure, trigonometric functions of angles, linear and angular velocity; Right triangle trigonometry and applications; Graphs of trigonometric functions; Inverse trigonometric functions and applications | | 5.1 - 5.4 6.1 - 6.3 | | 7.5 Hours | |
| Trigonometric identities; sum, difference, multiple-angle and half-angle formulas; Solving trigonometric equations | | 7.1 - 7.3,  7.5 | | 5 Hours | |
| Vectors, the dot product, and applications | | 8.8 | | 2 Hours | |
| Systems of nonlinear equations; Partial fractions | | 9.3-9.4 | | 3.25 Hours | |
| Ellipses, hyperbolas, parabolas | | 10.1-10.3 | | 3.5 Hours | |
| Infinite sequences and summation notation, arithmetic and geometric sequences; Mathematical induction; the Binomial Theorem. | | 11.1-11.4, 11.6 | | 6.5 Hours | |
| Optional sections: (At least one of the following topics) Polar coordinates, limits, derivatives. For Riemann Sums and integrals see chapter 5 of OpenStax Calculus - https://openstax.org/details/books/calculus-volume-1 | | 8.3 - 8.4 12.1 - 12.4 | | 3 Hours | |
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| \*\*\* One hour = 1 hour of face time. \*\*\*\*This outline allows for 4 hours of exams. | | | |  | |
| 16 Week Term: 1 week = 3.75 hours (face time) 6 Week Term: 1 week = 10 hours (face time) | | | |  | |
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| 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, Chavez, Kim, Kojima, Lee, Morales, Perez, Sholars, Tatoian, Tran, and Wohlgezogen  Department Policy: <https://www.mtsac.edu/math/departmentpolicy.html> | | | | |