Forman Christian College, Lahore
(A Chartered University)
Department of Mathematics
Spring 2023

Instructor Information:

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Office Hours:
Monday, Wednesday and Friday : 10:00 am – 11:30 am
Tuesday, Thursday : 8:30 am – 9:30 am, 12:15 pm – 12:45 pm
The **students can contact via** <mark>WHATSAPP</mark> preferably during the same office hours. Important messages, news and announcements will be shared through <mark>emails, moodle and WhatsApp group messages.</mark>

Course Information:
Course title: Pre-Calculus and Trigonometry (MATH-101)
Credit hours: 3
Class timings: TR 11:00am –12:15pm
Room: S-410
Section: C
Pre-requisite: None

Recommended Text:
PRECALCULUS Functions and Graphs by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen (5th Edition)

Course Contents:
This is a general education course for Mathematics. Course content 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 course will help students to:
- Understand the main ideas they need to know to start calculus.
- Learn to relate the idea of straight line and linear equations to the physical problems like motion in straight line, steepness and rapid change in things, etc.
- Understand the various kinds of functions and their application to daily life.
- Recognize and utilize logical understanding in mathematics.
- Learn new methods to solve algebraic expressions and make concluding remarks by analyzing the obtained solutions.
- Demonstrate competence in the use of numerical, graphical and algebraic representations.
- To be able to make connection between algebra and Geometry.
- To prepare the students to be able to apply Pre-Calculus methods to other disciplines e.g.

Computer Sciences and Economics, etc.

Course Requirements:
- The semester will start fully in-person mode so there will be in class lectures accompanied by notes on Moodle.
- 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. Note that 5% marks are reserved for attendance, behavior and class participation. If a student arrives more than 5 minutes late or leave class during lecture or use mobile in class, he/she will be marked absent. <mark>Minimum 70% attendance is required to appear in final exam.</mark>
- Course assessment will be through quizzes, attendance, behavior, class participation, assignments, midterm, and final exam.
- Quizzes, mid-term and final exam will be conducted on-campus. There is no make up for the missed quizzes and assignments. Make up for quizzes, 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 and will be referred to AIC (Academic Integrity Committee) at FCC for necessary action.

Course Evaluation: Grading will be based on following criteria:

Quizzes (3)	15%
Attendance/ Class Participation and behavior	5%
Assignments	10%
Midterm	30%
Final Exam	40%

Grades	Quality Points	Numerical Value	Meaning
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	
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

Weeks/Starting day of the week	Topics	Assessments
(1)	- Discussion of course plan and overview of course syllabus - Linear equations and applications (1.1)	
(2)	- System of linear equations and applications (1.2) - Linear inequalities (1.3)	

(3)	• Absolute value in equations and inequalities (1.4) • Quadratic equations and applications (1.6)	
(4)	• Polynomial and rational inequalities (1.8) • Basic Tools; Circles: Cartesian coordinate system, symmetry, distance between two points, circles (2.1)	
(5)	• Straight lines (2.2) • Functions (2.3)	Quiz-1
(6)	• Graphing Functions: Linear and quadratic functions (2.4) • Combining Functions: Operations on functions Composition of functions (2.5)	Assignment 1
(7)	• Inverse functions (2.6) • Polynomial functions and graphs: polynomial division, synthetic division, division algorithm, remainder theorem (3.1)	
(8)	• Factor theorem (3.2)	Mid-term exam (on-campus)
(9)	• Partial fractions (3.5)	
(10)	• Exponential functions (4.1) • The exponential function with base e. (4.2)	Assignment 2
(11)	• Logarithmic functions (4.3) • Common and natural logarithms (4.4)	Quiz-2
(12)	• Basic Identities (5.2) • Angles and their measure (5.3)	
(13)	• Trigonometric functions (5.4) • Solving right triangles (5.5)	
(14)	• Basic trigonometric identities and their use (6.1) • Sum, difference and co-function identities (6.2) •	Quiz-3 (on-campus)
(15)	• Double angle and half angle identities (6.3) • Product-sum and sum-product identities (6.4)	
(16)	• Law of sines and cosines (7.1, 7.2) • Revision and problem discussions	
(17)	Revision	