Syllabus for Calculus I
Math 1910
Section 001

Instructor: Ralph Faudree
Classroom: WD123

Exams and Homework:
Weekly homework 100 points
Weekly quizzes 100 points
4 hourly exams 400 points
Final Exam of 200 points
(The lowest 100 points will be dropped)
(You may get assistance (and, and in fact, are encouraged to do so) from tutors and tutoring laboratories in doing exercises, but all work on homework turned in for credit, and on quizzes and exams is you work alone).

Course Material: All sections of the first 5 chapters of the textbook will be covered. Roughly one Section will be covered each lecture period (not including review days and exam Days). The pace in Chapters 1 and 2 will be slightly more rapid, since it is review in nature.

Office and Office Hours: WD 329
10:15 – 11:15 MWF, 11: - 12 TT, and by appointment

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Week 1-2: Introduction to Calculus
Sections 1.1-1.2: Review of Function Concept and Graphs
Algebra Review: Polynomials
Section 1.3: Inverses of Functions
Sections 1.3-1.4: Review of Trigonometric, Exponential and Logarithmic Functions
Sections 2.1-2.2: Introduction to Limits

Week 3-4: Section 2.3: Limits for Algebraic Functions
Algebra Review: Rational Functions
Section 2.4: Infinite Limits (Vertical Asymptotes)
Section 2.5: Limits at Infinity (Horizontal Asymptotes)
Section 2.6: Continuous and Discontinuous Functions, Intermediate Value Theorem
Section 2.7: Precise Definitions of Limits
Week 5-6: Section 3.1: Motivation and Definition of Derivatives
Section 3.2: Basic Rules of Differentiation, Power Rule
Section 3.3: Product and Quotient Rules
Section 3.4: Derivatives of Trigonometric Functions
Section 3.5: Derivatives as Rates of Change
Section 3.6: Chain Rule and Generalized Power Rule

Week 7-8: Section 3.7: Implicit Differentiation
Section 3.8: Derivatives of Logarithmic and Exponential Functions
Section 3.9: Derivatives of Inverse Trigonometric Functions
Section 3.10: Related Rates

Week 9-10: Section 4.1: Extreme Values: Maxima and Minima, Extreme Value Theorem
Section 4.2: Monotonicity, Concavity, First and Second Derivative Test
Section 4.3: Sketching Functions
Section 4.4: Optimization Problems, Applications
Section 4.5: Linear Approximation, Differentials

Week 11-12: Section 4.6: Mean Value Theorem
Section 4.7: L'Hôpital's Rule, Indeterminate Forms
Section 4.8: Antiderivatives, Indefinite Integral
Section 5.1: Area Approximation, Riemann Sums
Section 5.2: Definite Integral and Area under Curves

Week 13-14: Section 5.3: Fundamental Theorem of Calculus — Part 1 and 2
Section 5.4: Working with Integrals, Average Value
Section 5.5: Method of Substitution

Outlook: Integration by Tables