*Approved: June 2016 Effective: FALL 2016*

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| **MATERIAL TO BE COVERED** | **SECTIONS FROM TEXT** | **TIME LINE** |
| Some algebra review; Limits; One-sided limits; continuity | 1.5 & 1.6  Optional: A1, A2, 1.1 – 1.4 | 6 hours |
| Definition of derivative; Techniques of differentiation including product, quotient, and chain rules; Higher-order derivatives; Implicit differentiation; Related rates. (Optional: Marginal analysis) | 2.1 – 2.4 & 2.6  Optional: 2.5 | 7 hours |
| Increasing/decreasing functions; Relative extrema; Concavity and points of inflection; Curve sketching; Business and additional applied problems | 3.1 – 3.5 | 11.5 hours |
| Exponential and logarithmic functions; Differentiation of exponential and logarithmic functions and their applications | 4.1 – 4.4 | 3.5 hours |
| Indefinite integration; Differential equations; Integration by substitution; The definite integral and the Fundamental Theorem of Calculus; Applications of the definite integral including area between curves and average value of a function; Additional business applications (Optional: Additional applications of integration to the life and social sciences | 5.1 – 5.5  Optional: 5.6 | 9.25 hours |
| Integration by parts; Numerical integration; Improper integration | 6.1 – 6.3 Optional: 6.1 Integration tables | 5 hours |
| Functions of several variables; Partial derivatives; Optimizing functions of two variables; The method of Lagrange multipliers; Double integrals (Optional: Least-squares regression | 7.1 – 7.6 Optional: 7.4 | 8 hours |

### 4-unit class: hours total 57.5 (15 x 3 hours 50 minutes) – hours for exams + 2.5 hour final

This outline allows for 6 hours of exams.

Professors are asked to emphasize that students use correct units when stating answers.

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Math Department Policy can be found at: <https://www.mtsac.edu/math/departmentpolicy.html>