Montgomery County Community College
MAT 201
Calculus and Analytic Geometry II
4-4-0

COURSE DESCRIPTION:
This is the second course in the calculus sequence. It is designed primarily for students who will major in mathematics, science, engineering, or business. Topics include integration techniques, improper integrals, sequences, series, Taylor's formula, parametric and polar curves, and applications. A TI 84 Plus Graphing Calculator is required for the course.

PREREQUISITE(S):
MAT 190 - Calculus and Analytic Geometry I, with a minimum grade of "C"
OR
MAT 189 Calculus With a Review of Functions II with a minimum grade of "C"

CO-REQUISITE(S):
None

| LEARNING OUTCOMES Upon successful completion of this course, the student will be able to: | LEARNING ACTIVITIES | EVALUATION METHODS |
|---|---|---|
| 1. Apply knowledge of integrals to finding volumes of solids of revolution. | Lecture Group work Homework Projects Quizzes | Homework Quizzes Tests Projects |
| 2. Use a number of integration techniques including integration by parts, integration by partial fractions, and integration by trigonometric substitution. | Lecture Group work Homework Projects Quizzes | Homework Quizzes Tests Projects |
| 3. Determine the convergence or divergence of series, including power series. | Lecture Group work Homework Projects Quizzes | Homework Quizzes Tests Projects |
| 4. Find a Taylor series and to use Taylor's Formula with Remainder. | Lecture Group work Homework Projects Quizzes | Homework Quizzes Tests Projects |

| LEARNING OUTCOMES | LEARNING ACTIVITIES | EVALUATION METHODS |
|---|---|---|
| 5. Track the motion of a particle with respect to time using parametric equations. | Lecture Group work Homework Projects Quizzes | Homework Quizzes Tests Projects |
| 6. Use the graphing calculator in relevant Calculus II concepts. | Lecture Group work Homework Projects Quizzes | Homework Quizzes Tests Projects |

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:
1. Integration by Substitution
2. Area between curves
3. Volumes of Solids of Revolution; Arc Length.
4. Techniques of Integration
5. Infinite Series
6. Conics, Parametric Equations, and Polar Coordinates

LEARNING MATERIALS:
Textbook:
Larson & Edwards. (2014). Calculus (10th ed.) Brooks Cole Cengage Learning
Calculator:
TI-84 Plus Graphing Calculator. If a student has a TI-83+, they do not need to buy a TI-84+.

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

COURSE APPROVAL:
Prepared by:   Guy P. Vuotto                                   Date:   4/1998
Revised by:   Aileen Conway, Assoc. Professor of Mathematics   Date:   9/1999
Revised by:   Aileen Conway, Assoc. Professor of Mathematics   Date:   12/2002
Revised by:   Walter R. Hunter, Professor of Mathematics   Date:   10/2004
Revised by:   Walter R. Hunter, Professor of Mathematics   Date:   5/2005
Revised by:   Aileen Conway, Assoc. Professor of Mathematics   Date:   1/2006

Revised by:   Mark McFadden                          Date:  2/1/2013
VPAA/Provost or designee Compliance Verification:
     Dr. Victoria Bastecki-Perez                   Date: 2/1/2013

Revised by:   Walter Hunter                            Date: 9/21/2016
VPAA/Provost or designee Compliance Verification:
     Dr. Victoria Bastecki-Perez                   Date: 9/21/2016

Revised by:   Brandon Dougherty                    Date: 4/13/2017
VPAA/Provost or designee Compliance Verification:       Date: 4/14/2017

*This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.*