SCHOOL OF STEM SYLLABUS

TERM:

INSTRUCTOR:

COURSE CODE: MAT-112

OFFICE HOURS:

COURSE TITLE: Calculus II

OFFICE LOCATION:

DAY(S) AND TIME(S):

EMAIL:

LOCATION:

PHONE:

COURSE PREREQUISITE: Complete MAT-111

CREDITS: 4

COURSE DESCRIPTION:
This course is a continuation of MAT 111. Topics include calculus of transcendental functions, integrations by parts, trigonometric integrals, improper integrals, sequences and infinite series. The use of mathematical software in problem-solving is emphasized.

STUDENT LEARNING OUTCOMES:
Upon completing this course, students will be able to:

1. Find the area between two graphs of two functions by partitioning the x-axis or the y-axis.
2. Find the volume of a solid formed by revolving a plane region about a vertical or horizontal straight line.
3. Find the arc length of a smooth curve over a closed interval of the form f(x) or f(y).
4. Find work done by a variable force
5. Find Hydrostatic pressure and force
6. Integrate by parts and derive a formula using integration by parts.
7. Integrate trigonometric function
8. Use trigonometric substitution efficiently.
9. Determine whether a series has a sum.
10. Use the test for convergence and divergence of a sequence
11. Express a function as a Taylor or Maclaurin series and find Taylor and Maclaurin expansions.
12. Work with binomial series.
13. Represent a function by a power series

TEXTBOOK AND SUPPLEMENTAL MATERIALS:
Textbook: Calculus, Early Transcendental functions, 8th edition, **Author**: Larson Edwards

Supplemental Materials:

- Schaum's series, Calculus, 6th Edition
  ISBN-13: 978-0071795531
  Author: Frank Ayres, Elliot Mendenson
  ISBN-13: 978-0071795531 .

GRADING POLICY:

3 Class Exams	70%
Final Exam	30%

SAMPLE COURSE SCHEDULE:

Time	sections	Topic	
Week	Chapter 7	Applications of integration	
1,2	7.1	Area of a Region Between Two curves	
	7.2	Volumes: The Disk Method	
3	7.4	Arc Length and Surface of Revolution	
4	**Exam 1**		
	Chapter 8	Techniques of integration	
5	8..2	Integration by Parts	
	8.3	Trigonometric Integrals	
6	8.4	Trigonometric Substitution	
	8.5	Partial Fraction	
7	8.7	Indeterminate Forms and L'Hôpital's Rule	
	8.8	Improper Integrals	
7	**Exam 2**		
	Chapter 9		
8	9.1	Sequences	
	9.2	Infinite Series	

9	9.3	The Integral Test	
10	9.4	The Comparison tests	
	9.5	Alternating Series	
11	9.6	Absolute Convergence and the Ratio and Root	
12	9.7	Strategy for testing series tests	
13	9.8	Representations of Functions as Power Series	
14	9.9	Taylor and Maclaurin Series	
15	**Review and Final Exam**		

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