Framingham State University

MATH 220 - Calculus II

Course Information

Semester	: Summer 2020 (July 6 2020 - August 7, 2020)
Credit	: 4
Teaching Hours	: 50 Hours
Location	: Online
Professor Name	: Sheiba Mas-Oud
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Course Description:

MATH 220 Calculus II A study of the applications of integration, first-order linear and separable differential equations, techniques of integration, improper integrals, sequences, series, and Taylor and Maclaurin Series.

Prerequisite: Completion of MATH 219 Calculus I with a minimum grade of C (2.00) or better.

This course focuses on expanded methods of integration and their application. Derivatives of the exponential, logarithmic and inverse trigonometric functions as well as their antiderivatives will be examined. Students learn to compute the customary antiderivatives of functions and apply antidifferentiation to such areas as volumes, moments, centroids, arc lengths and surfaces of revolution. Students will be introduced to differential equations. The use of L'Hopital's Rule and the evaluation of improper integrals are examined. The convergence tests of infinite series as well as the Power, Taylor and Maclaurin series are analyzed.

Required Textbook/Materials/Website:

Textbook: Calculus, by Briggs, Cochran, Gillet, Schulz;
Pearson Publishing, 3rd edition,© 2019
Materials: Graphing calculator (recommend a TI-83/84 plus calculator)

Website: Access to www.mymathlab.com. The course **ID is sheiba08173**

Student Learning Outcomes & Instructional Objectives:

This course is designed to achieve the following student outcomes and objectives:

- Evaluate velocity position and displacement.
- Calculate net change and future value.
- Evaluate the area of regions between curves.
- Understand the general slicing method and evaluate a volume by slicing.
- Apply correctly the Disk and Washer methods.
- Calculate volume by shells.
- Evaluate the length of curves.
- Understand and evaluate the area of a surface of revolution.
- Define and calculate the work done by a variable force.
- Solve lifting problems.
- Calculate the derivatives of inverse functions
- Define the natural logarithmic and exponential functions.
- Evaluate the derivative and integral of the exponential function.
- Correctly apply logarithmic differentiation.
- Define and correctly use the General Power Rule.
- Find growth rates using exponential models.
- Evaluate inverse trigonometric functions.
- Compute derivatives and integrals involving inverse trigonometric functions.
- Calculate limits involving exponential functions using L'Hopital's rule.
- Define the hyperbolic functions.
- Evaluate derivatives and integrals of hyperbolic functions.
- Use correctly integration by parts for indefinite integrals.
- Apply correctly trigonometric substitutions to evaluate integrals.
- Compute integrals using partial fractions.
- Approximate integrals using Numerical Integration.
- Evaluate Improper Integrals.
- Define and solve separable differential equations.
- Solve special first-order linear differential equations.
- Model with differential equations.
- Define and work with sequences.
- Evaluate the limit of a sequence.
- Evaluate geometric series.
- Determine the divergence of series using the divergence test.
- Determine the convergence or divergence of series using the Integral, Ratio, Root, and Comparison tests.
- Define and work with alternating series.
- Find Taylor polynomials of order n.
- Approximate functions with polynomials.
- Find the interval and radius of convergence of power series.
- Find Taylor and Maclaurin series for a function.

- Work with Taylor Series.

Teaching Procedures:

This Course be delivered synchronously via zoom (at a schedule time, once a week) and asynchronously (materials reviewed on student's own schedule) on blackboard and MyMathlab. Recorded zoom meetings will be saved and posted on Bb for later review. In addition, video links and power point slides would emailed to students prior to scheduled zoom lecture. You will be given homework assignments on MyMathLab to be completed by the due dates/times each week.

