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

Gul E Mehak

(Lecturer, Department of Mathematics)

Email: gulmehak@fccollege.edu.pk
Skype ID: live:gul-e-mehak5202
Office: S-355 (Armacost Science Building)

Office Hours	
Monday, Wednesday, Friday	**11:00 am - 11:45 am** **01:00 pm – 01:45 pm**
Tuesday, Thursday	**12:15 pm - 01:45 pm**

Course Information:

Course Name: Pre-Calculus and Trigonometry
Course Code: Math 101
Prerequisite: None
Credit Hours: 3
Section: E
Class Timings: Tuesday and Thursday;   02:00 pm - 03:15 pm
Classroom: S-413

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:

- ❖ Tackle math word problems using algebra.
- ❖ Understand the basic concepts of functions and their applications to daily life.
- ❖ 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.
- ❖ Recognize and utilize the logical understanding in mathematics.
- ❖ Demonstrate competence in the use of numerical, graphical, and algebraic representations.
- ❖ To prepare the students to be able to apply Pre-Calculus methods to other disciplines e.g., Computer Sciences and Economics, etc.

Textbook:

- ❖ "PRECALCULUS Functions and Graphs" by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen 5th Edition.

Recourses:

- ❖ Course pack (sections from the textbook) will be uploaded on Moodle.
- ❖ Recorded video lectures and lecture notes will be uploaded on Moodle every week.

Learning Outcomes: Upon successful completion of this course, the students will be able:

- ❖ To understand the main ideas, they need to know to start calculus.
- ❖ To be able to understand the various kinds of functions based on diverse properties.
- ❖ To learn new methods to solve algebraic expressions and make concluding remarks by analyzing the obtained solutions.
- ❖ To be able to make connection between algebra and Geometry.

Course Requirements: Course assessment will be through **quizzes; attendance, class participation and behavior; assignment; midterm and final exam**.

Attendance, Class Participation and Behavior:-

- ❖ Students are expected to **attend every class** and to arrive at each class on time and remain in class for the entire class period.
- ❖ Student whose attendance is less than 70% will not be allowed to take the final exam.

❖ **Mobile Phones will be turned off or on silent mode** while the student is in the classroom. No cell phone calculators are to be used in quizzes, midterm, and final exams.
❖ Note that there are **5 marks for attendance, class participation and behavior**, which includes attendance during classes and being active in the course by asking questions.
❖ If a student arrives more than **10 minutes late** or **leaves class during lecture** or **uses mobile in class**, he/she will be marked **absent** for that day.
❖ Individuals are expected to be aware of what a **constructive educational experience** is and respectful of those participating in a learning environment. Failure to do so can result in disciplinary action up to and including expulsion.

Quizzes, Mid-term and Final Exam:-

❖ There is **no make up** for the **missed quizzes**, **midterm exam** and **final exam**.
❖ Make up for **midterm and final exam** is possible only under **extremes cases** if a student provides **strong documentary evidence** within **3 days after missing the Midterm/ Final exam**.
❖ In case of make-up exam there will be a **0 to 20% deduction in marks** depending upon case-to-case basis.

Assignments:-

❖ Assignments will be conducted on Moodle. Students are expected to submit the assignments within due date and time. Late submission of assignment will result in deduction of marks from the assignment.
❖ Students' assignments should reflect their understanding of content. There is no make up for the missed assignments.
❖ If needed, students may be asked to explain the submitted work.

Academic dishonesty or cheating: Students are expected to present their own work failure to do this 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** (three quizzes and each having 5% weightage)   **15 %**
> **Attendance, class participation and behavior**   **05 %**
> **Assignments** (two assignments and each having 5% weightage)   **10 %**
> **Mid-term Exam**   **30 %**
> **Final Exam**   **40 %**

Grading Criteria:

Grades	Quality Points	Numerical Value	Meaning
A	4.00	93 - 100	Superior
A-	3.70	90 - 92	
B+	3.30	87 - 89	Good
B	3.00	83 - 86	
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

Weekly Lesson Plan:

Week	Topics (section number from the text book)	Assessments
1 Feb 14, 16	❖ Discussion of course plan and overview of course syllabus ❖ Linear equations and applications (1.1)	
2 Feb 21, 23	❖ System of linear equations and applications (1.2) ❖ Linear inequalities (1.3)	
3 Feb 28 Mar 02	❖ Absolute value in equations and inequalities (1.4) ❖ Quadratic equations and applications (1.6)	
4 Mar 07, 09	❖ Polynomial and rational inequalities (1.8)	**Quiz-1**
5 Mar 14, 16	❖ Basic Tools; Circles: Cartesian coordinate system, symmetry, distance between two points, circles (2.1)	**Assignment 1**
6 Mar 21	❖ Straight lines (2.2)	

7 Mar 28, 30	❖ Functions (2.3) ❖ Graphing Functions: Linear and quadratic functions (2.4)	
8 Apr 04	❖ Combining Functions: Operations on functions; composition (2.5)	
9 Apr 11, 13	❖ Combining Functions: Operations on functions; composition Continue…. (2.5)	**MID TERM**
10 Apr 18	❖ Inverse functions (2.6)	
11 Apr 27	❖ Polynomial functions and graphs: polynomial division, synthetic division, division algorithm, remainder theorem (3.1) ❖ Factor theorem (3.2)	
12 May 02, 05	❖ Partial fractions (3.5) ❖ Exponential functions (4.1)	
13 May 09, 11	❖ The exponential function with base e (4.2) ❖ Logarithmic functions (4.3)	**Quiz-2**
14 May 16, 18	❖ Circular functions (5.2) ❖ Angles and their measure (5.3)	**Assignment 2**
15 May 23, 25	❖ Trigonometric functions (5.4) ❖ Solving right triangles (5.5)	
16 May 30 June 01	❖ Basic trigonometric identities and their use (6.1) ❖ Sum, difference and cofunction identities (6.2)	
17 June 06, 09	❖ Double angle and half angle identities (6.3) ❖ Product-sum and sum-product identities (6.4) ❖ Revision and problem discussions	**Quiz-3**
June **12 – 21**	**Final Exam**	**As announced by university**