Term: July 13 – August 7, 2020

Class Hours: 18:00-19:50 (Monday through Friday)

Course Code: MATH 300

Instructor: Dr. Calistus Ngonghala

Home Institution: University of Florida, USA

Office Hours: TBA and by appointment

Email: calistusnn@gmail.com

Credit: 4

Class Hours: This course will have 52 class hours, including 32 lecture hours, 8 professor office hours, 8 TA discussion session hours, and 4 review session hours.

Course Description: This is a third course in the calculus sequence that provides a thorough introduction to multivariable calculus. It focuses on functions of several variables, differential and integral calculus of two and three variables, and their applications, and vectors and the geometry of curves and surfaces in three-dimensional space.

Course Objectives: The goal of the course is to provide a strong foundation and mastery of calculus in two and three variables and the geometry of vectors, lines, planes, curves, and surfaces for students who intend to continue in mathematics, physics, engineering, computer science, and other quantitative disciplines such as economics and finance.

Required Textbooks:
Calculus Early Transcendentals, by James Stewart (8th Edition).

Grading & Evaluation:

		Grade	Range
Attendance and participation:	10%	A	90-100
Homework and quizzes:	20%	B	80-89
Midterm:	30%	C	70-79
Final:	40%	D	60-69
Total:	100%	F	0-59

Course Schedule:

Week1: Vectors in three-dimension, dot and cross products, lines and planes in three dimension, implicit/parametric surfaces, curves and arc length, partial derivatives.

Week2: Partial derivatives, tangents, differentiability, the chain rule, gradient and directional derivatives.

Week3: Extrema, Lagrange multipliers, double and triple integrals.

Week4: Line integrals and change of variable, Curl, Green's, Stoke, and Divergence Theorems.

Detailed Course Outline:

Week	Date	Chapter	Topic
	Monday		1.1 Space and vectors in three-dimension
			1.2 Dot products
1	Tuesday	1 Geometry, space, surfaces and curves	1.3 Cross products
			1.4 Implicit and parametric surfaces
	Wednesday		1.5 Curves and arc length
	Thursday		2.1 Partial derivatives
	Monday		2.1 Partial derivatives
2	Tuesday	2 Differential calculus of functions of several variables	2.2 Tangent, differentiability
			2.3 The chain rule
	Wednesday		2.4 Gradient and directional derivatives
	Thursday		Mid-term Exam
	Monday		3.1 Extrema
3	Tuesday	3 Extrema, double and triple integrals	3.2 Lagrange multipliers
			3.3 Double integrals over rectangles
	Wednesday		3.3 Double integrals over general regions
	Thursday		3.3 Double integrals in polar coordinates
			3.4 Triple integrals
	Monday		3.5 Line integrals and change of variable
4	Tuesday	4 Vector fields and integral Theorems	4.1 Curl, Green's Theorem, Flux
	Wednesday		4.2 Stoke/Divergence Theorems
	Thursday		Final Exam

Student responsibilities/expectations: The main course material will be presented through lectures. A discussion session, to be held every Friday will offer an opportunity for students to discuss course material

and assigned problems with a teaching assistant (TA). Students are advised to keep pace with the course material as it is being presented. Consequently, students should endeavor to attend all class meetings and discussion sessions, be early for class, and spend sufficient time working on assigned homework problems. If for any reason a student misses a class, he/she should endeavor to obtain the notes and learn the missed material before the next class meeting.   Students should not hesitate to ask questions or seek additional assistance to ensure that they are staying on pace with the class. Students will be expected to come to class prepared and ready to participate actively. Please, turn off your cell phones and put aside any unrelated material before class begins. Students should exhibit a sense of responsibility and respect towards fellow students. Late-coming to class or early departure from class meetings will not be allowed.

Examinations: There will be two exams plus one cumulative final exam. Each exam will consist of a multiple choice and a problem (free-response) section. The free-response problem section will contain problems to solve and definitions, brief explanations of concepts, and simple proofs.

Quizzes: Quizzes will be administered periodically throughout course period. Quizzes are meant to test the understanding of covered topics, and to give a benchmark prior to the exams.

Homework: The purpose of homework is to develop more skills in the material covered. It will be the student's responsibility to solve the assigned homework problems in a timely manner. Students who intend to do well in the course are advised to solve the homework problems. Students should feel free to approach the instructor with difficulties from homework problems. Problems in which students encounter difficulties may also be discussed in class.