COURSE LEARNING OUTCOMES

DEPARTMENT: Mathematics

COURSE #: 32300 **COURSE TITLE: Advanced Calculus I** PRE-REQUISITES: Math 30800 or departmental permission CO-REQUISITES: None HOURS/CREDITS: 4/4 DATE EFFECTIVE: 1/21/17 COURSE SUPERVISOR: Tamara Kucherenko	**CATALOG DESCRIPTION :** Sequences, properties of continuous functions, derivatives and differentials, functions defined by series, integrability and integrals, convergence of function sequences. Required Text: *Elementary Analysis: The Theory of Calculus,* 2nd edition, by Kenneth A. Ross

COURSE LEARNING OUTCOMES
Please describe below all learning outcomes of the course, and indicate the letter(s) of the corresponding Departmental Learning Outcome(s) (see list at bottom) in the column at right.

After taking this course, the student should be able to:	Contributes to Departmental Learning Outcome(s):
1. demonstrate proficiency in epsilon-delta and triangle inequality proofs	g
2. state the definitions of basic terms in beginning analysis of one real variable, and use them and their negations in proofs: in particular those related to sequences and series of numbers and functions (including uniform convergence), continuity and uniform continuity, differentiation, and integration	a, b, e1, e2, g
3. construct examples and counterexamples	b, e2
4. state and prove: the Extreme, Intermediate Value, and Mean Value Theorems; and the Fundamental Theorem of Calculus	f
5. construct proofs which use estimation and/or other theorems/established facts	a, b, e1, e2, g
6. analyze the properties of given functions	a, b, e2,

COURSE ASSESSMENT TOOLS
Please describe below all assessment tools that are used in the course.
You may also indicate the percentage that each assessment contributes to the final grade.

1. Term Grade (60%)
2. The Final Exam (40%)

DEPARTMENTAL LEARNING OUTCOMES *(to be filled out by departmental mentor)*

The mathematics department, in its varied courses, aims to teach students to

a. perform numeric and symbolic computations
b. construct and apply symbolic and graphical representations of functions
c. model real-life problems mathematically
d use technology appropriately to analyze mathematical problems
e. state (e1) and apply (e2) mathematical definitions and theorems
f. prove fundamental theorems
g. construct and present (generally in writing, but, occasionally, orally) a rigorous mathematical argument.