**Course Name:** Calculus 2

**Department Head/Coordinator:** Costa Karavas  
**Effective Date:** Sept 2015

<table>
<thead>
<tr>
<th>School or Centre:</th>
<th>Department:</th>
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<tbody>
<tr>
<td>School of Arts and Science</td>
<td>University Transfer - Math</td>
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**Course History:**  
1st Year Post-secondary

**Course Number:** MATH 1200  
**Number of Credits:** 3.0

**Course Pre-requisites (if applicable):**

Math 1100 (Calculus 1) with a C-

**Course Co-requisites (if applicable):**

**PLAR (Prior Learning Assessment & Recognition):**

- No
- Yes (details below):

Math 1200 Challenge Exam with a C.

**Course Description:**

This course covers the fundamental concepts of integral calculus. Topics include antidifferentiation; the definite integral; the Fundamental Theorem of Calculus, areas and volumes; integration techniques; improper integrals; applications of the integral; numerical approximations; linear differential equations and applications; sequences and series; polynomial approximations; Taylor series and power series; calculus with parametric curves and polar coordinates.
Instructional Strategies:
Lectures coupled with computer lab exercises

Course Learning Outcomes:
Upon successful completion, students will be able to:

- Evaluate integrals using Riemann sums, the Fundamental Theorem of Calculus and numerical techniques.
- Compute areas and volumes using integration.
- Use various techniques of integration.
- Solve applied problems using integrals.
- Compute approximations and corresponding errors of integrals.
- Solve applied problems involving first-order linear differential equations.
- Determine Taylor and Maclaurin series of functions.
- Determine convergence of series using various convergence tests.
- Determine the radius and interval of convergence of power series.
- Use power series to approximate integral values and evaluate limits.

Program Learning Outcomes:
If this course is taken as a requirement or an elective in the following first year, University Transfer Certificate programs, the learning outcomes are found in the relevant Program Content Guides available at the Counselling and Advising Service areas.

University Transfer Arts Certificate
University Transfer Pathway to Health Sciences Certificate
University Transfer Science Certificate
University Transfer Engineering Certificate
University Transfer Computing Science and Software Systems Certificate
**Learning Environment/Type**

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Hours Per Instruction Type</th>
<th>Comments</th>
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<tbody>
<tr>
<td>L - Classroom</td>
<td>60</td>
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**Components and Weighting of the Assessment/Evaluation Plan:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
<th>Evaluation Plan</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>30</td>
<td>written, MC, SA, problems</td>
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<tr>
<td>Midterm Exam</td>
<td>35</td>
<td>written, MC, SA, problems</td>
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<tr>
<td>Final Exam</td>
<td>35</td>
<td>written, MC, SA, problems</td>
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**Total** 100

**Evaluation/Grading System**

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<tr>
<th>Grading System</th>
<th>Specify if 'Other':</th>
<th>Specify Passing Grade:</th>
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<tbody>
<tr>
<td>Letter Grades</td>
<td></td>
<td>D</td>
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**Resource Material(s):**

Resources are items in addition to tuition that the student is responsible for purchasing. Course resource information will be supplied by the department/instructor.
Course Topics and Sequence Covered:

-The Integral: elementary area computations; Riemann sums and the integral; evaluation of integrals; the Fundamental Theorem of Calculus; integration by substitution; areas of plane regions; numerical integration

-Applications of the Integral: Riemann sum approximations; volumes by cross sections; volumes by cylindrical shells; arc length and surface area of revolution; force and work; average value of a function, centroids of plane regions and curves

-Techniques of Integration: integral tables and simple substitutions; integration by parts; trigonometric integrals; rational functions and partial fractions; trigonometric substitution; improper integrals

-Differential Equations: separable equations and applications; linear equations and applications

-Sequences and Series: infinite sequences; infinite series and convergence; the integral test; comparison tests for positive-term series; alternating series and absolute convergence; Taylor series and Taylor polynomials; radius and interval of convergence of power series; power series applications

VCC Education and Education Support Policies

There are a number of Education and Education Support policies that govern your educational experience at VCC, please familiarize yourself with them.

The policies are located on the VCC web site at:

http://www.vcc.ca/about/governance--policies/policies/

To find out how this course transfers, visit the BC Transfer Guide at www.bctransferguide.ca.

FOR COMMITTEE USE ONLY

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<thead>
<tr>
<th>Date Approved by Education Council:</th>
<th>Date Approved by VCC Board (if applicable):</th>
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