

SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS (Tentative)
MATH 202 Calculus II

- 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:** MATH 201 (with a grade of at least C).
- Text:** *Calculus: Early Transcendentals, Single Variable* by Stewart; 7th edition, Brooks/Cole Publishing, 2011. ISBN 978-0538498678
- Required Technology:** Mathematica (computer software available in campus labs and for free download for registered students).

Topics (not necessarily in this order)	<u>Approximate No. of Class Hours</u>
<p style="text-align: center;"><i>Integration</i> (Chapter 5)</p> <p>Area, Riemann sums and the integral, and the Fundamental Theorem of Calculus.</p>	8
<p style="text-align: center;"><i>Applications of Integration</i> (Chapters 6 & 8)</p> <p>Length, area, surface area, volume, and a physical application.</p>	7
<p style="text-align: center;"><i>Integration Techniques</i> (Chapter 7)</p> <p>Integration by parts, inverse trigonometric functions and trigonometric substitutions, partial fractions, numerical integration, and improper integrals.</p>	8
<p style="text-align: center;"><i>Differential Equations (Chapter 9)</i></p> <p>Modeling with Differential Equations; direction fields and Euler's Method; growth and decay; separation of variables; and using Mathematica to sketch direction fields.</p>	8
<p style="text-align: center;"><i>Infinite Sequences and Series</i> (Sections 11.1 – 11.7)</p> <p>Convergence of sequences and series; formulae for sequences; tests for convergence; estimating and calculating the value of a series; absolute and conditional convergence.</p>	12
<p style="text-align: center;"><i>Series Representation of Functions</i> (Sections 11.8 – 11.12)</p> <p>Power series; Taylor and Maclaurin polynomials and series; differentiation and integration of power series; and applications.</p>	9
<p style="text-align: center;"><i>Testing</i></p>	$\frac{4}{56}$

EVALUATION

Homework or 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.

NOTE: If MATH 202 is completed with a grade of C or better, credit without registration can be awarded for MATH 201. To receive such credit, students must make arrangements with the Department Secretary before taking the final exam in MATH 202.