COURSE OUTLINE: OEL847 - CALCULUS

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Approved: Lori Crosson, Director, E-Learning and Continuing Education

Course Code: Title	OEL847: CALCULUS
Program Number: Name	
Department:	DISTANCE EDUCATION
Semesters/Terms:	20S, 20F, 21W
Course Description:	The basic concepts of calculus are introduced through an emphasis on applications and examples. Topics include limits, simple derivatives, derivatives of trigonometric and logarithmic functions, applications of derivatives, curve sketching, integration, and applications of integration.
Total Credits:	4
Hours/Week:	4
Total Hours:	64
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Substitutes:	MTH551
This course is a pre-requisite for:	OEL873
Course Evaluation:	Passing Grade: 50%, D
Books and Required Resources:	Basic Technical Mathematics with Calculus, Metric Version (Includes MyMathLab package and Student Solutions Manual) by Allyn J Washington Publisher: Pearson/Addison Wesley Edition: 9th ISBN: 0132465612

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Examine the derivative	-Evaluate limits of algebraic functions. -Approximate the slope of a tangent to a curve. -Find the derivative of an algebraic function using the delta method. -Find instantaneous rates of change of a function using derivatives. -Find the derivative of a polynomial using a rule. -Find derivatives of other algebraic functions (products and quotients) using rules for differentiation. -Find the derivative of a power of a function - Chain rule. -Find the derivative of an implicit function. -Find higher derivatives of algebraic functions
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Examine the applications of	-Find slopes and equations of tangent and normal lines.

	the derivative	-Compute velocities and accelerations for curvilinear motion. -Solve related rate problems. -Make graphs of non-linear functions using derivatives. -Make graphs of discontinuous functions using derivatives, asymptotes, intercepts. -Solve applied maximum-minimum problems.
	Course Outcome 3	**Learning Objectives for Course Outcome 3**
	Examine integration	-Use differentials to compute small change in a function. -Find an anti-derivative using derivative rules. -Use the basic rule for integration of algebraic functions. -Determine approximate areas under curves from graphs. -Determine exact areas under curves by integration - the fundamental theorem of integral calculus. -Evaluate other algebraic definite integrals.
	Course Outcome 4	**Learning Objectives for Course Outcome 4**
	Examine applications of integration	-Solve problems involving distance-velocity-acceleration, current-voltage-charge using integration. -Find areas (between two curves) using horizontal and vertical elements and definite integrals. -Find the volume of a solid of revolution using the disk or shell method.
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	Examine differentiation of transcendental functions	-Find derivatives of expressions containing sine or cosine functions. -Find derivatives of other trigonometric functions. -Find derivatives of inverse trigonometric functions -Solve worded problems which involve trigonometric functions. -Find derivatives of logarithmic functions - any constant base. -Find derivatives of exponential functions - any constant base. -Solve worded problems involving logarithmic of exponential functions.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Final exam	52%
Online tests 4	48%

Date: March 9, 2020

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.