

Marks	Grade Point	Letter Grade	Marks	Grade Point	Letter Grade
80>	4.00	A+	55-59	2.75	B-
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F



Daffodil Polytechnic Institute, Institute Code: 50238

Theory Marks		Practical Marks	
Midterm	30	PC	25
Class test	20	PF	25
Quiz test	10	-	-
Final	90	-	-
Total	150	-	50
Time Distribution (90min)			
	Particular	Time	
Greeting with students		5 Min	
Previous class review		10 Min	
Present class lecture		60 Min	
Feedback		10 Min	
Attendance		5 Min	

Lesson Plan – Academic session: July/August 23 – December 23/Jan 2024

Subject Teacher : Rabeya Alam (Instructor)
 Subject Name : Mathematics-II
 Subject Code : 25921
 Technology : Diploma Engineering
 Semester : 2nd
 Reference Book : Mathematics-II (Publisher: Technical, Hoque & R.S)
 eLearning Course Link :

Reference book- H.S.C text books

Subject Aims:

- To be able to understand the functions.
- To make understand the exponential series.
- To provide ability to apply the knowledge of differential Calculus in solving problem like slope gradient of a curve, velocity acceleration, rate of a flow of liquid etc.
- To enable to apply the process of integration in solving Practical Problems like Calculation of area of a regular figure in two dimensions and volume of regular solids of different shapes.

Subject Outcome:

- To express partial fractions, understand geometric Express meaning of $\frac{dy}{dx}$
- Develop differential of integral calculus. To understand vectors in Physics.

Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
01)	Chapter-01 Partial Fractions	1.1 Define proper and improper fractions. 1.2 Resolve into partial fraction of the following types: a) Denominator having a non-repeated linear factor. b) Denominator having a repeated linear factor. c) Denominator having a quadratic factor. d) Denominator having a combination of repeated, non-repeated and quadratic factors.	How to express partial fractions.	https://www.youtube.com/watch?v=al7mL7ZLt_4
02)	Chapter-01 Partial Fractions	1.3 Resolve into partial fraction of the following types: c) Denominator having a quadratic factor. d) Denominator having a combination of repeated, non-repeated and quadratic factors.	After the Class, Students will be able to: - understand the formula of exponential series.	https://www.youtube.com/watch?v=olG1AG_txZ0
03)	Chapter-02 Exponential series	2.1 Define e. 2.2 Prove that e is finite and lies between 2 and 3.	After the Class, Students will be able to: - understand the formula and solve of exponential series.	https://www.youtube.com/watch?v=TNmjmLtHfsY
04)	Chapter-02 Exponential series	2.3 Prove that, $e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots \text{ to } \infty$	After the Class, Students will be able to: - understand the formula and solve of exponential series	https://www.youtube.com/watch?v=xh4IzUUxiqM&list=RDCMUCPv-nrEB6NFMtIla mL4yTyw&start_radio=1&rv=xh4IzUUxiqM&t=761
05)	Chapter-02 Exponential series	2.4 Solve the following problem: i) $1 + \frac{1}{2!} + \frac{1}{4!} + \frac{1}{6!} + \dots \text{ to } \infty$ ii) $\frac{1}{2!} + \frac{1+2}{3!} + \frac{1+2+3}{4!} + \frac{1+2+3+4}{5!} + \dots \text{ to } \infty$	After the Class, Students will be able to: - understand the formula and solve of exponential series	https://www.youtube.com/watch?v=2vbIV4IQxA8&list=RDCMUCPv-nrEB6NFMtIla mL4yTyw&index=2
06)	Chapter-03 Binomial Theorem	3.1 State binomial expression. 3.2 Express the binomial theorem for positive, negative and fractional index.	1. Student will be able to used in advanced mathematics and calculating to determine the roots of equations in higher powers.	https://www.youtube.com/watch?v=f7p7IO-FbB0&list=PLUv x2CKOD1pk4-E73O5g770NX90B42ioF

