Original impetus:

- inspired by a presentation by David Bressoud about how they do things at Macalester
- realizing this is a terminal math course for many students: What do students need in order to understand what they will encounter in their future quantitative career?
- Should include: modelling; basic multivariate functions; derivatives; DEs

Outline of "New" Calculus Courses

Applied Calculus I (1151)

1. Functions and modelling (linear, exponential) [3]
2. Derivatives: meaning, computing, higher derivatives [5]
3. Chain Rule and implicit differentiation [3]
4. Optimization in one variable [2]
5. Modelling with differential equations [3]
6. Functions of more variables. Constrained optimization [4]
7. Vectors [2]
8. Multivariable differentiation: partial derivatives, gradient, critical points [6]

Calculus II (1121)

1. Accumulation, definite integral, and Fundamental Theorem of Calculus [6]
2. Techniques of integration: substitution, parts, trig sub [6]
3. Applications of integration: volumes, arc length, centres of mass, separable DEs [5]
4. Limits and continuity; limits at infinity, L'Hopital and order of growth [6]
5. Differentiability. Linear and higher approximations and Taylor polynomials. [4]
6. Taylor series and power series. [4]