



**Forman Christian College, Lahore**  
(A Chartered University)  
**Department of Mathematics**

## **Instructor Information**

### **Asim Nadeem**

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**Office Hours:** M, W: 11:00 AM – 01:00 PM. Tue, Thu: 10:00 AM – 12:00 PM

**Online Office Hours:** All days: 9 PM to 11 PM (Text / WhatsApp / E-mail)

## **Course Information:**

### **Spring 2022**

Pre-Calculus & Trigonometry

**MATH-101 D (face to face + online)**

3 credits

Prerequisite: None

**Room # S- 416**

**Timing: Mon, Wed, Fri: 10:00 ---- 10:50**

## **Textbooks**

PRECALCULUS Functions and Graphs, By Raymond A. Barnett, Michael R. Ziegler, 5<sup>th</sup> ed.

## **Resources**

- On Campus classes.
- In case of online semester video lectures will be uploaded on YouTube.

## **Course Introduction**

This is a general education course for Mathematics. The course will provide basic background knowledge for those students who haven't studied Mathematics in the college and want to pursue in a field which requires the knowledge of Calculus. The course contents include the following: Fundamentals, solution of equations and inequalities, lines, functions, linear and quadratic functions, polynomial and rational functions, operations on functions, inverse functions, synthetic division, remainder and factor theorem, partial fractions, exponential, logarithmic and trigonometric functions, trigonometric identities, solution of right and oblique triangles.

## **Course Objectives**

The objective of Pre-calculus is to enable the student to acquire a working understanding of functions. This involves: interrelating the three function representations (table, graph, formula), viewing functions as both processes and entities, recognizing function types and their characteristics, predicting the behavior of a function from the value of its parameters, using functions to represent and solve problems, using functions to analyze data, establishing connections between functions and the real world, and developing the level of mathematical understanding required for subsequent study of Calculus.

## Learning Outcomes

Students will be able to

- understand the Elementary Functions (Linear, Quadratic, Polynomial, Rational, Exponential, Logarithmic, and Trigonometric).
- use the properties of each function to interrelate their graphical and algebraic representations.
- find inverse of functions and composition of two functions.
- formulate problems mathematically and solve them.
- apply Remainder Theorem, Factor Theorem, and Synthetic Division.
- prove and solve trigonometric identities.

## Course Requirements:

- Students are expected to attend every class. Students must arrive at class on time, should remain in class for the entire class period and mobile phone should be switched off or on silence. If a student arrives more than 10 minutes late or leave class during lecture or use mobile in class, he/she will be marked absent.
- In case of online semester, students are expected to watch every video lecture and read the lecture notes uploaded on Moodle. Off-campus students can discuss their queries/ questions in the given online office hours.
- Course assessment will be through **quizzes, attendance, behavior, class participation, assignments, midterm, and final exam.**
- Quizzes, Mid-term exam and final exam will be conducted on campus. Students will submit homework on Moodle. There is **no make up** for the **missed quizzes** and **homework**. Make up for midterm and final exam is possible only under extremes cases if a student provides strong documentary evidence. In case of make-up exam there will be a 0-20% deduction in marks depending upon case-to-case basis.
- Academic dishonesty or cheating will result in zero points (grade F) and will be referred to AIC (Academic Integrity Committee) at FCC for necessary action.

<u>Grades</u>	<u>Quality Points</u>	<u>Numerical Value</u>	<u>Meaning</u>
A	4.00	93-100	Superior
A-	3.70	90-92	
B+	3.30	87-89	
B	3.00	83-86	Good
B-	2.70	80-82	Fair
C+	2.30	77-79	
C	2.00	73-76	Satisfactory
C-	1.70	70-72	
D+	1.30	67-69	
D	1.00	60-66	Passing
F	0.00	59 or below	Failing

## **Course Evaluation:**

Grading will be based on following criteria:

Quizzes	15 %
Homework	10%
Attendance, behavior and class participation	05%
Midterm	30%
Final	40%

## **Lesson Plans**

<b>Week</b>	<b>Topics</b>	<b>ASSESSMENTS</b>
1	Course Introduction, Policies, Requirements, Grading Criteria.  Linear equations and inequalities.	
2	Absolute value in equations and inequalities.	
3	Quadratic equations, Polynomial and rational inequalities	
4	Circles, Straight lines, Functions	QUIZ-1
5	Graphing Functions, Combining Functions.	
6	Inverse functions, Polynomial functions and graphs	HW-1
7	Factor theorem, Partial Fractions.	
8	Exponential functions, The exponential function with base e	Midterm
9	Logarithmic functions, common and natural logarithms.	
10	Circular functions, Angles and their measures.	
11	Trigonometric functions, Solving right triangles.	
12	Basic Trigonometric identities and their use.	
13	Sum, Difference and co-function identities.	QUIZ-2
14	Double and half angle identities	HW-2
15	Product-sum and Sum-product identities. Law of Sines, Law of Cosines.	