Forman Christian College, Lahore

(A Chartered University)
SPRING 2022

Sabah Iqbal

(Lecturer, Department of Mathematics)
Email: sabahiqbal@fccollege.edu.pk
Office: S-355 (Armacost Science Building)
Students Meeting / Office Hours: Mon, Wed, Fri**: 11:00 a.m. - 12:30 p.m.**
Tuesday, Thursday: **12:30 p.m. - 02:00 p.m.**
Zoom Personal Meeting ID
https://zoom.us/j/4997022415?pwd=Nk9Dck52SVU0M1VTL2FiTkp0MlpNUT09
Meeting ID: 499 702 2415
Passcode: MATH

Course Information: **Pre-Calculus and Trigonometry** **Math 101 (C)**

Prerequisite: None **Credit Hours:** 3

Class Room: S-413 **Class Timings:** 10:00 a.m. -10:50 a.m. (Mon, Wed, Fri)

Course Trailer Link: https://www.youtube.com/watch?v=UNRTu-Wnk70

Resources:

- Course pack (related sections from the text book) will be uploaded on Moodle.
- Recorded video lectures and lecture notes will be uploaded on Moodle every week.
- ***Text Book:*** PRECALCULUS Functions and Graphs by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen 5th Edition.

Mode of teaching:

- In case of **blended mode**, students with even and odd roll numbers will rotate weekly as per academic calendar provided by university. There will be on-campus lectures accompanied with video lectures & notes on Moodle/ regular Zoom sessions.
- In case of **in-person (on campus) classes,** there will be in class lectures.
- In case of fully **online teaching**, regular Zoom classes will be conducted along with recorded video lectures and lecture notes uploaded on Moodle.
- **Note: Assessments' criteria** will be same for all modes of teaching. **Assignments** will be conducted on Moodle for every mode. Quizzes, mid-term exam & final exam will be conducted on campus in case of in-person & blended classes. Otherwise for online mode, all assessments will be conducted online on Moodle.

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.

Course Requirements:

- **Attendance:** Students are expected to attend every class. Student whose attendance is less than 70% will not be allowed to take the final exam. 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 silent mode. Note that there is **5 marks for attendance, behavior and class participation**, 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. Online attendance is based on regularly accessing the course materials on Moodle, taking regular weekly Zoom sessions and submitting tasks on time.
- **Assessments:** Course assessment will be through **quizzes, attendance and behavior, assignments, midterm, and final exam**. Make up for quizzes, midterm and final exam is possible only under extremes cases if student provides strong documentary evidence, but in that case, there will be a 0-20% deduction in marks depending upon case-to-case basis.

- **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.

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 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 Mar. 07,09,11	❖ 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	❖ Linear inequalities (1.3) ❖ Absolute value in equations and inequalities (1.4)	
3 Mar. 21,25	❖ Quadratic equations and applications (1.6) ❖ Polynomial and rational inequalities (1.8)	
4 Mar. 28,30 Apr. 01	❖ (continued . . .) Polynomial and rational inequalities (1.8) ❖ Basic Tools; Circles: Cartesian coordinate system, symmetry, distance between two points, circles (2.1)	**Quiz-1**
5 Apr. 04, 06, 08	❖ Straight lines (2.2) ❖ Functions (2.3)	**Assignment 1**

6 Apr. 11,13	❖ Graphing Functions: Linear and quadratic functions (2.4) ❖ Combining Functions: Operations on functions; composition (2.5)	
7 Apr. 20,22	❖ Composition of functions (continued…) (2.5) ❖ Inverse functions (2.6)	
8 Apr. 25,27,29	❖ Polynomial functions and graphs: polynomial division, synthetic division, division algorithm, remainder theorem (3.1)	**Mid-term Exam**
9 May 09,11,13	❖ Factor theorem (3.2) ❖ Partial fractions (3.5)	
10 May 16,18,20	❖ Exponential functions (4.1) ❖ The exponential function with base e. (4.2)	
11 May 23,25,27	❖ Logarithmic functions (4.3) ❖ Common and natural logarithms (4.4)	
12 May 30 June 01,03	❖ Circular functions (5.2) ❖ Angles and their measure (5.3)	**Quiz-2**
13 June 06,08,10	❖ Trigonometric functions (5.4) ❖ 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)	
15 June 20,22,24	❖ Product-sum and sum-product identities (6.4) ❖ Law of sines and cosines (7.1, 7.2)	**Quiz-3**
June27 – July 06	Final examination will be conducted as per official schedule Final examination period is from **June 27 – July 06, 2022**.	**Final Exam**