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.


COURSE LEARNING OUTCOMES

After taking this course, the student should be able to:

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Contributes to Departmental Learning Outcome(s):</th>
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<tbody>
<tr>
<td>1. demonstrate proficiency in epsilon-delta and triangle inequality proofs</td>
<td>g</td>
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<tr>
<td>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</td>
<td>a, b, e1, e2, g</td>
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<tr>
<td>3. construct examples and counterexamples</td>
<td>b, e2</td>
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<td>4. state and prove: the Extreme, Intermediate Value, and Mean Value Theorems; and the Fundamental Theorem of Calculus</td>
<td>f</td>
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<td>5. construct proofs which use estimation and/or other theorems/established facts</td>
<td>a, b, e1, e2, g</td>
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<tr>
<td>6. analyze the properties of given functions</td>
<td>a, b, e2</td>
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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.