Math 1270 Syllabus

**Engineering Calculus I**

This is the first semester of a four-semester Engineering Math sequence. This semester treats topics in 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 1-6.3

**Course outline**:

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| Week 1 | 1.3-1.5 | Functions, Graphs, Compositions, Exponential Function |
| Week 2 | 1.6-2.1 | Logarithms, Inverse Functions, Parametric Curves, Velocity |
| Week 3 | 2.2-2.4 | Limits, Limit Laws, Continuity |
| Week 4 | 2.5-2.7 | Derivatives, Rate of Change, Relationship between a Function and its Derivative |
| Week 5 | 2.8-3.2 | Derivatives of Polynomials and Exponential, Product and Quotient Rules |
| Week 6 | 3.3-3.5 | Derivatives of Trig Functions, Chain Rule, Implicit Differentiation |
| Week 7 | 3.6-3.8 | Inverse Trig Functions, Log Functions, and their Derivatives, Applications |
| Week 8 | 3.9-4.2 | Linear Approximation, Differentials, Related Rates, Max and Min Values |
| Week 9 | 4.3-4.5 | Derivatives and Shapes of Curves, Graphing, l'Hopital's Rule |
| Week 10 | 4.6-4.8 | Optimization, Newton's Method, Antiderivatives |
| Week 11 | 5.1-5.3 | Areas, Distances, The Definite Integral, Evaluating Definite Integrals |
| Week 12 | 5.4-5.6 | Fundamental Theorem of Calculus, Substitution Rule, Integration by Parts |
| Week 13 | 5.7-5.9 | Integration Techniques, Approximate Integration |
| Week 14 | 5.10, 6.1-6.2 | Improper Integrals, Areas Between Curves, Volumes |
| Week 15 | 6.3-6.4 | Volumes by Shells, Arc Length, 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.