

Calculus, 6th Edition by James R. Stewart

It is departmental policy that computer projects and assignments be part of Calculus III and IV, MA 2733 and MA 2743, and the use of *Mathematica* has now been incorporated into the syllabus for Calculus III. Graduate Teaching Assistants in the Allen 414 computer lab are available to guide incoming transfer student and others through an introductory tutorial, “Getting Started with *Mathematica*”, accessible through the department’s home page. Instructors of Calculus IV may therefore assume familiarity with the fundamentals of *Mathematica* and need only concern themselves with specific *Mathematica* commands needed for applications in multivariate calculus. This syllabus attempts to allow adequate time for lab experiences.

In the syllabus below, 1 hour equals 50 minutes. We recommend three in-class tests in a 14-week MWF class. Because some students will have copies of the 5th edition in the Summer II and Fall 2008 terms, we ask that instructors be flexible concerning assignments and perhaps post parallel assignments for Stewart’s 5th and 6th editions at least through Fall.

Chapter

- 15.** Partial Derivatives Sections 15.1–15.8 12 hours
Essentially unchanged from the previous edition. Tangent planes and applications of the gradient. Optimization and the method of Lagrange multipliers. Use *Mathematica* to investigate local extrema analytically and graphical.
- 16.** Multiple Integration Sections 16.1–16.9 10 hours
Section 15.6 of the 5th edition has been deleted in the 6th since it overlapped with section 17.6. Spherical coordinates are no longer in Calculus III and are introduced in section 16.8. There are obvious applications of *Mathematica* in calculating multiple integrals, visualizing regions and computing centroids.
- 17.** Vector Calculus Sections 17.1–17.9 12 hours
Chapter 17 appears to be largely unchanged from the 5th edition. Vector fields, line integrals and work; Green’s theorem. Parameterized surfaces, surface integrals and flux. Stokes’ Theorem and the Divergence theorem.

Total: 34 hours

The remaining time, about 8 hours, should be spent on tests/review and time in the lab.