North South University
Department of Mathematics & Physics

Calculus and Analytic Geometry I (MAT-120)
Fall Semester, 2017
Section- 19 and 20

Instructor: Dr. Mohammad Babul Hasan
Professor, Dept. Of Mathematics
Dhaka University

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Day & Time:

Section 19: RA 11:20 – 12:50	Venue: SAC-511
Section 20: RA 1:0 – 2:30	Venue: NAC-993

Office Room:
Office Hour: 10:00 – 11:20.

Course Objective

This course is designed to introduce the students to the fundamentals of Calculus and Analytic Geometry. Calculus is the mathematical tool used to analyze changes in physical quantities. It was developed in seventeenth century. This course will help the students to understand basic facts and terminology relating to numbers, absolute values, intervals etc. The students will be able to visualize the algebraic equations as geometric curves and conversely to present geometric curves by algebraic equations. This course will enable the students to define the fundamental concepts in mathematics, the notation of function, limit, continuity, differentiation, integration etc.
Finally, the students will know how to apply this knowledge in many real life problems.

Required Book:

"Calculus with Analytic Geometry" 5th Edition--- By Howard Anton

Course Assessment:

Midterm 1	25%
Midterm 2	25%
Class Attendance	10%
Quiz (Average of 3)	10%
Assignment	5%
Final	25%
Total	100%

Note: *The instructor reserves the right to make any necessary changes in the course content depending on the progress of the class.*

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Tentative Class Schedule

Lecture 1:	Introduction, numbers, intervals and inequalities	**Chapter 1**
Lecture 2:	Absolute value, coordinate planes and graphs	**Chapter 1**
Lecture 3:	Operations and graphs of Functions	**Chapter 1**
Lecture 4:	Limit: Intuitive introduction and computational techniques	**Chapter 2**
Lecture 5:	Continuity,	**Chapter 2**
Lecture 6:	Limit and continuity of trigonometric functions	**Chapter 2**
Assignment1	**1.1:** 23, 27, 29, 33, 37,39, 41, **1.2:** 5, 7, 9, 19, 21,25, 29, 33, 35 **1.3:** 13, 15, 17, 21, 23, 27, 31, 35, **1.4:** 25, 27, 29, 33, 37, 41, 47 **1.5:** 23, 25, 29, 33, 37, 39, 43, 57, 61, 65, 67 **2.1:** 3, 9, 17, 21, 25, 37, 39, 41,47, **2.2:** 7, 9, 29, 31, 35, 49, **2.3:** 9, 11, 19, 21, 27, 41, 43, **2.5:** 11, 17, 23, 29, 37, 41, 59, 67, 73, **2.6:** 3, 9, 15, 25, **2.7:** 15, 17, 23	
Lecture 7:	**Review**	**Chapter 2**
Lecture 8:	**MIDTERM-1 (Chapter 1, 2)**	
Lecture 9:	Differentiation, tangent lines and rates of change, derivatives	**Chapter 3**
Lecture 10:	Techniques of differentiations, derivatives of trigonometric functions	**Chapter 3**
Lecture 11:	Chain rule Implicit differentiation	**Chapter 3**
Lecture 12:	Applications of differentiation, increasing, decreasing functions	**Chapter 4**
Lecture 13:	Relative extrema: First and second derivative tests	**Chapter 4**
Lecture 14:	Mean value theorem: Rolle's theorem, Lagrangr's MVT	**Chapter 4**
Lecture 15:	Review and **Quiz II**	**Chapter 4**
Assignment2	**3.1:** 9, 19,23, **3.2:** 5, 11, 43, **3.3:** 11, 27, 41, **3.4:** 5, 17, 27, **3.5:** 11, 21, 37, 39, 43, 47, 65, **3.6:** 9, 27, 29, **4.1:** 7, 9, 13, 17, 19, 25, 33, 37, **4.2:** 15, 19, 21, 25, 37, **4.3:** 3,13, 15, 25, 35, 43, **4.6:** 7, 21, 25, 31, 37, **4.9:** 3, 5,11,13	
Lecture 16:	**MIDTERM-2 (Chapter 3, 4)**	
Lecture 17:	Introduction of Integration, Antiderivatives, Indefinite integrals,	**Chapter 5**
Lecture 18:	Techniques of indefinite integrations	**Chapter 5**
Lecture 19:	Definite integrals, fundamental theorem of calculus	**Chapter 5**
Lecture 20:	Applications of integrations: areas, arc lengths	**Chapter 5**
Lecture 21:	Overview of logarithms and exponents	**Chapter 6**
Lecture 22:	Derivatives and integrals of logarithms and exponents	**Chapter 6**
Lecture 23:	First order differential equations and applications	**Chapter 6**
Lecture 24:	First order differential equations and applications continued and **Quiz III**	**Chapter 6**
Assignment3	**5.2:** 11, 23, 25, 27,29,47,49, **5.3:** 1c, 3d, 11,21,23,33, **5.6:** 19, 21, 23, 25, 33,35, 37, **5.7:** 9, 15, 21, 23, **5.8:** 9, 11, 15, 17, 21, 23, 25, 27, **5.9:** 17, 19	
	Final Exam- (Chapter 5, 6)	

Dr. Mohammad Babul Hasan (BBN)