

**SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**  
**SYLLABUS (Tentative)**  
**MATH 201 *Calculus I***

- Background** The Calculus ushered in modern science and challenged the vision of poets, theologians and philosophers. It serves as the basis for much of today's science and technology.
- Objectives** To better understand the mathematics which is the foundation for modern science, with emphasis on applications, approximations, and the role of proof. To develop higher level thinking skills; in particular, to practice drawing on previous knowledge to approach new problems.
- Intended Audience** Students wanting an intermediate Calculus course that prepares them for further study in mathematics, science, and engineering.
- Prerequisite** Trigonometry and MATH 140 or equivalent.
- Text** *Calculus: Early Transcendentals, Single Variable* by Stewart; Sixth edition, Brooks/Cole Publishing, 2008. ISBN: 978-0-495-01169-9.  
 \*\* This textbook is for students ***NOT*** intending to take Calculus 3. For those who ***ARE*** intending to take Calculus 3 you will need *Calculus: Early Transcendentals* by Stewart; Sixth edition, ISBN: 978-0-495-01166-8.
- Technology** Maple or Mathematica (computer software available in campus labs).

<b>Topics (not necessarily in this order)</b>	Approximate No. of Class Hours
<b>Preparation for Calculus (Chapter 1)</b> Review of prerequisite mathematics, including algebra, functions (polynomial, rational, trigonometric, exponential, and logarithmic), inverse functions, and graphing techniques. Fundamentals of Maple including using the Help Menu; defining and evaluating functions; plotting functions and changing scales in plots; and solving equations.	3
<b>Limits, Continuity, and the Derivative (Chapter 2)</b> Tangent lines; velocity; definition of the derivative; symbolic, graphical, and numerical approaches to limits; properties of limits; one-sided limits; limits involving infinity; continuity; the Intermediate Value Theorem; and using Maple to find limits.	14
<b>Differentiation (Chapter 3)</b> Differentiation of algebraic and transcendental functions; the Chain rule; implicit differentiation; rates of change; higher order derivatives including acceleration; linear approximation; and finding derivatives using Maple.	16
<b>Applications of Differentiation (Chapter 4)</b> Finding and classifying extreme values; the Mean Value Theorem; the Extreme Value Theorem; slope, concavity and points of inflection; L'Hôpital's Rule; curve sketching; optimization; Newton's Method and antiderivatives. Using Maple to explore applications.	18
<b>Testing, Review, and Optional Topics</b> Possible topics include: exponential growth and decay, related rates and hyperbolic functions.	5
	56

**EVALUATION**

Homework, Lab work, quizzes:	20-40%
In-class examinations:	40-60%
Comprehensive Final Exam:	20-40%

*Free tutoring is available for this course in the Spring and Fall semesters.*

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.