Course Outline

Applications of Integration
6.2 Regions between Curves
6.3 Volume by Slicing
6.4 Volume by Shells Methods
6.5 Lengths of Curves
6.6 Surface Area
6.7 Physical Applications
16.6 Integrals for Mass Calculations

Logarithmic and Exponential Functions
7.1 Inverse Functions
7.2 The Natural Logarithmic and Exponential Functions
7.3 Logarithmic and Exponential Functions with other bases
7.4 Exponential Models
7.5 Inverse Trigonometric Functions
7.6 L'Hopital's Rule and Growth Rates
7.7 Hyberbolic Functions

Integration Techniques
8.1 Basic Approaches
8.2 Integration by Parts
8.3 Trigonometric Integrals
8.4 Trigonometric Substitutions
8.5 Partial Fractions
8.9 Improper Integrals

Differential Equations
9.1 Basic Ideas
9.3 Separable Differential Equations

9.4 Special First-Order Linear Differential Equations

Sequences and Infinite Series
10.1 An overview
10.2 Sequences
10.3 Infinite Series
10.4 The Divergence and Integral Tests
10.5 Comparison Tests
10.6 Alternating Series
10.7 The Ratio and Root Tests

Power Series
11.1 Approximating Functions with Polynomials
11.2 Properties of Power Series
11.3 Taylor Series and Maclaurin Series

Assessment

Students will be assessed in various ways, including quizzes, exams, homework, and a cumulative final exam. Remember, your written work is a reflection of your effort in this course and therefore, all work is to be written legibly, with scratch work done on separate paper.

Tentative Assignments/Quizzes/Tests Schedule

July 6	**Introduction**
7/6-7/12	**Chapt 6 & 7**
7/6-712	**Chapt 6 & 7**
7/10-7/12	***Quiz 1***
July 13	**Chapt 8**
7/13-7/19	**Chapt 8**
7/15-7/19	***Quiz 2***
7/17-7/19	***Test 1***
July 20	**Chapt 9**
7/20-7/26	**Chapt 9**
7/22-7/26	***Quiz 3***

7/24-7/26	***Test 2***
July 27	**Chapt 10**
7/27-8/02	**Chapt 10**
7/29- 8/02	***Test 3***
August 3	**Chapt 11**
8/03-8/07	**Chapt 11**
8/07	***Final Exam***

What chapters will be on the Exams?	
Test 1	**Chapters 6, 7**
Test 2	**Chapters 8, 9**
Test 3	**Chapters 9, 10**
Final Exam	**Comprehensive – August 7th**

Grading Breakdown:

35% - Homework
15% - Three Quizzes (No Make Up but will drop the lowest at the end of the semester)
25% - Three Tests (No Make Up but will drop the lowest at the end of the semester)
25% Cumulative Final Exam (No Make Up)

A	95 – 100	B –	80 – 82	D +	67 – 69
A –	90 – 94	C +	77 – 79	D	63 – 66
B +	87 – 89	C	73 – 76	D –	60 – 62
B	83 – 86	C –	70 – 72	F	0 – 59

Attendance, Student Responsibilities and Expectations

- **E-Textbook**: All required for this course, MATH 220 is the e-textbook via MyMathLab
- **All homework** assignments, quizzes and tests will be, assigned and graded on MyMathLab. Students are able to see their scores and progress directly on MML anytime via the Gradebook.

- You would receive emails and brief announcements via MyMathLab and Blackboard on a regular basis to keep you informed of what you should be working on.
- **Weekly emails** will be sent to students who may be falling below average as a wakeup call and remind them of help options available for catching up to expectations.
- **3 Quizzes**: Two attempts with the option to review the first attempt before taking the second attempt.
- **3 Tests**: Only one attempt with a possibility of reviewing after the due date. However, if a student's test is disrupted due to possible technology issues he/she must contact me immediately for a possible reset in at least two hours before it expires.

- **Final Exam**: Only one attempt and could not be reviewed after submission. However, if a student's exam is disrupted due to possible technology issues he/she must contact me immediately for a possible reset at any time during the testing period. To minimize improper assistance during tests/final exam, students are expected to take test/exam at the same time/date while logged into zoom with audio/video turned on and would try confirm any technological disruptions whenever they may occur.
- Students should NOT use calculators to integrate or differentiate.
- Homework will be assigned progressively. It is important that students keep on top of the course material, so homework must be done when assigned. Please note that completion of all homework assignments in a timely manner is necessary to reinforce the skills learned in class that day.
- Missing an exam is a ***serious*** matter. In the event a student must miss an exam because of circumstances beyond his/her control, it is imperative that the student contacts the instructor before the scheduled exam, or before the next class following the exam. Once a graded exam has been returned to the class, it is not possible for a student to make it up.
- Class participation and attentiveness to the pace of this course will be considered an integral part of this course.

