Course Name and Number: MTH 264 Calculus II   **Section Number:**01

Class Times: Monday-Thursday: 11:45-1:20 (3rd Block)   **Semester and Year:** Spring 2020

Instructor: Jessie Mullins

Office Location: Rm 314   **Email:** jdmullins@dcps.k12.va.us

Office Hours: Monday: 9:40 - 11:10

                  Tuesday: 9:40 - 11:10

                  Wednesday: 9:40 - 11:10

                  Thursday: 9:40 - 11:10

Course Description:

Continues the study of calculus of algebraic and transcendental functions including rectangular, polar, and parametric graphing, indefinite and definite integrals, methods of integration, and power series along with applications. Features instruction for mathematical, physical and engineering science programs.

Lecture 4 hours. Total 4 hours per week.
Prerequisite: Completion of MTH 263 or equivalent with a grade of C or better.

4 credits

Instructional Materials:

Your textbook for this class is available for **free** online, in web view and PDF format. You can also purchase a print version, if you prefer, from OpenStax on Amazon.com.

You can use whichever formats you want. Web view is recommended – the responsive design works seamlessly on any device. If you buy on Amazon, make sure you use the link on your book page on openstax.org so you get the official OpenStax print version. (Simple printouts sold by third parties on Amazon are not verifiable and not as high-quality.)

Calculus Volume 2 from OpenStax, Print ISBN 1938168062, Digital ISBN 194717214X, www.openstax.org/details/calculus-volume-2

A non-graphing scientific calculator can be used in this course. No graphing calculators are allowed. A TI-30x is recommended.

Core Competencies:

This course satisfies the following core competencies: Critical Thinking and Quantitative Literacy.

Learning Outcomes:

Students will compute, analyze, and communicate quantitative data using mathematical and logical methods to solve problems (e.g. tables, graphs, formulas, or other relevant formats).

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Course Goals:

Second part of a two semester basic calculus sequence

Specific Objectives:

Applications of Integration
- Compute Volumes by cross-section
- Compute Volumes by disk-washer
- Compute Volumes by shells
- Compute Work (spring, rope)
- Compute Work (pumping liquids)
- Compute Arc length
- Compute Areas of surfaces of revolution
- Compute Application (center of mass)

Techniques of Integration
- Integrate by parts
- Calculate trigonometric integrals
- Calculate integrals by trigonometric substitution
- Define the indeterminate form and apply L'Hopital's Rule.
- Calculate improper integrals
- Integrate by partial fractions
- Integrate using Tables and Software
- Approximate integrals (Trapezoidal, Simpson) with error estimation.

Infinite Sequences and Series
- Write definition of and understand Sequences
- Write definition of and understand Series (intro)
- Determine convergence by integral test
- Determine convergence by comparison test
- Determine convergence of alternating series
- Determine absolute convergence (ratio, root tests)
- Apply strategies for testing series
- Work with power series
- Represent functions as power series
- Find Taylor, Maclaurin series & polynomials
- Calculate Taylor and Maclaurin series

Parametric Curves and Polar Coordinates
- Represent curves by parametric equations
- Perform calculus with parametric curves
- Use and graph with polar system
- Calculate areas and lengths in polar coordinates
- Define the conic forms in polar form

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Instructional Method:

Students are expected to come to class prepared. Instruction will be in class with problems assigned at the conclusion of the teachings from each section. Each assignment is due the Friday of the same week it is assigned. Students should work on the assigned problems for the section(s) that were covered in previous classes and be prepared to ask questions about areas of difficulty. After questions have been addressed, the new section(s) will be covered.

Attendance Policy:

Regular class attendance is required. Specific attendance requirements are explained in the syllabus for each course. When absence from a class is necessary, it is the responsibility of the student to inform the instructor prior to the absence. The student is responsible for the subsequent completion of all work missed during an absence. (MECC Student Handbook) Mountain Empire Community College is committed to academic quality and student success. Elements that support both of these values are regular attendance and participation in class. The college policy states that regular class attendance is required.

