

The first of two half-courses in calculus, taken by all first-year Applied Science students. A 50% standing is a prerequisite for most second year mathematics courses in the Faculty of Applied Science.

**Textbook:** *Calculus: Early Transcendentals*, 5th Edition  
by J. Stewart (Brooks/Cole)  
*APSC 171 Interactive Course Notes*

**Instructors:** L. B. Jonker, C. Koestler, L. Butler

<b>Evaluation:</b>	Final examination	70%
	Midterm examination	15%
	Homework	10%
	Quizzes	5%

**Outline:**

1. Functions, mathematical models, exponential functions, inverse functions
2. Logarithmic functions, limits
3. Continuity, limits at infinity, derivatives, rules of differentiation
4. Rates of change in science, derivatives of trig functions, chain rule, implicit differentiation
5. Higher derivatives, derivatives of inverse trig functions and of logarithms, differential equations in mathematical models, exponential growth and decay, related rates
6. Linear approximation and differentials, maximum and minimum values, mean value theorem
7. Concavity, l'Hopital's Rule, curve sketching
8. Optimization, antiderivatives, definite integral
9. Fundamental theorem of calculus
10. Substitution rule, area, volumes
11. More volumes, work, integration by parts
12. Partial fractions, approximate integration, improper integrals