Dr. Donald Adongo, FH 6A-2

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Office Hours: MTR 12:30 – 1:20 pm; or by appointment

Section 1 CRN 81009

Meeting: 1:30 pm – 2:20 pm MTWR FH 104

http://campus.murraystate.edu/faculty/dadongo

DEPARTMENT: MATHEMATICS AND STATISTICS

COURSE PREFIX: MAT **COURSE NUMBER: 309** **CREDIT HOURS:** 4

I. TITLE:

Calculus and Analytic Geometry III

II. COURSE DESCRIPTION AND PREREQUISITE(S):

Course develops main ideas of differentiation and integration of functions of several variables and introduces vector calculus. Topics include vectors, analytic geometry of 3-dimensional space, functions of several variables, partial derivatives, directional derivatives, integrals of functions of two and three variables, vector fields, line integrals, Greens theorem, and the divergence theorem.

Prerequisite(s): MAT 308.

III. COURSE OBJECTIVES:

The student will be able to:

A. Graph spheres and cylindrical surfaces in 3-space;
B. Perform vector algebra, including dot product, projections, cross product, and triple scalar product;
C. Find vector, symmetric and parametric equations of a line in space;
D. Find vector equation, point-normal form, and general form of equation of plane;
E. Graph cylinders and quadric surfaces. Convert between rectangular, cylindrical and spherical coordinates;
F. Find limit of, differentiate, and integrate vector-valued functions;
G. Find arc length for vector-valued functions and determine motion-velocity, speed, and acceleration along a curve;
H. Find unit tangent and normal vectors to surfaces;
I. Calculate curvature;
J. Determine limit and continuity of functions of several variables;
K. Calculate partial derivatives of functions of several variables;
L. Demonstrate differentiability and chain rules for functions of two or more variables; calculate directional derivatives and gradients;
M. Generalize chain rule for functions of several variables;
N. Use second partial test to find maxima and/or minima and/or saddle points for functions of two variables;
O. Use Lagrange Multipliers to maximize/minimize subject to constraints, a function of two or more variables;
P. Use double integrals to find area over non-rectangular regions or in polar coordinates and surface area;
Q. Use triple integrals to find volume of solids, centroids, and centers of gravity and in spherical and cylindrical coordinates;
R. Calculate Jacobian for two and three-spaces;
S. Evaluate multiple integrals by change of variables;
T. Evaluate a line integral and relation to independence of path;
U. Evaluate surface integrals including vector-valued functions;
V. Evaluate a line integral using Green's Theorem; Apply the Divergence Theorem, and Stokes' Theorem.

IV. CONTENT OUTLINE:

A) Vector geometry
B) The calculus of vector-valued functions
C) Differentiation in several variables
D) Multiple integration
E) Line and surface integrals
F) Vector analysis

V. INSTRUCTIONAL ACTIVITIES:

Lecture, daily assignments, group work, projects, reading assignments, oral presentations, and quizzes the material, as per instructor course design.

VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

None

VII. TEXT(S) AND RESOURCES:

Essential Calculus Early Transcendentals Second Edition by James Stewart

VIII. EVALUATION AND GRADING PROCEDURES:

A. Your Course grade will be based on EXAM grades, HOMEWORK grades, QUIZ grades, and the FINAL EXAM. Forty eight (48) percent of the course grade will come from 3 major exams and thirty (30) percent of the course grade will come from the final exam. The homework grade and quiz grade will each contribute eleven (11) percent towards the course grade. The grading scale will be:

Grading Scale:	
90 - 100 %	A
80 - 89 %	B
70 - 79 %	C
60 - 69 %	D
Below 60%	E

Exams: The Exams will test your comprehension of concepts and skills not covered on a previous exam. Exams may contain both problem-solving questions and essay questions. Exams occur for everyone (to be fair to everyone) on the scheduled date. Sometimes, however, extenuating circumstances do exist. If you absolutely must miss an exam, you are to stop by or call me (or leave a message with the office if I am not in when you call) before the exam to tell me why you cannot be at the exam. In addition, you must complete the "missed exam form" (see the course website) within one day. If you do not, you will get a zero on that exam with no opportunity to make it up. An excused missed exam will be made up in my office within two days (an extension may be granted in rare cases), with the grade to be determined as explained at that time. Our three exams will be **September 15, October 13**, and **November 3**.

