

**HAGERSTOWN COMMUNITY COLLEGE
MASTER SYLLABUS**

COURSE: MAT 203 Calculus I

(4 Credits)

INSTRUCTORS: J. Szczesniak, L. Wadel

SEMESTER/YEAR: Fall 2017

COURSE DESCRIPTION: An introduction to differential and integral calculus applied to algebraic and transcendental functions. Topics include: limits, continuity, derivatives, differentials, The Mean Value Theorem, curve sketching, optimization, Newton's method, antiderivatives, the definite integral, and The Fundamental Theorem of Calculus. Applications are studied throughout the entire Calculus I, II, III sequence.

Prerequisites: MAT-161 or consent of the mathematics department.

TEXTBOOK USED:

Calculus: Early Transcendentals, Eighth Edition, James Stewart, ISBN 9781285741550

Students may use older versions of the textbook. The bookstore updated the version without informing faculty.

STUDENT LEARNING OUTCOMES:

General Education Outcomes:

Upon successful completion of this course students will be able to:

1. Apply mathematical methods involving arithmetic, algebra, geometry, and graphs to solve problems.
2. Represent mathematical information and communicate mathematical reasoning symbolically and verbally.
3. Interpret and analyze numerical data, mathematical concepts, and identify patterns to formulate and validate reasoning.

Course Outcomes:

In this course students will acquire:

- 1) **TECHNICAL COMPETENCY** in the methods of calculus that will enable them to find limits, derivatives and integrals of algebraic and transcendental real-valued functions of a single variable and to recognize the setting in which the result applies. (*Supports Mathematics Program Outcomes 1 and 5*)
- 2) **CONCEPTUAL UNDERSTANDING** of limits, continuity, differentiation and integration and the theorems that relate these topics. Conceptual understanding will be developed by requiring students to view and understand these topics and their related theorems from numeric, geometric, algebraic and written/verbal perspectives. (**The Rule of Four**). (*Supports Mathematics Program Outcomes 1, 2, 4 5, 6 and 7*)
- 3) **UTILITY** in the methods of calculus. Students will use calculus to solve applied problems from a variety of disciplines ranging from biology, economics, business,

engineering, and the social sciences, but primarily focusing on applications from physics and mathematics. (*Supports Mathematics Program Outcomes 1, 2, 4, 5, 6 and 7*)

Total Hours of Coursework:

To earn one academic credit at HCC, students are required to complete a minimum of 37.5 clock hours (45 fifty-minute “academic” hours) of coursework per semester. Those hours of coursework may be completed through a combination of hours within the classroom and hours outside the classroom. Certain courses may require more than the 37.5 minimum hours of coursework per credit.

For most classes, students should expect to do at least 2 hours of coursework outside of class for each hour of in-class coursework.

Total Time Needed: (37.5 hours per credit) x (4 credits) = 150 hours

Activity	
Outside of the Classroom	
Practice Problems	35 hours
Written Assignments	30 hours
Online Assignments	15 hours
Test Preparation	24 hours
Subtotal	99 hours
Inside of the Classroom	55 hours
Total	154 hours

Services for Students with Disabilities: Students may receive reasonable accommodations if they have a diagnosed disability and present appropriate documentation. Students seeking accommodations are required to contact the Disability Support Services (DSS) office as early as possible. Students may contact a DSS staff member for an appointment at dss@hagerstowncc.edu or at 240-500-2530.