Disability Statement:

"Framingham State University offers equal opportunities to all qualified students, including those with disabilities and impairments. The University is committed to making reasonable accommodations as are necessary to ensure that its programs and activities do not discriminate, or have the effect of discriminating, on the basis of disability. Academic Support serves students with learning and psychiatric disabilities as well as students with

visual, mobility and hearing impairments. For further information about this, please visit the website at https://www.framingham.edu/academics/center-for-academic-success-andadvising/ or contact Ms. LaDonna Bridges, Director of Academic Support/Disability Services, in the Center for Academic Support and Advising (CASA) at 508-626-4906 or lbridges@framingham.edu."

Academic Honesty and Plagiarism:

Our purpose in the classroom is to seek the truth; this work requires trust and honesty between teacher and student. If we are not honest about what we know and don't know, our learning will always be impaired. Because our teaching and learning depends on this honest communication, we expect all students to understand what plagiarism is and why it is unacceptable.

Plagiarism means taking someone else's ideas or words and presenting them as one's own. The offense can take many forms including cheating on a test, passing in a paper taken from the Internet or from another student, or failing to properly use and credit sources in an essay. Sometimes the issue is subtle, involving getting too much help on an assignment from someone else. In every instance, plagiarism means cheating both oneself and the owner of the source. Since the cheating sabotages a student's learning experience, consequences range from no credit for the assignment to failure for the course and possible expulsion from the college.

For further information concerning plagiarism, refer to the FSU Student Handbook.

Copyright Law

U.S. Copyright Law - For all courses that use Blackboard, please include the following statement on your syllabus: "This course website may contain copyrighted materials that are used in compliance with U.S. Copyright Law. Under that law, materials may not be saved to your computer, revised, copied, or distributed without permission. They are to be used in support of instructional activity as part of this course only and shall be limited to the duration of the course, unless otherwise specified by the instructor or owner of the material. You may only download or print materials at the direction of your instructor who knows which materials are copyrighted and which are not."

Frequently Asked Questions by Students:

- ***Can I turn in late homework?***
    - Yes, you can. But there is a 30% reduction in your potential earned points for the questions that are past due. Also, homework assignments will not remain available for the entire semester. Once an exam is given, the homework assignments that cover the exam's material will be closed for the remainder of the semester.
- ***Can I make up a missed quiz?***

  - No, you cannot take a missed quiz, no matter what the reason. However, the lowest quiz score will be dropped at the end of the semester.
- ***Can I make up a missed test?***
  - No, you cannot take a missed test, no matter what the reason. However, the lowest quiz score will be dropped at the end of the semester.
- ***Do you give "retakes" on tests or quizzes?***
  - No, I do not. You only get one (1) chance at each quiz or each test.
- ***Do you give Extra Credit in this course?***
  - This question often gets asked towards the end of the semester. No, extra credit is *not* given for this course. To earn the highest possible grade, you should read your textbook, complete all homework assignments on time, be ready for quizzes and exams. You will not be allowed to do extra work to boost your grade.
- ***What are the consequences for cheating?***
  - Failure of the quiz or test. Or worse – failure of the course. Simply don't cheat.
- ***What should I do if I'm struggling with my homework?***
  - Email me right away, by clicking on the "Ask Your Teacher" link on MyMathLab. I will reply as quickly as I can.
  - Watch YouTube videos. Search for what you're struggling with.
- ***Can any calculator be used for this course?***
  - In short, yes, any calculator can be used for this course. However, you'll find that a graphing calculator will be very helpful to you, requiring less memorization of formulas, although formulas can/will be provided if needed. The professor will be using the TI-83/84plus throughout this course, and showing students how to use it in class.