



COURSE SYLLABUS

A. Course Title & Number	Calculus III – 110101201		
B. Pre/Co-requisite(s)	Calculus II (110101102)		
C. Number of credits	3		
D. Format	Distance Learning		
E. Faculty Name	Faculty of Science		
F. Term/Year	Summer 2019/2020		
G. Sections	Section No.	Time	Location
H. Instructor's Information	Instructor	Office	Email
I. Course Description	Covers coordinate systems in three dimensions, analytic geometry of lines and planes, vector valued functions, functions of several variables, derivatives such as partial derivatives, gradients and directional derivatives, optimization problems of real valued functions of several variables, definite integrals to functions of two and three variables and Lagrange multipliers.		
J. Course Learning Outcomes	Learning Outcomes		Assessment Instruments
	1	Demonstrate the ability to analyze and visualize curves, surfaces, and regions in 2 and 3 dimensions, in Cartesian, polar, cylindrical, and spherical coordinate systems.	First and/or Final Exam
	2	Perform calculus operations on vector-valued functions including limits, derivatives, integrals, curvature, and the description of motion in space.	First, Second and/or Final Exam
	3	Perform calculus operations on functions of several variables including limits, partial derivatives, directional derivatives, and multiple integrals.	Second and/or Final Exam
	4	Find and classify extrema and tangent planes of functions of several variables.	Second and/or Final Exam
K. Textbook and References	Text Book:		
	<ul style="list-style-type: none"> • Calculus Early transcendentals, by James Stewart, 9th Edition; McMASTER UNIVERSITY AND UNIVERSITY OF TORONTO. 		
L. Teaching and Learning Methodologies	References:		
	<ul style="list-style-type: none"> ○ Calculus, Early Transcendentals, by H. Anton, I. Bivens, and S. Davis, John Wiley & Sons, Inc., 11th edition, 2016. ○ Thomas' Calculus, by Joel R. Hass, Christopher E. Heil, and Maurice D. Weir, Pearson, 14th Edition, 2017. 		
L. Teaching and Learning Methodologies	This is a traditional lecture based course. Students tested and given feedback throughout the semester regular exams and the discussions in class.		



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M. Assessment of Student Learning	Assessment Category	Assessment Type	%	Assessment Description	Due Date	CLO
	Quizzes & other activities	<ul style="list-style-type: none"> ➤ One-two Question Quiz ➤ other activities 	30	<ul style="list-style-type: none"> ➤ During each week, there is a one short at most five-minutes exam that takes place during one of the lectures. The questions in the quiz will cover one or two of the topics that the students have learned in that week. ➤ Activities that will be determined by the instructor such as homeworks, explanation questions, Participation and interaction in lectures. 	It will be Assigned randomly by the Instructor without telling the students	1,2,3,4
	Test	Midterm Exam	30	This exam will cover topics learned from week 1 to week 4. It will measure the degree of conceptual and procedural understanding a student has gained.	Approximately 6/8/2020	1,2,3
	Test	Final Exam	40	This exam will cover topics learned from week 1 to week 7 with more focus on topics learned from weeks 5-7. Its structure, and the breakdown of the questions included are similar to the ones for the first and second exams.	It will be assigned by the registrar's office	1,2,3,4

N. Rules and Regulations	<p>Make-up: If a student has a valid reason for missing an examination, he/she may be granted an opportunity to make up the exam by the Math department. The student must submit a request for a make-up exam in writing to the instructor of the course within 48 hours of the scheduled examination time. The request must state clear and compelling reasons for the student's absence and include any relevant supporting documentation: statement from a certified medical doctor, clinic or hospital, detailing the medical condition, or a written explanation regarding an emergency. The instructor will look into the requests and decide within 24 hours. Make-up exam will be paper based and completely different from the one given in class.</p> <p>Attendance: Attendance and Lateness policy as described in the Undergraduate catalog will be strictly implemented in this course. In case you find yourself in a situation that prevents you from attending class or exam, you have to inform your instructor. If you miss more than 6 classes for the (Sunday, Tuesday, and Thursday model) or 4 classes for the (Monday and Wednesday Model), you cannot pass the course.</p> <p>Others: Mobile phones and Smart devices are not to be used for personal use during a class or exam. Students are not permitted to eat or drink while in class or exam.</p>
O. Student Academic Integrity Code Statement	All students are expected to abide by the Student Academic Integrity Code as articulated in the HU undergraduate catalog.



Weekly Outline

Week	Topics
1	12.1 Three-Dimensional Coordinate Systems 12.2 Vectors 12.3 The Dot Product
2	12.4 The Cross Product 12.5 Equations of Lines and Planes 12.6 Cylinders and Quadric Surfaces
3	13.1 Vector Functions and Space Curves 13.2 Derivatives and Integrals of Vector Functions 13.3 Arc Length and Curvature
4	14.1 Functions of Several Variables 14.2 Limits and Continuity 14.3 Partial Derivatives
5	14.5 The Chain Rule 14.6 Directional Derivatives and the Gradient Vector 14.7 Maximum and Minimum Values
6	15.1 Double Integrals over rectangles 15.2 Iterated Integrals 15.3 Double Integrals over General Regions 15.4 Double Integrals in Polar Coordinates
7	15.7 Triple Integrals 15.8 Triple Integrals in Cylindrical Coordinates 15.9 Triple Integrals in Spherical Coordinates
8	University Final Exams



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Homework Assignments – Calculus III: Students are strongly encouraged to solve all of the following suggested exercises from the textbook. If you need any help you can consult me during my office hours or by appointment.

Section	Page (7 th Ed)	Problems
12.1	790	2,5,6,11,13,17,23,30,31
12.2	798	3,4,6,17,22,24,25,26,29
12.3	806	1,6,7,10,11,17,19,22,24,26,41,47
12.4	814	3,8,11,13,14,16,19,27,31,33
12.5	824	3,4,5,7,13,19,23,28,31,46,51,57,60, 69,71,73
12.6	832	3,4,6,11,14,19,21,22,23,24,25,26,27,28
13.1	845	1,4,5,7,11,21,22,23,24,25,26,27
13.2	852	3,5,9,14,19,21,25,35,39,47
13.3	860	3,4,5,17,20,24
14.1	888	9,10,11,15,17,19,32,45,47,49
14.2	899	5,7,9,10,11,13,15,16,17,31,32,37,39,41
14.3	911	15,21,22,23,25,26,33,34,42,43, 47,51 53, 61,65,67
14.5	930	1,3,7,11,17,21,22,27
14.6	943	5,7,9,11,12,15,19,21,22
15.1	981	11,12,13,14
15.2	987	1,3,7,9,15,16,20,23,25,29,30,31
15.3	995	1,2,5,7,9,13,16,17,19,20,25,26,29
15.4	1002	3,5,7,11,17, 19,22,25,27
15.7	1025	2,3,5,6,7,9,11,17,21,22
15.8	1031	1,3,5,6,7,9,11,19,21,22,23,29,30
15.9	1037	1,3,5,7,9,10,11,13,21,23,25,30,35,39,40