CALCULUS II

TEXT

Varies with instructor

GOALS

Students should gain knowledge of integrals, learn the concepts of improper integrals and infinite series, and learn to apply integrals and series in applications.

CORE TOPICS (must be covered in each section of MAT 127)

1. Integration by parts
2. Integration techniques, including substitutions, partial fractions, improper fractions, and reduction of power
3. Integration tables and computer algebra systems
4. Numerical integration
5. Improper integrals
6. Area of a plane region
7. Volume by slicing and by shells
8. Arc length (including parametric curves) and surface area
9. Some application of integration to physics, engineering
10. Separable differential equations
11. Infinite series (including geometric and p-series); k-term, integral, and comparison tests
12. Alternating series
13. Absolute convergence and ratio test
14. Power series
15. Taylor series
16. Applications of Taylor series (finding limits, evaluating integrals)

SUPPLEMENTARY TOPICS (included at instructor's discretion)

1. Projectile motion
2. Probability.
3. Hyperbolic functions
4. Growth, decay, cooling
5. Linear differential equations
6. Euler's method
7. Sequences
8. Conic sections
9. Calculus and parametric equations
10. Calculus and polar equations