American University of Kurdistan - Math 202 Calculus II

Syllabus – Spring 2019

COURSE DESCRIPTION: Calculus II: Derivatives and integrals of exponential and logarithmic functions, applications, Sequences and Series, Power, Taylor and Maclaurin Series, Polar Coordinate.

INSTRUCTOR: Daner Ferhadi

PRE-REQUISITE: Math 120 Calculus I

TEXT: *Thomas' Calculus Early Transcendentals 13th Edition with SI Units*

COURSE FORMAT: There are three 1.25-hour lectures each week. The sections covered in each lecture is listed at the end of this syllabus.

OFFICE HOURS: Wednesdays 10:30 AM to 11:30 AM

MATH 202 COURSE LEARNING OBJECTIVES:
upon successfully completing Math 202, students should be able to:

1	Differentiate exponential, logarithmic, and inverse trigonometric functions
2	Integrate exponential, logarithmic, and inverse trigonometric functions
3	Recognize integrands for which integration by parts is appropriate
4	Use the formula to integrate by parts
5	Use techniques for integrals of products of sines and cosines
6	Use techniques for integrals of secants and tangents
7	Use technique of trigonometric substitution to solve integrals
8	Complete the square to express an irreducible quadratic polynomial as a sum or difference of squares
9	Perform polynomial long division to reduce an integrand to a more easily integrated form
10	Use the technique of partial fraction decomposition to reduce an integrand to a more easily integrated form
11	Given a random integration problem, choose the proper method and proceed with integration
12	Evaluate limits using L'Hospital's Rule
13	Recognize improper integrals and put in proper form for determination

14	Determine if an improper integral diverges or converges (and if so, to what?)
15	Identify and compare different types of sequences
16	Determine if a sequence diverges or converges (and if so, to what?)
17	Recognize famous series in standard and non-standard form
18	Apply infinite series tests for convergence and divergence
19	Find the interval of convergence and radius of convergence for a given power series
20	Generate power series representations of some functions from a geometric series perspective
21	Recognize and manipulate important Maclaurin Series (e x , sin x, cos x, tan-1 x, 1/(1-x)) by differentiation, integration, and substitution
22	Find the nth degree Taylor Polynomial of a function f at a point a and determine the error associated with the estimate
23	Sketch graphs of polar equations
24	Find slopes of tangents to polar-defined curves
25	Find points of intersection of two or more polar functions
26	Find areas enclosed by polar-defined curves

EXAMINATIONS: Two 120-minute exams will be given during the semester and a comprehensive final exam will be given during the final exam period.

Following dates:

Midterm I	February 12th
Midterm II	March 12th
Final Exam	Week of April 23rd – May 9th

COURSE GRADES: Grades will be assigned on a basis of 500 points, distributed as follows:

Midterm I	100
Midterm II	100
Homework and Quizzes	150
Final Exam	150
Total	500

Month	Day	Sections	Topic
January	15th	1.5, 1.6	Exponential Functions, Inverse Functions and Logarithms
January	17th	7.1	The Logarithm Defined as an Integral
January	20th	7.1	The Logarithm Defined as an Integral
January	22nd, 24th	8.1	Basic Integration Formulas
January	27th	8.2	Integration by Parts
January	29th	8.2	Integration by Parts
February	31st, 3rd	8.3	Trigonometric Integrals
February	5th	8.3	Trigonometric Integrals
February	7th, 10th	8.8 or 8.4	Improper Integrals or Trigonometric Substitution
February	12th	**Midterm I**	
February	14th	10.1	Sequences
February	17th, 19th	10.2	Infinite Series, Geometric Series
February	20th	10.3	The Integral Test
February	21st	10.3	The Integral Test
February	24th, 26th	10.4	Comparison Test
February	26th, 28th	10.5	Absolute Convergence; Ratio and Root Test
February	28th, 3rd	10.5	Absolute Convergence; Ratio and Root Test
March	5th	10.6	Alternating Series Test
March	7th, 10th	10.7	Power Series
March	12th	**Midterm II**	
March	14th	10.8	Taylor and Maclaurin Series
March	24th, 26th	10.8	Taylor and Maclaurin Series
March	28th, 31st	10.9	Convergence of Taylor Series
March	2nd, 4th	10.9	Convergence of Taylor Series
March	7th, 9th	11.3	Polar Coordinates
April	11th, 14th, 16th	11.4	Graphing Polar Coordinate Equations
April	18th, 21st, 23rd	-	Review