Grading System:

There will be five tests worth 10% each, five quiz grades worth 15% of the final average, exercises from each section worth 10% of the final average, and a comprehensive final exam worth 25% of the final average. The following grading scale will be used:

$$90 - 100 A$$
$$80 - 89 B$$
$$70 - 79 C$$
$$60 - 69 D$$
$$\text{Below } 60 F$$

A student who officially withdraws by _____ will receive a grade of W. It is the student's responsibility to withdraw from the course. To withdraw from the course, you must log in to SIS and complete the process or see your advisor for assistance.

Any violations of academic integrity are subject to sanctions and/or disciplinary actions as outlined in the PROCEDURAL STANDARDS / DISCIPLINARY PROCEEDINGS section of the Student Handbook.

Quizzes: Quizzes will be take home open note and open book. The average of your quiz grades will be used for grade calculation.

Tests: Tests will be closed book and closed notes unless otherwise specified. If it will improve your grade in the course, your final exam score can replace one of the following: your quiz average **or** your lowest test grade. Remember, the final exam is comprehensive and thus typically harder than homework, quizzes, or individual tests.

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Cheating: If a student is caught cheating on a test, the student will receive a grade of 0 for that test and will not be allowed to retake the test.

Make-Up Policy:
There are no make-up exams or quizzes. The course moves very quickly and I want you to be paying attention to the current material. It is almost impossible to create an equivalent makeup exam. Therefore, if you miss an exam, this will be the grade that is replaced by the final exam grade (see above).

Outside Resources:

- **MY OFFICE HOURS:** Feel free to make an appointment with me or drop in if you need assistance.
- **The Learning Center:** Free tutoring is available to all students through Student Support Services located in The Learning Center, Godwin Hall, room 216 (across from the vending machines). Students will need to complete a brief application to be scheduled with a tutor. Other services include: Supplemental Instruction (SI) for BIO 101/102, and BIO 141/142 or 231/232, Transfer Counseling and Planning, Career Counseling and Planning, Financial Literacy, Informative Seminars and Workshops, Academic Advisement and Course Selection, Academic Success Assistance, Accommodations for Students with Disabilities, and Financial Aid Assistance. For more information, contact Jessica Ketron, Counselor, (276) 523-2400, ext. 342 or jketron@mecc.edu.

- **SmartThinking:** MECC offers free 24/7 online tutoring to all of their students.   You can access Smarthinking from inside your Blackboard course under the "Tools" area on the course menu. Email Susan Kennedy (skennedy@mecc.edu) if you have questions.
- **Khan Academy:** Khan Academy is an excellent free resource for assistance in your courses. The website is https://www.khanacademy.org/

Academic Integrity:

Academic work is evaluated on the assumption that the work presented is the student's own, unless designated otherwise. Anything less is unacceptable and is considered academically dishonest. Please see the MECC Student Handbook for the full policy on academic integrity and the code of conduct.

Instructions for Students with Disabilities:

Students may request academic accommodations for disabilities through the Office of Student Services. That office will evaluate the request and make recommendations for appropriate and reasonable accommodations, which the student will provide to the instructor. Individuals requiring temporary handicapped parking accommodations due to short-term illness should also contact Student Services. All correspondence will be kept confidential.

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Emergency Statement:

In the event of a College-wide emergency, course requirements, classes, deadlines, and grading schemes are subject to changes that may include alternative delivery methods; alternative method of interaction with the instructor, class materials, and/or classmates; a revised attendance policy; and a revised semester calendar and/or grading scheme.

For more general information about a College-wide emergency situation, please refer to:
- College website
- Emergency Text Messaging or Phone System (276-523-7495)

In the event of a college-declared emergency, the student should check blackboard for instructions on how to continue the course.

What is "QEP"?

