Math 1320 Syllabus

**Engineering Calculus II**

This is the second semester of a four-semester Engineering Math sequence. This semester treats topics in single and multivariable differential and integral calculus, with a focus on engineering applications and projects.

**Text**: [Calculus: Concepts and Contexts, 4th edition, by J. Stewart](http://www.cengage.com/search/productOverview.do?N=+16+4294922413+4294967225+4294967224+4294967223+4294967218&Ntk=P_Isbn13&Ntt=9780495557425#mainTab_2) , chapters 6.5-11.

**Course outline**:

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| Week 1 | 6.5-6.6 | Review, Average Values, Applications of Integration to Engineering |
| Week 2 | 7.1-7.3 | Modeling with Differential Equations, Direction Fields, Separable Differential Equations |
| Week 3 | 7.4, 8.1-8.2 | Exponential Growth and Decay, Sequences, Series |
| Week 4 | 8.3-8.4 | Convergence Tests for Series, Estimating Sums |
| Week 5 | 8.5-8.6 | Power Series, Representing Functions with Power Series |
| Week 6 | 8.7-8.8 | Taylor and Maclaurin Series, Applications of Taylor Polynomials |
| Week 7 | 9.1-9.3 | Three Dimensional Coordinates, Vectors, Dot Product |
| Week 8 | 9.4-9.5 | Cross Product, Equations of Lines and Planes |
| Week 9 | 9.6-10.1 | Functions and Surfaces, Vector Functions, Space Curves |
| Week 10 | 10.2-10.3 | Derivatives and Integrals of Vector Functions, Arc Length, Curvature |
| Week 11 | 10.4-10.5 | Velocity, Acceleration, Parametric Surfaces |
| Week 12 | 11.1-11.3 | Functions of Several Variables, Limits, Partial Derivatives |
| Week 13 | 11.4-11.5 | Tangent Planes, Linear Approximation, Chain Rule |
| Week 14 | 11.6-11.7 | Directional Derivative, Gradient Vector, Maximum and Minimum Values |
| Week 15 | 11.8-- | Lagrange Multipliers, Review |

**Course format**: There are four 50 minute lecture presentations per week (or equivalent), and one 50 minute section meeting. Section meetings will focus on homework and project work. Projects will be drawn from the suggestions in the text, as well as from topics suggested by the College of Engineering. Students will be evaluated on the basis of regular homework and/or quizzes based on that homework; project work; 2-3 midterm exams administered during their section meetings; and an in-class final exam administered during the University scheduled time.