Department of Mathematics

Jackson State Community College

Last Day to Drop or Withdraw from Classes: (Verify Date on calendar or with Records Office)

MATH 1920 Calculus II

Credit Hours

4 credit hours

Course Description

A continuation of Calculus I. Topics include applications of integration, techniques of integration, arc length, surface area, liquid force, differential equations, infinite sequences and series.

Prerequisite Course(s)

MATH 1910 (Calculus I)

Text

Briggs/Cochran. Calculus for Scientists and Engineers: Early Transcendentals. 1st edition, packaged with MyMathLab, Pearson.

Other text or materials required

Graphing calculator

Academic Honesty

Acts of academic dishonesty are serious offences at JSCC. Suspension from the college could be the consequence for any act of dishonesty. No form of cheating will be tolerated. See the JSCC catalog for additional information.

Prerequisite Competencies

It is expected that students have mastery of these prerequisite competencies. These topics will not be covered during class time. If assistance is needed regarding these topics, please use the services and materials provided by the Academic Assistance Center and Math Learning Center+.

Competencies include but are not limited to:

- Evaluate limits and prove limits from a numerical, geometric, and analytic point of view
- Calculate limits using the limit laws
- Determine if a function is continuous at a point or on an interval
- Use limits to determine tangents, velocities, and other rates of change
- Determine the derivative of a function and apply differentiation formulas
- Apply the chain rule to differentiate a function
- Find the derivative of a function using implicit differentiation
- Find higher order derivatives
- Solve related rates application problems
- Calculate the maximum and/or minimum values of a function
- Apply the Mean Value Theorem
- Sketch curves using the derivative
- Solve optimization problems using the derivative
- Apply Newton's Method
- Solve definite integrals
- Use the fundamental theorem of integral calculus
- Use integration to find the area of a region
- Solve indefinite integrals
- Use the substitution rule to integrate a function

Exit Competencies:

Upon successful completion of this course, a student will demonstrate comprehension and application of the following competencies.

- Use the definite integral to determine areas between curves
- Use the definite integral to determine the volume of a solid
- Use the definite integral to solve work problems
- Evaluate integrals using integration by parts
- Evaluate integrals using trigonometric identities and substitution
- Evaluate integrals containing rational functions by partial fractions
- Approximate the value of a given integral
- Evaluate improper integrals
- Determine convergence or divergence of an improper integral
- Use integrals to calculate the length of a curve
- Use integrals to calculate area of a surface of revolution
- Use integrals to solve application problems
- Solve differential equations
- Investigate direction fields and family of functions
- Use differential equations to determine exponential growth and decay
- Solve separable differential equations
- Use the integral test and estimates of sums to determine convergence of an infinite series
- Use the comparison tests to determine convergence of an infinite series
- Determine if alternating series converge
- Determine if a series is absolutely convergent and use the ratio and root tests
- Find the radius of convergence of the power series
- Find a power series representation for a function
- Expand a function in a Taylor Series
- Investigate applications of Maclaurin and Taylor series

Writing Competency

None

Support Facilities

Most JSCC math courses are supported with tutoring during the Fall and Spring semesters. See your instructor for specific tutoring opportunities available at JSCC. These facilities are not a substitute for attending class. Math tutors are not allowed to introduce new material to a student. If a class must be missed, the student must obtain class notes from a classmate and then meet with the instructor BEFORE seeking tutoring on the missed material.

ADA

Jackson State will make reasonable accommodations for students with documented disabilities. Students should notify their instructor and Linda Nickell, Dean of Students, in the Counseling Office, Room 139 of the Student Union Building. The contact number is 425-2616 and the email is lnickell@jscc.edu. Instructors should be notified the first week of class. All discussions remain confidential.