



Catalog Description:

Multivariable calculus; introduction to Taylor series.

Prerequisites:

C- or better in 1161.xx or 1181H.

Exclusions:

For 2162.01: Not open to students with credit for any higher numbered math class numbered 2162 or higher.

For 2162.02: Intended for students in Freshman Engineering Honors and not open to students with credit for any higher numbered math class numbered 2162 or higher.

Text:

Calculus for Scientists and Engineers: Early Transcendentals, 2nd OSU custom edition, by Briggs, Cochran, Gillett, Person, published by Pearson, ISBN: 9781269753449

Topics:

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| 9.1; 9.2 | An Overview; Sequences |
| 9.2; 9.3 | Sequences; Infinite Series |
| 9.4 | Divergence and Integral Tests |
| 9.5 | Ratio, root, and Comparison Tests |
| 9.5; 9.6 | Ratio, root, and Comparison Tests; Alternating Series; |
| 10.1; 10.2 | Approximating Functions with Polynomials; Properties of power Series |
| 10.3; 10.4 | Taylor Series; Working with Taylor Series |
| 11.1; 11.2 | Parametric Equations; Polar Coordinates |
| 11.2; 11.3 | Polar Coordinates; Calculus in Polar Coordinates |

Midterm 1



12.1; 12.2 Vectors in the Plane; Vectors in Three Dimensions
12.3;12.4 Dot Products; Cross Products
12.5 Lines and Curves in Space
12.6 Calculus of Vector-Valued Functions
12.7; 12.8 Motion in Space; Length of Curves
12.9 Curvature and Normal Vectors
13.1; 13.2 Planes and Surfaces; Graphs and Level Curves
13.3 Limits and Continuity
13.4;13.5 Partial Derivatives; Chain Rule
13.6 Directional derivative and the Gradient

MIDTERM 2

13.7 Tangent Plane and Linear Approximation
13.8 Maximum/Minimum Problems
13.9 Lagrange Multipliers
14.1; 14.2 Double Integral over Rectangular Regions; Double Integrals over General Regions
14.2; 14.3 Double Integrals over General Regions; Double integrals in Polar Coordinates
14.4; 14.5 Triple Integrals; Triple Integrals in Cylindricals and Sphericals
14.5; 14.6 Triple Integrals in Cylindricals and Sphericals; Integrals for Mass Calculations
15.1 Vector Fields
15.2 Line Integrals
15.3 Conservative Vector Fields

MIDTERM 3

15.4 Green's Theorem
15.5 Divergence and Curl
15.6 Surface Integrals
15.7 Stokes' Theorem
15.8 Divergence Theorem