Final: The Final will be a comprehensive exam covering any material addressed that semester. The Final exam will be on **Thursday, December 10th** at **1:30 p.m**. in **FH 104**.

Homework: Homework (written) will be assigned at the beginning of each section and will also be listed on the course web site. Homework will be collected twice a week (Monday and Thursday unless it is a holiday). **(No Late Homework)**. Homework must be completed in pencil, separate from your notes, and on loose-leaf paper or paper without rough edges. **Staple** your papers together if you have used more than one sheet other wise your homework **will not be graded**. Your name and class meeting time should be written on the top right part of the first page.

Quizzes: Each day's discussion of new material depends on vigorous participation on your part. During the semester numerous in-class quizzes will be given. These will generally not take more than five (5) minutes to complete.

The value of presentations depend upon basic familiarity with the topic, and naturally, your participation in the quizzes might be limited by your attendance. See attendance policy below.

Important Grade-dates: The last day to drop a course without receiving a grade (or a W) is Monday, August 24. The last day to drop individual courses and receive a grade of "W" (no penalty) is Thursday, November 12. The last day to change a full semester class from AUDIT to CREDIT is Monday, August 24. The last day to change a full semester class from CREDIT to AUDIT is Thursday, November 12.

No classes during Labor day September 7, Fall Break October 1 - 2, and Thanksgiving break November 25-27.

B. **Auditing**: If you seek to change your status to audit, you must continue to do all the graded assignments, to attend classes regularly after the audit is given, to miss no more than 5 class periods after the audit is given, and to maintain a grade of at least 70% of the grade they had upon taking the Audit. If these requirements are not followed, then an "E" will be earned for this course.

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletins.

Class attendance will be taken daily. If you miss class you are responsible for obtaining the day's notes and assignments.

A. If you miss two or fewer days this semester, I will drop your four lowest homework grades and four lowest quiz grades.

B. If you miss three or four days this semester, no homework grades will be dropped and No penalty.

C. If you miss five or more days this semester, there will be a penalty on your Grade. You will loose 2% of your grade for every absence starting with the fifth.

Excused absences fall into two broad categories: 1. Absence due to personal illness or death in the immediate family or other extraordinary personal circumstance. Faculty may require appropriate authentication or documentation. 2. Absence due to student participation in a University Sanctioned Event in which the student serves as a representative of the institution.

Note the following provisions on arriving late to class or leaving early:
Every two tardies (arriving late) will count as an absence.
Leaving class early will count as an absence unless you provide me with a reason in advance.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Equal Opportunity. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

XI. NON-DISCRIMINATION POLICY AND STUDENTS WITH DISABILITIES:

Policy Statement

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

Students with Disabilities

Students requiring special assistance due to a disability should visit the Office of Student Disability Services immediately for assistance with accommodations. For more information, students should contact the Office of Student Disability Services, 423 Wells Hall, Murray, KY 42017. 270-809-2018 (voice) 270-809-5889 (TTD).

XII. Other required departmental or collegiate committee information

Electronic Communication Policy: It is the default policy of the Department of Mathematics and Statistics that, without the prior consent of the course instructor, no device may be used for electronic communication in class. This shall include cell phones, smart-phones, computers, laptops, and tablets. In addition, this includes verbal calling, incoming calls, email, text messaging, the use of cell phone calculators on tests and quizzes, and the use of the wireless capabilities of calculators or other electronic devices. Unless given special permission in advance from the course instructor for potential cases of emergency or critical family situations, cell phones must be kept on silent and out of sight (i.e. secured to a person's belt or kept in a bag or purse away from desks). Should a student's cell phone be visible, ring, or should the student be engaged in some other form of unauthorized usage that the course instructor finds to be disruptive to the class, the student may be asked to leave class and not return for that class period, and be counted absent for that day. Similar restrictions and penalties apply to use of other electronic devices, unless permitted by the instructor for that class period.

Please fill out this portion, detach and return to the instructor by **Thursday August 20, 2015**.

By my signature below, I certify that I have received a copy of the course syllabus for MAT 309-(01) taught by Dr. Donald Adongo during the Fall 2015 Semester. Furthermore, I certify that I have read and understand the contents of the course syllabus.

Printed Name: .....

Signature: .....

Date: .....