07)	Chapter-03 Binomial Theorem	3.3 Find the general term, middle term, equidistant term and term independent of x. 3.4 Solve the problems related to above.	. And also used to prove a lot of important math equations.	https://www.youtube.com/watch?v=vmFXhIPFNnc
08)	Chapter-03 Binomial Theorem	3.4 Solve the problems related to above	After the Class, Students will be able to: - understand the formula and solve of Binomial Theorem	https://www.youtube.com/watch?v=jBjKfhL0nhg
Lab Report-01 Lecture 01 - 03		To enhance their confidence level and boost creativity in chapters 01 -03		
09)	Chapter-04 Functions and Graph of Function	4.1 Define constant, variable, function, domain, range 4.2 Solve problems related to functions.	Students will learn how to apply and determine the different transformations that can be applied to functions using transformational parameters, along with learning to apply function and set notations, and graphing methods consistently.	1. https://www.youtube.com/watch?v=L2g6fPMxkxo 2. https://www.youtube.com/watch?v=NXNu9_4BTfq
10)	Chapter-05 Concept of Limit	4.3 Define limit and continuity of a function. 4.4 Distinguish between $f(x)$ and $f(a)$	Student will be able to understand use of the Limit to calculus (and mathematical analysis in general)	https://www.youtube.com/watch?v=lcRWy_ngdP0
11)	Chapter-05 Concept of Limit	4.5 Establish i) $\frac{\sin x}{x} = 1$ ii) $\frac{\tan x}{x} = 1$	Student will be able to understand used to define continuity, derivatives, and integrals."	https://www.youtube.com/watch?v=aCnxIzOm60U
12)	Chapter-6 Differential coefficient and differentiation	6.1 Prove that $\frac{dy}{dx} = \frac{f(x+h)-f(x)}{h}$.	By the differential coefficient student able to do the result of mathematical differentiation; the instantaneous change of one quantity relative to another; $df(x)/dx$. synonyms: derivative, derived function, differential, first derivative.	1. https://www.youtube.com/watch?v=0RJBWAXjf4 2. https://www.youtube.com/watch?v=jU8HtTQr4OU

13)	Chapter-6 Differential co-efficient and differentiation	6.2 Find the differential co-efficient of algebraic and trigonometrical functions from first principle	After the class - Student will be able to solve the problem	https://www.youtube.com/watch?v=c1084BtFFNk
	Lab Report-02 Lecture 04 - 06	Mathematical problem in text on Chapter 4 to 6	To build up their confidence level in chapter 04-06	
14)	Chapter-07 Concept of differentiation	7.1 State the formulae for differentiation: (i) sum or difference (ii) product (iii) quotient (iv) function of function (v) logarithmic function	After the Class, Students will be able to: - understand the concept of differentiation	1. https://www.youtube.com/watch?v=YkuAwBpzXDS 2. https://www.youtube.com/watch?v=Vf3mijU1NQc
	Class Test -1 Lecture 01 – 03 (Result will be published within the next two classes)	Mathematical problem in text on Chapter 1 to 3		
15)	Chapter-07 Concept of differentiation	7.2 Find the differential co-efficient using the sum or difference formula, product formula and quotient formula. 7.3 Find the differential co-efficient function of function and logarithmic function.	After the Class, Students will be able to: - understand the concept of differentiation	https://www.youtube.com/watch?v=lbsKbFmwMCU&list=RDCMUCAzlou1jVmDZk3f3cB8o5jg&index=2
	Assignment -1 Lecture 01 - 06	All Formula To build up their confidence level in chapter-01-06		
16)	Chapter-08 Geometrical meaning of $\frac{dy}{dx}$ —	8.1 Interpret $\frac{dy}{dx}$ geometrically.	Student will easily solve the problem of $\frac{dy}{dx}$	1. https://www.youtube.com/watch?v=RqWKS-foKc&list=PLPXaxVCAifchXOHdQpib2FeM_k4qSD4Hb&index=1

				2. https://www.youtube.com/watch?v=Xk2_YtI0jEg&list=PLPXaxVC AifchXOHdQpib2FeM_k4qSD4Hb&index=2
17)	Chapter-08 Geometrical meaning of $\frac{dy}{dx}$	8.2 Explain $\frac{dy}{dx}$ under different conditions. 8.3 Solve problems related to above.	Student will easily solve the problem of $\frac{dy}{dx}$	3. https://www.youtube.com/watch?v=EGtKFb6ZMb c&list=PLPXaxVCAifchXOHdQpi b2FeM_k4qSD4Hb&index=3 4. https://www.youtube.com/watch?v=TM5Sbm6R81Q&list=PLPXaxVCAifchXOHdQpib2FeM_k4qSD4Hb&index=6
18)	Quiz Test -1 Chapter 6-9	To build up their confidence level in chapter-06-09		
19)	Chapter-09 Leibnitz's theorem solve the problems of successive differentiation	9.1 Find 2nd, 3rd and 4th derivatives of a function and hence find n-th derivatives.	Student will learn to use Leibnitz's theorem to solve the problems of successive differentiation	https://www.youtube.com/watch?v=R-uShRR3PRk

