HOSSAM GHANEM

MATH 102

COURSE SYLLABUS

COURSE NUMBER : Math 102
COURSE NAME : Calculus II
CREDITS : 3

CATALOGUE DESCRIPTION:

Logarithmic and exponential functions. Inverse trigonometric and hyperbolic functions. Techniques of integration. Indeterminate forms and improper integrals. Conic sections. Plane curves and polar coordinates. Vectors and surfaces in R3.

Textbook: *Calculus; 5th edition by James Stewart*.

TOPICS OF THE COURSE:

7. THE INVERSE FUNCTIONS: (15 Hours)
The Derivative of Inverse Functions, The Natural Logarithmic Functions, The Exponential Functions, Integration using Logarithmic and Exponential Functions, General Exponential and Logarithmic Functions, Inverse Trigonometric Functions, Hyperbolic Functions, Indeterminate Forms and l 'Hopital's Rule.

8. TECHNIQUES OF INTEGRATIONS: (14 Hours)
Integration by Parts, Trigonometric Integrals, Trigonometric Substitutions, Integral of Rational Functions, , Improper Integrals

9. FURTHER APPLICATION OF INTEGRATIO (6 Hours)
Arc length, Area of surface of revolution, Application to physics and engineering

11. PARAMETRIC EQUATIONS AND POLAR COORDINATES: (6 Hours)
Curves Defined by Parametric Equations, Calculus with Parametric Curves, Polar Coordinates, Area and length in Polar coordinates

TOTAL (41 Hours)

MATH 102-CALCULUS II
COURSE SYLLABUS

CHAPTER-7. THE INVERSE FUNCTIONS: (15 Hours)

7.1 Inverse Functions
7.2 The Exponential Functions and Their Derivatives
7.2* The Natural Logarithmic Functions
7.3 Logarithmic Functions
7.3* The Natural Exponential Functions
7.4 Derivatives of Logarithmic Functions
7.4* General Logarithmic and Exponential Functions
7.5 Inverse Trigonometric Functions
7.6 Hyperbolic Functions
7.7 Indeterminate Forms and l 'Hopital's Rule.

CHAPTER-8 TECHNIQUES OF INTEGRATIONS (14 Hours)

8.1 Integral by Parts
8.2 Trigonometric Integrals
8.3 Trigonometric Substitutions
8.4 Integral of Rational Functions by Partial fractions
8.5 Strategy for integration
8.8 Improper Integrals

CHAPTER-9 FURTHER APPLICATION OF INTEGRATIO (6 Hours)

9.1 Arc Length
9.2 Area of a Surface of revolution
9.3 Application to physics and engineering

CHAPTER-11 PARAMETRIC EQUATIONS AND POLAR COORDINATES (6 Hours)

11.1 Curves Defined by Parametric Equations
11.2 Calculus with Parametric Curves, Polar
11.3 Polar Coordinates
11.4 Area and length in Polar coordinates

TOTAL (41 Hours)

MATH 102-CALCULUS II
COURSE SYLLABUS

COURSE NUMBER : Math 102
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MATH 102-CALCULUS II–First Mid Term Examination

7. THE INVERSE FUNCTIONS: (15 Hours)

1) 7.1 Inverse Functions
2) 7.2 The Exponential Functions and Their Derivatives
3) 7.2* The Natural Logarithmic Functions
4) 7.3 Logarithmic Functions
5) 7.3* The Natural Exponential Functions
6) 7.4 Derivatives of Logarithmic Functions
7) 7.4* General Logarithmic and Exponential Functions
8) 7.5 Inverse Trigonometric Functions
9) 7.6 Hyperbolic Functions
10) 7.7 Indeterminate Forms and l 'Hopital's Rule.

