

MATH 3202 (Vector Calculus) — Spring 2019

Course Outline

UNIT 1: VECTOR FUNCTIONS (approx. 4 weeks)

- 1.1: Vector Functions and Space Curves (§13.1)
- 1.2: Derivatives and Integrals of Vector Functions (§13.2)
- 1.3: Arclength (§13.3)
- 1.4: Line Integrals (§16.2)
- 1.5: Curvature (§13.3)
- 1.6: Applications to Motion in Space (§13.4)

UNIT 2: CALCULUS OF SURFACES (approx. 4 weeks)

- 2.1: Surfaces in Three Dimensions and Tangent Planes (§12.5, 12.6, 14.4, 16.6)
- 2.2: Directional Derivatives and the Gradient Vector (§14.6)
- 2.3: Surface Area and Surface Integrals (§15.5, 16.6, 16.7)
- 2.4: Triple Integrals (§15.6)
- 2.5: Triple Integrals in Cylindrical Coordinates (§15.7)
- 2.6: Triple Integrals in Spherical Coordinates (§15.8)

UNIT 3: VECTOR CALCULUS (approx. 4 weeks)

- 3.1: Vector Fields (§16.1, 16.2, 16.7)
- 3.2: The Fundamental Theorem for Line Integrals (§16.3)
- 3.3: Green's Theorem (§16.4)
- 3.4: Curl and Divergence (§16.5)
- 3.5: Stokes' Theorem (§16.8)
- 3.6: The Divergence Theorem (§16.9)

UNIT 4: FURTHER TOPICS IN VECTOR CALCULUS (approx. 1 week)

- 4.1: Lagrange Multipliers (§14.8[†])
- 4.2: Change of Variables in Double and Triple Integrals (§15.9[†])

Section numbers (§) refer to Stewart, 8th edition.

[†] These sections will be covered only as time permits.