20)	Chapter-09 Leibnitz's theorem solve the problems of successive differentiation differentiation	9.2 Express Leibnitz's theorem. 9.3 Solve the problems of successive differentiation and Leibnitz's theorem	Student will learn to use Leibnitz's theorem to solve the problems of successive differentiation	https://www.youtube.com/watch?v=iRBKvuKsq6I
21)	Chapter- 10 Partial differentiation	10.1 Define partial derivatives. 10.2 State formula for total differential. 10.3 State formulae for partial differentiation of implicit function and homogenous function.	Student will learn the formula of Partial differentiation	1. https://www.youtube.com/watch?v=mB_fKkGsBB_A 2. https://www.youtube.com/watch?v=FcVmmFj7RyI&list=PLPXaxVCAifciGPvY4I3XU-8Om1-NxTo7v
22)	Chapter- 10 Partial differentiation	10.4 State Euler's theorem on homogeneous function. 10.5 Solve the problems of partial derivatives..	Student will learn the formula of Partial differentiation	https://www.youtube.com/watch?v=-PPgXhUAqss
23)	Class test-2 Lecture 03 - 06	To build up their confidence level in chapter-03-06		
	MID TERM			
24)	Chapter-11 Indefinite integral	11.1 Explain the concept of integration and constant of integration. 11.2 State fundamental and standard integrals.	Student will learn about concept of Indefinite Integral	https://www.youtube.com/watch?v=Aj1y34krxnA&list=PL4XrhAetwHqFoQ3TKqfeUYEZRH9GVKg5_V

25)	Chapter-11 Indefinite integral	11.3 Write down formulae for: (i) Integration of algebraic sum. (ii) Integration of the product of a constant and a function. 11.4 Integrate by method of substitution, integrate by parts and by partial fractions. 11.5 Solve problems of indefinite integration.	Student will learn about concept of Indefinite Integral	1. https://www.youtube.com/watch?v=jCUV02-jkdU 2. https://www.youtube.com/watch?v=UqBPW9kOC1M&list=PL4XrhAetwHqFoQ3TKgfeUYEZR9GVKg5V&index=9
26)	Class Test-3 Lecture 06 - 09	To build up their confidence level in chapter 06-09		
27)	Chapter-12 Definite Integral	12.1 Explain definite integration. 12.2 Interpret geometrically the meaning of $\int_a^b f(x) dx$ 12.3 Solve problems of the following types: i) $\int_0^{\frac{\pi}{2}} \cos^2 x dx$ ii) $\int_0^1 \frac{x^2}{\sqrt{-x^2}} dx$	Student can solve the Definite Integral Problem	https://www.youtube.com/watch?v=f6Rrgb1MN5g
28)	Chapter-12 Definite Integral	12.3 Solve problems of the following types: i) $\int_0^{\frac{\pi}{2}} \cos^2 x dx$ ii) $\int_0^1 \frac{x^2}{\sqrt{-x^2}} dx$	Student can solve the Definite Integral Problem	https://www.youtube.com/watch?v=Osc_M9RgUNs
29)	Quiz Test -09-12			
30)	Chapter-13 Vector algebra	13.1 Define scalar and vector. 13.2 Explain null vector, free vector, like vector, equal vector, collinear vector, unit vector, position vector, addition and subtraction of vectors, linear combination,	* To know about Vector algebra	https://drive.google.com/file/d/1iBSiwJiY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing

		direction cosines and direction ratios, dependent and independent vectors, scalar fields and vector field.		
31)	Chapter-13 Vector algebra	13.3 Prove the laws of vector algebra. 13.4 Resolve a vector in space along three mutually perpendicular directions. 13.5 Solve problems involving addition and subtraction of vectors.	* To know about Vector algebra	https://drive.google.com/file/d/1iBSiwJiIY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing
32)	Chapter-14 Dot product of Vectors	14.1 Define dot product of Vectors. 14.2 Interpret dot product of vector geometrically. 14.3 Deduce the condition of parallelism and perpendicularity of two vectors.	*to build up their knowledge in Dot product of vectors	https://drive.google.com/file/d/1iBSiwJiIY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing
33)	Chapter-14 Dot product of Vectors	14.4 Prove the distributive law of dot product of vector. 14.5 Explain the scalar triple product and vector triple product. 14.6 Solve problems involving dot product.	*to build up their knowledge in Dot product of vectors	https://drive.google.com/file/d/1iBSiwJiIY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing
34)	Class Text-04 And Quiz Test-04	Difference mathematical problem in text.	*To build up their confidence level in chapter-11,12,13	https://drive.google.com/file/d/1iBSiwJiIY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing
35)	Chapter-15 Cross product of vectors	15.1 Define cross product of vectors. 15.2 Interpret cross product of vector geometrically. 15.3 Deduce the condition of parallelism and perpendicularity of two vectors.	To build up their knowledge in Cross product of vectors	https://drive.google.com/file/d/1iBSiwJiIY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing
36)	Chapter-15 Cross product of vectors	15.4 Prove the distributive law of cross product of vector. 15.5 Explain the scalar triple product and vector triple product. 15.6 Solve problems involving cross product.	To build up their knowledge in Cross product of vectors	https://drive.google.com/file/d/1iBSiwJiIY1J5gl5kA7OZjgrzMBOQStZY/view?usp=sharing
	Assignment-02 Lecture 13 - 15	All Formula To build up their confidence level in chapter-13-15		

37)	Class Test-4 Lecture 13 - 15			
38)	Model test		Our students will be ready for exam.	Pen, pencil, eraser, calculator, scale.