



# Forman Christian College, Lahore

(A Chartered University)

SPRING 2022

## Sabah Iqbal

(Lecturer, Department of Mathematics)

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**Office:** S-355 (Armcast 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: Quantitative Skills,

**Math 100 (B)**

**Prerequisite:** None

**Credit Hours:** 3

**Class Room:** S-412 **Class Timings:** 09:00 a.m. - 09:50 a.m. (Mon, Wed, Fri)

**Course Trailer Link:** <https://www.youtube.com/watch?v=3DdPDr7cWAA>

### Text Books:

**Course Pack:** Topics from the recommended books.

### Recommended Books: -

- Mathematics, Application and Connection Course 2, McGraw Hill Publishing.
- Quantitative skills portion of Barron's GRE.
- Basic Business Mathematics, Schaum's outlines Eugene Don and Joel Lerner.
- New Syllabus Mathematics 1 – 3, Oxford University Press.

### Resources:

- Lecture notes, exercises, and their solutions and answers will be uploaded on Moodle.
- Recorded Video Lectures will be uploaded on Moodle.

### 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. This course will provide the basic knowledge of daily life Mathematics. Topics include basic algebra and number theory, rounding, estimating and scientific notation, algebraic expressions, fractions, factoring, solving equations, two equations with two unknowns and their applications to daily life problems, quadratic equations and their applications, percentage problems (profit, loss, commission, zakat deduction, mark-up, margin, stock exchange, index), ratio and proportion, work problems, distance problems (time, distance, speed, velocity), basic geometry, mean, median, and mode.

**Course Objectives:** The objectives of the course are for students not only to know the mathematics of these concepts, but also to be able to apply the concepts to analyze and interpret information in business and financial application problems. It will challenge students' beliefs about mathematics and hopefully change their attitudes in a positive way. It will improve and increase students' quantitative literacy and ability to independently increase their own understanding of mathematics. It will provide students with an opportunity to experience mathematics as an intellectual exercise and a way of thinking, and to appreciate the visual and intellectual beauty of mathematics.

Students successfully completing the course should be reasonably proficient solving quantitative problems, they will experience in their lives. They will demonstrate competence in the use of numerical, graphical, and algebraic representations. Students will demonstrate the ability to interpret data, analyze graphical information, and communicate solutions in written and oral form. Students will demonstrate proficiency in the use of mathematics and algebra to formulate and solve problems.

### **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 student will be able:

- Develop and strengthen quantitative reasoning skills and apply them to other disciplines.
- Recognize and utilize the logical understanding in mathematics.
- Acquire and develop a mathematical sense, or intuition.
- Analyze, model and interpret “real-world” problems in mathematical terms.
- Define and understand basic concepts of geometry.

**Course Evaluation:** Grading will be based on following criteria:

❖ <b>Quizzes</b> (three quizzes and each having 5% weightage)	<b>15 %</b>
❖ <b>Attendance, class participation and behavior</b>	<b>05 %</b>
❖ <b>Assignments</b> (two assignments and each having 5% weightage)	<b>10 %</b>
❖ <b>Mid-term Exam</b>	<b>30 %</b>
❖ <b>Final Exam</b>	<b>40 %</b>

### **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:

<b>Week</b>	<b>Topics</b>	<b>Assessments</b>
<b>1</b> Mar. 07,09,11	<ul style="list-style-type: none"> <li>❖ <b>Discussion of Course Plan:</b> Course introduction, policies, requirements and grading criteria</li> <li>❖ <b>Whole Numbers and Decimals:</b> Whole numbers, decimals, operations (addition, subtraction, multiplication, division), order of operations, properties of equality, addition and multiplication</li> <li>❖ <b>Positive and Negative Numbers:</b> Operations, comparing and ordering of numbers, graph of a number, absolute value of a number, opposite numbers</li> </ul>	
<b>2</b> Mar. 14,16,18	<ul style="list-style-type: none"> <li>❖ <b>Number Theory:</b> Divisibility, even and odd numbers, factors, prime and composite numbers, prime factorizations, common factor, greatest common factor (GCF), common multiple, least common multiple (LCM)</li> <li>❖ Integer Exponents and Scientific Notation</li> </ul>	
<b>3</b> Mar. 21,25	<ul style="list-style-type: none"> <li>❖ Algebraic Expressions</li> <li>❖ <b>Fractions:</b> Numerical and algebraic fractions, operations in fractions and mixed numbers</li> </ul>	
<b>4</b> Mar. 28,30 Apr. 01	<ul style="list-style-type: none"> <li>❖ Squares and Square Roots</li> <li>❖ Factorization</li> </ul>	<b>Quiz-1</b>
<b>5</b> Apr. 04, 06, 08	<ul style="list-style-type: none"> <li>❖ <b>Solving linear equations</b> and their applications to daily life problems</li> </ul>	<b>Assignment 1</b>
<b>6</b> Apr. 11,13	<ul style="list-style-type: none"> <li>❖ <b>Solving Simultaneous equations</b> (two linear equations with two unknowns) and their applications to daily life problems</li> </ul>	
<b>7</b> Apr. 20,22	<ul style="list-style-type: none"> <li>❖ <b>Percentage:</b> Conversions, direct and indirect percentage</li> <li>❖ <b>Percentage:</b> One quantity as a percentage of another, percentage increase and decrease</li> <li>❖ <b>Percentage:</b> Profit and loss</li> </ul>	
<b>8</b> Apr. 25,27,29	<ul style="list-style-type: none"> <li>❖ <b>Percentage:</b> Discount</li> <li>❖ <b>Percentage:</b> Simple and compound interest</li> </ul>	<b>Mid-term Exam</b>
<b>9</b> May 09,11,13	<ul style="list-style-type: none"> <li>❖ <b>Percentage:</b> Taxation (property tax, sales tax and income tax) and commission</li> </ul>	
<b>10</b> May 16,18,20	<ul style="list-style-type: none"> <li>❖ <b>Ratios</b> (expressing as ratio, equivalent ratio, increase and decrease in a ratio)</li> </ul>	

<b>11</b> May 23,25,27	❖ <b>Proportion</b> (direct and indirect proportion)	
<b>12</b> May 30 June 01,03	❖ <b>Mean, Median, Mode</b> , and their applications ❖ <b>Quadratic Equations</b> and their applications	<b>Quiz-2</b>
<b>13</b> June 06,08,10	❖ <b>Distance problems</b> ❖ <b>Average of two or more speeds</b> ❖ <b>Work problems</b>	<b>Assignment 2</b>
<b>14</b> June 13,15,17	❖ <b>Geometry:</b> Angles and its types, supplementary and complementary angles, interior and exterior angles of a triangle	
<b>15</b> June 20,22,24	❖ <b>Geometry:</b> Area and circumference of a circle, area and perimeter of polygons, finding area of shaded regions, Pythagoras theorem	<b>Quiz-3</b>
<b>June27 – July 06</b>	Final examination will be conducted as per official schedule Final examination period is from <b>June 27 – July 06, 2022.</b>	<b>Final Exam</b>