



Forman Christian College, Lahore (A Chartered University)

Spring 2022

Department of Mathematics

Gul E Mehak

(Lecturer, Department of Mathematics)

Email: gulmehak@fccollege.edu.pk

Skype ID: [live:gul-e-mehak5202](skype:live:gul-e-mehak5202)

Office: S-355 (Armacost Science Building)

Office Hours	
Monday and Wednesday	11:00 am - 12:00 pm
Friday	11:00 am - 12:00 pm + 01:00 pm - 02:00 pm
Tuesday and Thursday	11:00 am - 12:30 pm

Course Information:

Course Name: Pre-Calculus and Trigonometry

Course Code: Math 101

Prerequisite: None

Credit Hours: 3

Section: B

Class Timings: Monday, Wednesday and Friday; 12:00 pm - 12:50 pm

Class Room: S-416

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.

Text Book:

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

Recourses:

- ❖ Course pack (sections from the text book) 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 on the basis of 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:

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| ➤ 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:

<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	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 Mar 07, 09, 11	<ul style="list-style-type: none"> ❖ Discussion of course plan and overview of course syllabus ❖ Linear equations and applications (1.1) ❖ System of linear equations and applications (1.2) 	
2 Mar 14, 16, 18	<ul style="list-style-type: none"> ❖ Linear inequalities (1.3) ❖ Absolute value in equations and inequalities (1.4) 	
3 Mar 21, 25	<ul style="list-style-type: none"> ❖ Quadratic equations and applications (1.6) ❖ Polynomial and rational inequalities (1.8) 	
4 Mar 28, 30 Apr 01	<ul style="list-style-type: none"> ❖ Basic Tools; Circles: Cartesian coordinate system, symmetry, distance between two points, circles (2.1) ❖ Straight lines (2.2) 	Quiz-1 Mar 30 (Wed)
5 Apr 04, 06, 08	<ul style="list-style-type: none"> ❖ Functions (2.3) ❖ Graphing Functions: Linear and quadratic functions (2.4) 	Assignment 1
6 Apr 11, 13	<ul style="list-style-type: none"> ❖ Combining Functions: Operations on functions; composition (2.5) 	
7 Apr 20, 22	<ul style="list-style-type: none"> ❖ Inverse functions (2.6) 	

8 Apr 25, 27, 29	❖ Polynomial functions and graphs: polynomial division, synthetic division, division algorithm, remainder theorem (3.1) ❖ Factor theorem (3.2)	MID TERM Apr 27 (Wed)
9 May 09, 11, 13	❖ Partial fractions (3.5) ❖ Exponential functions (4.1)	
10 May 16, 18, 20	❖ The exponential function with base e. (4.2) ❖ Logarithmic functions (4.3)	
11 May 23, 25, 27	❖ Common and natural logarithms (4.4) ❖ Circular functions (5.2)	
12 May 30 June 01, 03	❖ Angles and their measure (5.3) ❖ Trigonometric functions (5.4)	Quiz-2 June 01 (Wed)
13 June 06, 08, 10	❖ Solving right triangles (5.5) ❖ Basic trigonometric identities and their use (6.1)	Assignment 2
14 June 13, 15, 17	❖ Sum, difference and cofunction identities (6.2) ❖ Double angle and half angle identities (6.3) ❖ Product-sum and sum-product identities (6.4)	
15 June 20, 22, 24	❖ Law of sines and cosines (7.1, 7.2) ❖ Revision and problem discussions	Quiz-3 June 22 (Wed)
June 27 – July 06	Final Exam	As announced by university