Math 131 - Weekly Schedule

Textbook: *Single Variable Calculus: Concepts & Contexts,* 4th edition, by Stewart

Guidelines:

- Proofs, as well as overly complex limits, derivatives, and integrals, are beyond the scope of this course.
- Keep most theorems at an intuitive level.
- Many topics such as special limits of trig functions, limits of inverse trig functions, parametric curves, logarithmic differentiation, and curve sketching for trig functions can be considered optional.

Note: This is a fall or spring schedule. In summer, this schedule is accelerated by a factor of 3 in order to accommodate a 5-week session.

Fall Semester Schedule

- Week 1
  - Sections 1.1, 1.2 (emphasize function classes), 1.3
    Functions, Models, Transformations of Functions
- Week 2
  - Sections 1.5, 1.6, 2.1
    Exponential Functions, Inverses and Logarithmic Functions, Approximating Slopes of Tangent Lines
- Week 3
  - Sections 2.2, 2.3 (excluding Squeeze Theorem), 2.4 (excluding the Intermediate Value Theorem)
    Introduction to Limits, Calculating Limits, Continuity
- Week 4
  - Section 2.5, Review, Exam I
    Limits Involving Infinity
- Week 5
  - Sections 2.6, 2.7, 2.8
    Derivatives and Rates of Change, Limit Definition of Derivatives, Slope Graphs and Antiderivatives
- Week 6
  - Sections 3.1, 3.2, 3.3 (de-emphasize special limits of trig functions to prove derivative formulas)
    Derivatives of Polynomials and Exponential Functions, Product and Quotient Rules, Derivatives of Trig Functions
- Week 7
  - Sections 3.4 (excluding tangents to parametric curves and proving the chain rule), 3.7 (excluding logarithmic differentiation), 3.8
    Chain Rule, Derivatives of Log Functions, Applications in Natural and Social Sciences
- Week 8
  - Section 3.9, Review, Exam II
    Linear Approximations and Differentials
- Week 9
  - Sections 4.2, 4.3, 4.6 (excluding trig optimization)
    Local and Absolute Extrema, Curve Sketching, Optimization
- Week 10
  - Sections 4.8 (excluding inverse trig functions), 5.1, 5.2 (excluding evaluating an integral by computing the limit of a Riemann sum)
    Antiderivatives, Approximating Area, The Definite Integral
- Week 11
  - Sections 5.3, 5.4
    Evaluating Definite Integrals, Fundamental Theorem of Calculus
- Week 12
  - Section 5.5, Review
    Substitution
- Week 13
  - Exam III
- Week 14
  - Sections 6.1 (excluding parametric curves), 6.5, 6.7 (blood flow and cardiac output), 7.1* (emphasize population growth)
    Area Between Curves, Average Value of Functions, Applications to Biology, Introduction to Differential Equations
- Week 15
  - Review for Final Exam

Spring Semester Schedule

- Week 1
  - Sections 1.1, 1.2 (emphasize function classes)
    Functions, Models
- Week 2
  - Sections 1.3, 1.5, 1.6
    Transformations of Functions, Exponential Functions, Inverses and Logarithmic Functions
- Week 3
  - Sections 2.1, 2.2, 2.3 (excluding Squeeze Theorem)
    Approximating Slopes of Tangent Lines, Introduction to Limits, Calculating Limits
- Week 4
  - Sections 2.4 (excluding the Intermediate Value Theorem), 2.5
    Continuity, Limits Involving Infinity
- Week 5
  - Review, Exam I, Section 2.6
  - Derivatives and Rates of Change
- Week 6
  - Sections 2.7, 2.8, 3.1
    Limit Definition of Derivatives, Slope Graphs and Antiderivatives, Derivatives of Polynomials and Exponential Functions
- Week 7
  - Sections 3.2, 3.3 (de-emphasize special limits of trig functions to prove derivative formulas), 3.4 (excluding tangents to parametric curves and proving the chain rule)
    Product and Quotient Rules, Derivatives of Trig Functions, Chain Rule
- Week 8
  - Sections 3.7 (excluding logarithmic differentiation), 3.8, 3.9
    Derivatives of Log Functions, Applications in Natural and Social Sciences, Linear Approximations and Differentials
    Note: Spring Break falls between Weeks 8 and 9.
- Week 9
  - Section 3.9, Review, Exam II, Section 4.2
    Linear Approximations and Differentials, Local and Absolute Extrema
- Week 10
  - Sections 4.3, 4.6 (excluding trig optimization)
    Curve Sketching, Optimization
- Week 11
  - Sections 4.8 (excluding inverse trig functions), 5.1, 5.2 (excluding evaluating an integral by computing the limit of a Riemann sum)
    Antiderivatives, Approximating Area, The Definite Integral
- Week 12
  - Sections 5.3, 5.4, 5.5
    Evaluating Definite Integrals, Fundamental Theorem of Calculus, Substitution
- Week 13
  - Review, Exam III, Section 6.1 (excluding parametric curves)
    Area Between Curves
- Week 14
  - Sections 6.5, 6.7 (blood flow and cardiac output), 7.1* (emphasize population growth)
    Average Value of Functions, Applications to Biology, Introduction to Differential Equations
- Week 15
  - Review for Final Exam

*as time permits

Updated 4/7/17 KK