MATH 102-CALCULUS II
COURSE SYLLABUS

COURSE NUMBER : Math 102
COURSE NAME : Calculus II
CREDITS : 3

MATH 102-CALCULUS II– Second Mid Term Examination

CHAPTER-8 TECHNIQUES OF INTEGRATIONS (14 Hours)

1) 8.1 Integral by Parts
2) 8.2 Trigonometric Integrals
3) 8.3 Trigonometric Substitutions
4) 8.4 Integral of Rational Functions by Partial fractions
5) 8.5 Strategy for integration
6) 8.8 Improper Integrals

TOTAL (14 Hours)

MATH 102-CALCULUS II
COURSE SYLLABUS

COURSE NUMBER : Math 102
COURSE NAME : Calculus II
CREDITS : 3

MATH 102-CALCULUS II– Final Mid Term Examination

CHAPTER-9 FURTHER APPLICATION OF INTEGRATIO (6 Hours)

10) 9.1 Arc Length

11) 9.2 Area of a Surface of revolution

12) 9.3 Application to physics and engineering

CHAPTER-11 PARAMETRIC EQUATIONS AND POLAR COORDINATES (6 Hours)

13) 11.1 Curves Defined by Parametric Equations

14) 11.2 Calculus with Parametric Curves, Polar

15) 11.3 Polar Coordinates

16) 11.4 Area and length in Polar coordinates

TOTAL (12 Hours)

ASSESSMENT METHODS

1	Quizzes	10
2	First Mid Term Examination	25
3	Second Mid Term Examination	25
4	Final Examination	40
	TOTAL	100

Suggested grading :

90 – 100	**A**
85 – 89	**A-**
80 – 84	**B+**
75 – 79	**B**
70 – 74	**B-**
65 – 69	**C+**
60 – 64	**C**
56 – 59	**C-**
53 – 55	**D+**
50 – 52	**D**
0 – 49	**F**

Lecture Table
First Mid Term

No	Lecture	Notes
1	Refresh Change Of Variables In Indefinite Integrals	
2	7.2 The Exponential Function (A)	
3	7.2 The Exponential Function (B)	
4	7.3 The Logarithm Function	
5	7.3 The Logarithmic Differentiation	
6	7.4 Integral Using Natural Logarithm and Exponential Function (A)	
7	7.4 Integral Using Natural Logarithm and Exponential Function (B)	
8	7.5 Inverse Trigonometric functions (A)	
9	7.5 Derivatives Of Inverse Trigonometric functions (B)	
10	7.5 Integration Of Inverse Trigonometric functions (C)	
11	7.6 Hyperbolic functions (A)	
12	7.6 Hyperbolic functions (B)	
13	7.1 The derivative of the inverse function (A)	
14	7.1 The derivative of the inverse function (B)	
15	7.7 Indeterminate Forms and I' Hopital's Rule(A)	
16	7.7 Indeterminate Forms and I' Hopital's Rule (B)	

Lecture Table
Second Mid Term

No	Lecture	Notes
17	8.1 Integration by parts(A)	
18	8.1 Integration by parts(B)	
19	8.2 Trigonometric integrals(A)	
20	8.2 Trigonometric integrals(B)	
21	8.3 Trigonometric Substitutions(A)	
22	8.3 Trigonometric Substitutions(B)	
23	8.4 Integrals of Rational Function(A)	
24	8.4 Integrals of Rational Function(B)	
25	8.3 Quadratic Expressions	
26	8.3 Miscellaneous Substitutions	
27	8.1 Integration by parts(C)	
28	8.5 Strategy for integration	
29	8.8 improper integrals(A)	
30	8.8 improper integrals(B)	

Lecture Table
Final Mid Term

No	Lecture	Notes
31	9.1 Arc Length	
32	9.2 Area of a Surface of revolution	
33	9.3 Application to Physics and Engineering	
34	11.1 11.2 Calculus with parametric curves	
35	11.1 11.2 Calculus with parametric curves	
36	11.1 11.2 Calculus with parametric curves	
37	11.3 Polar Coordinates	
38	11.3 Graph in Polar Coordinates	
39	11.4 Areas In Polar Coordinates	
40	11.4 Areas In Polar Coordinates	
41	11.4 Areas In Polar Coordinates	
42	11.4 Areas And Lengths In Polar Coordinates	