



**Forman Christian College**  
(A Chartered University)  
**Department of Mathematics**

**Instructor Information:**

**Name:** Dr. Ahmad Mahmood Qureshi

(Associate Professor & Dean Faculty of Computer and Mathematical Sciences)

**Office:** S - 204

**Office Hours:** Monday & Wednesday (02:00 PM to 03:30 PM)

**OTHERWISE GET APPOINTMENT FIRST.**

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**Course Information:**

**Course Code and Title:** MATH 201: Calculus II (Section A) **Credits:** 3

**Prerequisite:** MATH 102: Calculus I

**Class Room:** S - 413

**Class Time:** Tuesday, Thursday (11:00 AM – 12:15 PM)

**Text Book:** *Calculus Early Transcendentals, 10th Edition* by Howard Anton, Irl C. Bivens, Stephen Davis.

**Online Resource:** <https://ocw.mit.edu/courses/mathematics/18-01-single-variable-calculus-fall-2006/video-lectures/>

**Course Objectives:**

This second course in calculus emphasizes applications of single variable differential and integral calculus. The purpose of this course is to:

1. review differential calculus and apply it to analysis of functions: increase, decrease, maxima, minima, concavity and Mean Value Theorem.
2. introduce some of the main applications of integrals: computing areas, volumes, arclength, and so forth.
3. acquaint students with some of the beginnings of the theory of infinite series and Taylor series for functions
4. continue the development of mathematical problem-solving skills with class discussions and practice sessions of exercises and problems.
5. prepare students for further studying higher level courses in mathematical sciences.

## **Learning Outcomes:**

After successfully completing this course, the students would be able to:

1. think, show, and explain the use of differential and integral calculus.
2. demonstrate a good understanding and application of differential and integral calculus.
3. apply the learned techniques for solving application problems.
4. comfortably prepare themselves for higher level courses in applied mathematics.

## **Course Requirements:**

Students must arrive at class on time during their designated weeks and those coming after attendance call won't be marked present.

1. Please watch attentively the video lectures shared as part of blended class.
2. Keep a note of your queries, if any, that you are not able to comprehend.
3. You will have the opportunity to get your questions answered, in-person if you are coming on campus or through a live zoom meeting when off-campus.
4. Work out the exercise questions to apply and analyze the learned concepts.
5. Quizzes, Midterms and Finals will be conducted in-class.
6. Working regularly, understanding the lectures, doing exercises will be very helpful in quizzes, mid-term and final to get a good grade. Your knowledge of the subject and ability to solve problems will be reflected in your grades.

## **Course Evaluation:**

Grading will be based on following criteria:

Class participation and behavior	5%
Assignment	5%
Quizzes (Two)	20%
Mid Term	30%
Final Exam	40%

**Grade Legend:**

<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	
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

**Course Outline:**

<b>Week</b>	<b>Topics</b>	<b>Article</b>
<b>1</b>	1) <b>Discussion of Course Plan:</b> Course objectives, requirements and policies, grading criteria. 2) <b>Review of Calculus I concepts: Continuity and Differentiability</b>	
<b>2</b>	1) Analysis of Functions I: Increase, Decrease and Concavity 2) Analysis of Functions I: Concavity	4.1 4.1
<b>3</b>	1) Analysis of Functions II: Relative extrema, First Derivative Test 2) Analysis of Functions II: Relative extrema, Second Derivative Test	4.2 4.2
<b>4</b>	1) <b>QUIZ-1</b> 2) Absolute Maxima and Minima 3) Applied Maximum and Minimum Problems	4.4 4.5
<b>5</b>	1) Rolle's Theorem and applications 2) Mean-Value Theorem and applications	4.8 4.8
<b>6</b>	1) Area Between Two Curves 2) Volumes by Slicing, Disks and Washers	6.1 6.2
<b>7</b>	1) <b>MID-TERM EXAM</b> 2) Volumes by Slicing, Disks and Washers 3) Volumes by Cylindrical Shells	6.2 6.3
<b>8</b>	1) Length of a Plane Curve 2) Area of a Surface of Revolution	6.4 6.5

<b>9</b>	1) <b>QUIZ-2</b> 2) Improper Integrals	7.8
<b>10</b>	1) Sequences 2) Monotone Sequences	9.1 9.2
<b>11</b>	1) Infinite Series 2) Convergence Tests	9.3 9.4
<b>12</b>	1) The Comparison Test 2) Ratio and Root Tests	9.5 9.5
<b>13</b>	1) Alternating Series, Absolute and Conditional Convergence	9.6
<b>14</b>	1) Maclaurin and Taylor Series: Power Series	9.8
<b>15</b>	1) Conic Sections	10.4
	<b>FINAL EXAM (FROM THE WHOLE COURSE)</b> <b>February 2022</b>	