"CALCULUS I" SYLLABUS

1. Preliminaries. Lines in the plane.
2. Functions and graphs. Inverse functions.
3. The limit of a function. Algebraic computation of limits.
4. Continuity.
5. Exponential and logarithmic functions.
6. An introduction to the derivative. Tangents.
7. Techniques of differentiation.
8. Derivatives of trig., exponential and log. functions.
9. Rates of change. Rectilinear motion.
10. The chain rule.
11. Implicit differentiation.
12. **Lecture Exam #1**
13. Related rates. Linear approximation and differentials.
14. Extreme values of a continuous function.
15. The mean value theorem.
16. Sketching the graph of a function.
17. Curve sketching with asymptotes.
18. l'Hopital's rule.
19. Optimization in physical sciences, etc.
20. Antidifferentiation.
21. **Lecture Exam #2**
22. Area as the limit of a sum.
23. Riemann sums and the definite integral.
24. The fundamental theorem of calculus.
25. Integration by substitution.
26. Introduction to differential equations.
27. The mean value theorem for integrals.
28. Numerical integration.