DEPARTMENT OF MATHEMATICS
University at Buffalo The State University of New York

UNDERGRADUATE STUDIES
244 MATHEMATICS BLDG.
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MTH 131 Mathematical Analysis for Management

Credit Hours: **4.0**

Textbook(s): ***Hoffman and Bradley, Calculus, UB-custom 8th ed, or standard 8th ed., McGraw-Hill***

Prerequisite: **NYS Regents Course B, ULC 148, or MTH 115.**

***SAMPLE SYLLABUS**: This document is published only as an indication of what is typically taught in this course. Instructors have the responsibility of deciding on topics to be omitted, additional topics to be included, and on the emphasis, ordering, and pacing of presentation of topics.*

Remarks: MTH 131 is a one-semester terminal course for students in the School of Management. It fulfills the now reduced mathematics requirement (formerly MTH 121-122) for students pursuing a major program in Management. It incorporates most of the topics from MTH 121, basic differentiation and applications, exponential and log functions, introduction to integration. This course also includes some material which was previously encountered in MTH 122, functions of two variables and optimization thereof, and more integral calculus (e.g. integration techniques of substitution and integration by parts).

The text is particularly rich in business and economics examples and problems. Instructors are advised to stick to these examples and exercises, and to bypass those involving life and physical sciences. Students will be struggling with the mathematics, and they will be sufficiently challenged even by the material they can see to be directly relevant to themselves.

There should be time for an instructor to do either Sections 7.5- 7.6 or 6.3, but the schedule indicates the minimum goal. Two in-class tests (more would be better) plus a final examination is minimal.

Week	*Section*	*Topic*	*Comments*
1	1.1 - 1.4	Functions; The Graph of a Function; Linear Function; Functional Models	Make a brisk start
2	1.5 - 1.6 2.1 - 2.2	Limits; Continuity The Derivative; Techniques of Differentiation	
3	2.3 - 2.5	The Product and Quotient Rules; Higher Order Derivatives; The Chain Rule; Marginal Analysis	
4	2.6 * * * * * * *	Implicit Differentiation and Related Rates * * * * * * * ***EXAM 1*** * * * * * *	* * * * * * * * * *
5	3.1 - 3.3 Begin 3.4	Increasing & Decreasing Functions; Concavity & Inflection; Curve Sketching Optimization	
6	Finish 3.4 3.5	Optimization Applied Optimization	
7	4.1 - 4.2	Exponential Functions; Logarithmic Functions	
8	4.3 - 4.4	Differentiation of Logarithmic & Exponential Functions; Additional Exponential Models	
9	* * * * * * *	* * * * * ***Review / catch-up*** ***EXAM 2*** * * * * *	* * * * * * * * * *
10	7.1 - 7.2 Begin 7.3	Functions of Several Variables; Partial Derivatives Optimizing Functions of Two Variables	Optional: Sect 7.5 and 7.6
11	Finish 7.3 5.1- 5.2	Optimizing Functions of Two Variables Antidifferentiation: The Indefinite Integral; Integration by Substitution	
12	5.3 - 5.5	Definite Integral & Fundamental Theorem of Calculus; Applying Definite Integration; Applications to Business & Economics	
13	6.1 - 6.2	Integration by Parts; Integral Tables; Intro Differential Equations	Optional: Sect 6.3