

## MATH 148 – Preparation for Calculus

**Course Description from Bulletin:** Review of algebra and analytic geometry. Functions, limits, derivatives. Trigonometry, trigonometric functions and their derivatives. Inverse functions, inverse trigonometric functions and their derivatives. Exponential and logarithmic functions. (4-0-4)

**Enrollment:** This course does not count for graduation in any engineering, mathematics, natural science or computer science degree program

**Textbook(s):** David Cohen, with Theodore B. Lee, David Sklar, *Precalculus* (7th Ed.) and James Stewart, *Calculus, 8<sup>th</sup> Ed.* (if MATH 251 will be taken eventually) or *Single Variable Calculus, 8<sup>th</sup> Ed.* (if only MATH 151 and 152 will be taken) or *Single Variable Calculus, Volume 1, 8<sup>th</sup> Ed.* (if only MATH 151 will be taken).

**Other required material:** WebAssign access.

**Prerequisites:** None

### Objectives:

1. Students will be able to use the Cartesian coordinate system and analytic geometry to investigate functions.
2. Students will be able to perform algebraic and numeric operations with functions.
3. Students will be able to solve linear, quadratic, and rational equations and inequalities.
4. Students will be able use the rules for exponentials and logarithms.
5. Students will be able to use trigonometry and fundamental trigonometric identities.
6. Students will be able to compute limits of simple functions.
7. Students will be able to differentiate polynomial, rational and trigonometric functions by using the definition and by using formulae.

**Lecture schedule:** Three 75 minute lectures per week

### Course Outline:

	Hours
1. Real Number System, Absolute Value, Polynomials	4
2. Properties of Polynomials, Inequalities	4
3. Cartesian Coordinate System, Graphs of Equations	4
4. Graphing using symmetry, translations, and reflections	4
5. Functions and inverse functions	4
6. Exponential and Logarithmic functions	4
7. Right triangle trigonometry	1
8. Trigonometric Functions of Real Numbers	5
9. Trigonometric Identities	6
10. Limits and Continuity	6
11. Tangents and Rates of Change	4
12. Definition of the Derivative, Differentiation Rules	8
13. Derivatives of Trigonometric Functions	2
14. Review	

<b>Assessment:</b>	Homework	5-10%
	Quizzes	10-15%
	Tests	50%
	Final Exam	25-30%

**Syllabus prepared by:** John Erickson and Michael Pelsmajer

**Date:** 7/16/15 (Updated from 12/15/05, 02/04/12, by Sue Sitton and Patrick McCray)