MAT 272 (Calc III) Syllabus

Text: *Calculus, Early Transcendentals, Fourth Edition*, by Stewart
Lab Manual: *Multivariable CalcLabs with Maple, 4th* Ed., by Belmont & Yasskin

Topics for exam #1

- 3D coordinate system, vectors, vector algebra and geometry, distance formula
- Dot and cross products
- Lines and planes
- Quadric surfaces
- Vector functions and their derivatives
- Velocity, acceleration, arc length

*Exam #1*

Topics for exam #2

- Functions of 2 or more variables
- Limits and continuity
- Level curves and surfaces, contour lines
- Partial differentiation
- Tangent planes and differentials
- Chain rule
- Gradient and applications
- Directional derivative
- Tangent planes and normal lines using gradient
- Higher order partials
- Optimization problems, LaGrange multipliers

*Exam #2*

Topics for exam #3

- Double integrals, iterated integrals, rectangular and more general regions
- Integrals using polar coordinates
- Cylindrical and spherical coordinates
- Triple integrals in rectangular, cylindrical, and spherical coordinates
- Parameterization of surfaces, surface areas

*Exam #3*
Topics for exam #4

Vector fields
Curl and divergence
Line integrals
Green’s theorem, potential function, independence of path
Surface integrals and applications: mass, moments, flux integrals
Stokes’ theorem
Divergence theorem

Exam #4

Final Examination