

## CORE CURRICULUM COMPONENT APPLICATION

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<b>CORE COMPONENT AREA</b>	Mathematics
<b>COURSE TYPE</b>	Existing Core
<b>DEPARTMENT</b>	Mathematics and Engineering
<b>COURSE RUBRIC &amp; NUMBER</b>	MATH 2413
<b>COURSE NAME</b>	Calculus I
<b>CATALOG DESCRIPTION</b>	Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas.
<b>NUMBER OF SECTIONS OFFERED/FALL</b>	2
<b>NUMBER OF SECTIONS OFFERED/SPRING</b>	2
<b>EXTIMATED ANNUAL ENROLLMENT</b>	100
<b>COURSE LEVEL</b>	Freshman
<b>CONTACT PERSON (dept. representative)</b>	Dr. Krista Cohlmia
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<b>DEPARTMENT APPROVAL STATUS</b>	<b>Approved</b> - Date <b>4/10/2013</b>
<b>CORE COMMITTEE COMMENTS</b> <small>(REQUEST FOR ADDITIONAL INFORMATION)</small>	
<b>CORE COMMITTEE APPROVAL STATUS</b>	Select One - Date Click here to enter a date.

Best practices and accreditation guidelines generally place the faculty in a position of responsibility for curricular decisions.

## CORE CURRICULUM COMPONENT APPLICATION

*Indicate below how each learning objective will be supported, what strategies or activities will be used to introduce each objective and how student learning will be assessed.*

**\*NOTE: Component Area Option –**

- A. A minimum of 3 SCH must meet the definition and corresponding Core Objectives specified in one of the foundational component areas
- B. As an option for up to 3 semester credit hours of the Component Area Option, an institution may select course(s) that:
  - i. Meet(s) the definition specified for one or more of the foundational component areas; and
  - ii. Include(s) a minimum of three Core Objectives, including Critical Thinking Skills, Communication Skills, and one of the remaining Core Objectives of the institution's choice.

#	THECB CORE OBJECTIVE "ICO"	PROGRAM GOALS/OUTCOMES	COURSE LEARNING OUTCOMES	KEY IDENTIFIERS	LEARNING EXPERIENCE	ASSESSMENT
1	<p><b>Critical Thinking Skills</b> - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</p> <p><i>Must be addressed in all core curriculum courses</i></p>		Upon successful completion of this course, the student will be able to identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.	The student correctly uses formulas of calculus to solve problems.	Students will participate in group discussions, complete homework or quizzes, and take exams. The comprehensive departmental course final exam will be submitted for assessment.	This core objective will be assessed by an interdepartmental assessment committee using the Critical Thinking rubric.
2	<p><b>Communication Skills</b> - to include effective development, interpretation and expression of ideas through written, oral and</p>		Upon successful completion of this course, the student will be able to articulate the relationship between	The student correctly describes and uses the Fundamental Theorem of Calculus.	Students will participate in group discussions, complete homework or quizzes, and take	This core objective will be assessed by an interdepartmental assessment committee using the

	<p>visual communication.</p> <p><i>Must be addressed in all core curriculum courses</i></p>		<p>derivatives and integrals using the Fundamental Theorem of Calculus.</p>		<p>exams. The comprehensive departmental course final exam will be submitted for assessment.</p>	<p>Communication rubric.</p>
3	<p><b>Empirical and Quantitative Skills</b> - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions</p> <p><i>Must be addressed in all Mathematics, Life and Physical Sciences, AND Social &amp; Behavioral Sciences component area core curriculum courses. Optional for all other component areas.</i></p>		<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.</li> <li>2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.</li> <li>3. Determine whether a function is continuous and/or differentiable at a point using limits.</li> <li>4. Use differentiation rules to differentiate algebraic and transcendental</li> </ol>	<ol style="list-style-type: none"> <li>1. The student correctly solves tangent line and area problems.</li> <li>2. The student correctly sketches graphs of functions using calculus techniques.</li> <li>3. The student correctly identifies points of continuity and differentiability.</li> <li>4. The student correctly applies derivative rules.</li> <li>5. The student integrates correctly.</li> </ol>	<p>Students will participate in group discussions, complete homework or quizzes, and take exams. The comprehensive departmental course final exam will be submitted for assessment.</p>	<p>This core objective will be assessed by an interdepartmental assessment committee using the Empirical and Quantitative Skills rubric.</p>

			<p>functions.</p> <p>5. Evaluate definite integrals using the Fundamental Theorem of Calculus.</p>			
4	<p><b>Teamwork</b> - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.</p> <p><i>Must be addressed in all Communication, Life &amp; Physical Sciences, and Creative Arts component area core curriculum courses. Optional for all other component areas.</i></p>					
5	<p><b>Social Responsibility:</b> to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities</p> <p><i>Must be addressed in all Language, Philosophy &amp; Culture, Creative Arts, American History and Government/Political Science, and Social &amp; Behavioral Sciences component area core curriculum courses. Optional for</i></p>					

	<i>all other component areas.</i>					
6	<p><b>Personal Responsibility</b> - to include the ability to connect choices, actions and consequences to ethical decision-making.</p> <p><i>Must be addressed in all Communication, Language, Philosophy &amp; Culture, American History and Government/Political Science component area core curriculum courses. Optional for all other component areas.</i></p>					
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## Critical Thinking Skills

To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

***Must be addressed in all core courses***

## Communication Skills

To include effective development, interpretation and expression of ideas through written, oral and visual communication.

***Must be addressed in all core courses***

## Empirical and Quantitative Skills

To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

***Must be addressed in all core courses that satisfy the following requirements:***

- Mathematics
- Life and Physical Sciences
- Social and Behavioral Sciences
- Some Component Area Options

## Teamwork

To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

***Must be addressed in all core courses that satisfy the following requirements:***

- Communication
- Life and Physical Sciences
- Creative Arts
- Some Component Area Options

## Social Responsibility

To include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national and global communities.

***Must be addressed in all core courses that satisfy the following requirements:***

- Language, Philosophy and Culture
- Creative Arts
- American History
- Government/Political Science
- Social and Behavioral Sciences
- Some Component Area Options

## Personal Responsibility

To include the ability to connect choices, actions and consequences to ethical decision-making.

***Must be addressed in all core courses that satisfy the following requirements:***

- Communication
- Language, Philosophy and Culture
- American History
- Government/Political Science
- Some Component Area Options