

UNIVERSITY OF KENTUCKY  
UNIVERSITY EXTENSION  
Independent Study Program  
Lexington, Kentucky 40506

Mathematics 123  
Elementary Calculus  
and Its Applications

30 Assignments  
3 Semester Hours

This is an independent study course in elementary calculus prepared by Tom Moss. The course consists of thirty assignments, three of which are practice exams. The final exam will be similar to these practice exams. The course is worth three credit hours of university credit.

REQUIRED TEXTBOOK:

Brief Calculus with Applications, seventh edition, by Laurence D. Hoffman and Gerald L. Bradley, published by McGraw Hill Book Company, New York, New York.

## GENERAL DIRECTIONS:

Each assignment consists of a portion of the textbook to be studied. In all lessons other than the three practice exams, some remarks and examples are given to supplement the textbook to help the student to a better understanding of the concepts. Be sure to study the materials in the textbook as well as the materials in the Independent Study Guide. It is to your benefit to work as many problems as possible in the textbook other than those assigned to be submitted for grading.

When submitting assignments for grading use only one side of the paper and do your work in pencil or erasable ink to facilitate the correction of errors. Be sure your work is logical, neat and complete. Partial credit will be given only if the solution is accompanied by the work to produce the solution.

## GRADING:

Your final grade is determined by two factors: the 30 assignment grades and the final exam. Each will comprise 50% of the final grade. However, a passing grade will not be assigned for the course unless you make a grade of 50% or better on the final exam.

Each assignment will be graded on a 100 point basis. The average of the 30 assignments and the final exam score will be averaged to determine the final grade. The following ten point scale will be used.

100% to 90%	--	A
89% to 80%	--	B
79% to 70%	--	C
69% to 60%	--	D
59% to 0%	--	E

Good luck with your study of calculus. I hope you gain in knowledge from this experience.

Students have the option of using the calculator on the lessons but the calculator is not permitted on the final exam.

COURSE OUTLINE:

ASSIGNMENT NUMBER	SECTION NUMBER	TOPIC
1	1.1 & 1.2	Functions; The Graph of a Function
2	1.3	Linear Functions
3	1.4	Functional Models
4	1.5	Limits
5	1.6	Continuity
6	2.1	The Derivative: Slope and Rate
7	2.2	Techniques of Differentiation
8	2.3	The Product and Quotient Rules
9	2.4	Marginal Analysis: Approximation by Differentials
10		Practice Exam 1
11	2.5	The Chain Rule
12	2.6	The Second Derivative
13	2.7	Implicit Derivatives and Related Rates
14	3.1	Increasing and Decreasing Functions
15	3.2	Concavity
16	3.3	Limits Involving Infinity: Asymptotes
17	3.4	Optimization
18	3.5	Practical Optimization
19		Practice Exam 2
20	4.1	Exponential Functions
21	4.2	Exponential Models
22	4.3	Differentiation of Logarithmic and Exponential Functions
23	4.4	Additional Exponential Models
24	5.1	Antidifferentiation: The Indefinite Integral
25	5.2	Integration by Substitution
26	5.3	Introduction to Differential Equations
27	5.5	Integration by Parts
28	6.1	Definite Integration
29	6.2	Applications to Business and
30		Practice Exam 3