QEP stands for "Quality Enhancement Plan." In short, a QEP is a plan to implement and assess a focused set of initiatives designed to improve student learning and/or student success across the College community.

Get AMPED!

MECC's Quality Enhancement Plan is "**Get AMPED**"--is a multi-year project **to improve students' problem solving skills through quantitative literacy**. Get AMPED is an acronym for **Applying Mathematical Principles to Everyday Decisions**

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Tentative Schedule:

Date	Topic	Assignment
Monday, January 06	Syllabus and Review of Calc I	(Continue Review until January 13)
Tuesday, January 14	2.1 Areas between Curves	
Wednesday, January 15	2.2 Determining Volumes by Slicing	
Thursday, January 16	2.2 Continued	
Monday, January 20	2.3 Volumes of Revolution: Cylindrical Shells	
Tuesday, January 21	2.3 Continued	
Wednesday, January 22	2.4 Arc Length of a Curve and Surface Area	
Thursday, January 23	2.4 Continued	
Monday, January 27	Review 2.1-2.4	
Tuesday, January 28	Quiz 2.1-2.4	
Wednesday, January 29	2.5 Physical Applications	
Thursday, January 30	2.5 Continued	
Monday, February 03	2.6 Moments and Center of Mass	
Tuesday, February 04	2.9 Calculus of the Hyperbolic Functions	
Wednesday, February 05	Review	
Thursday, February 06	Ch. 2 Test	
Monday, February 10	3.1 Integration by Parts	
Tuesday, February 11	3.2 Trigonometric Integrals	
Wednesday, February 12	3.2 Continued	
Thursday, February 13	3.3 Trigonometric Substitution	
Friday, February 14	3.4 Partial Fractions	
Tuesday, February 18	Review 3.1-3.4	
Wednesday, February 19	Quiz 3.1-3.4	
Thursday, February 20	3.5 Other Strategies for Integration; 3.6 Numerical Integration	
Monday, February 24	3.6 Continued	
Tuesday, February 25	3.7 Improper Integrals	
Wednesday, February 26	Review	
Thursday, February 27	Ch. 3 Test	
Monday, March 02	5.1 Sequences	
Tuesday, March 03	5.1 Continued	
Wednesday, March 04	5.2 Infinite Series	
Thursday, March 05	5.2 Continued	

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Tuesday, March 10	5.3 The Divergence and Integral Tests	
Wednesday, March 11	5.3 Continued	
Thursday, March 12	5.4 Comparison Tests	
Monday, March 16	5.5 Alternating Series	
Tuesday, March 17	Review 5.1-5.5	
Wednesday, March 18	Quiz 5.1-5.5	
Thursday, March 19	5.6 Ratio and Root Tests	
Monday, March 23	6.1 Power Series and Functions	
Tuesday, March 24	6.2 Properties of Power Series	
Wednesday, March 25	6.2 Continued	
Thursday, March 26	6.3 Taylor and Maclaurin Series	
Monday, March 30	6.4 Working with Taylor Series	
Tuesday, March 31	6.4 Continued	
Wednesday, April 01	Review	
Thursday, April 02	Test over Ch. 5 and Ch. 6	
Monday, April 06	7.1 Parametric Equations	
Tuesday, April 07	7.2 Calculus of Parametric Equations	
Wednesday, April 08	7.3 Polar Coordinates	
Thursday, April 09	7.3 Continued	
Monday, April 13	Easter Break	No Class
Tuesday, April 14	Review 7.1-7.3	
Wednesday, April 15	Quiz 7.1-7.3	
Thursday, April 16	7.4 Area and Arc Length in Polar Coordinates	
Monday, April 27	7.5 Conic Sections	
Tuesday, April 28	7.5 Continued	
Wednesday, April 29	Review	
Thursday, April 30	Ch. 7 Test	
Monday, May 04	Review	
Tuesday, May 05	Review	
Wednesday, May 06		
Thursday, May 07	Final Exam	
Monday, May 11		
Tuesday, May 12		