SYLLABUS

Embry-Riddle Aeronautical University, Daytona Beach Campus

COURSE NUMBER: MA243-01, -02
COURSE TITLE: Calculus and Analytic Geometry III
CREDIT HOURS: 4
TERM: Spring 2018
TIME & PLACE: Section 1: MWF 9:00-9:50 a.m. in COAS318, Tues 8:15-9:30 a.m. in COAS305
Section 2: MWF 10:00-10:50 a.m. in COB118, Tues. 3:45-5:00 p.m. in COAS205
FINAL EXAM: Section 1: Mon., Apr. 30, 2:45-4:45 p.m., COAS318
Section 2: Sat., Apr. 28, 2:45-4:45 p.m., COB118
INSTRUCTOR: Prof. Spradlin, a.k.a. Dr. Spradlin
OFFICE HOURS: 11:00 a.m.-12:00 p.m. Mon., Tues,. Wed., and Fri., or by appointment
OFFICE LOCATION+PHONE: COAS 301.17, 386-226-7737
E-MAIL: spradlig@erau.edu . Please don't try to send me a message using Canvas: I might not get it. I'll hold you responsible for checking your e-mail daily and reading everything I send you.
WEB ACCESS: Course documents will be posted in a Google Drive folder with URL https://drive.google.com/drive/folders/1wk-QTUn5BqabMLeGemAQ3BEDf5WjkKHl?usp=sharing (shortened URL is https://goo.gl/Sstufq: it might be case-sensitive). You don't need a Google account to use it.
COURSE TEXT: *Calculus: ~~Extraterrestrial~~ Early Transcendentals*, James Stewart, 7th edition (Brooks/Cole, Cengage). Most of the homework problems will be from this text. Our library has some copies on reserve.
PREREQUISITE: MA242 (Calculus and Analytic Geometry II) or equivalent. If you don't have the prerequisite, please speak to me as soon as possible.
ACADEMIC INTEGRITY: If you cheat, you will face the consequences listed in Part 2 of the Honor Code of the Student Handbook, which is posted at https://ernie.erau.edu/Departments/dean-of-students-daytona/Documents/Student-Handbook.pdf (pp. 20-24). These could include an "F" grade in the class, or expulsion from the university.

ATTENDANCE: Students are responsible for finding out everything that happens or is announced in class every day. Attendance is not counted toward your grade, with one exception: if you audit the class, you must attend regularly. If you must leave class early, tell me before class. Don't make a habit of coming to class late. You never have to ask permission to leave class briefly to visit the rest room or for another decent reason.

DISABILITIES: If you want testing accommodations on quizzes or the final due to a disability, then you must come to my office and speak to me as soon as possible.

QUIZZES: There will be no exams, except for the final. Instead there will be at least 22 quizzes. Only the highest 20 will count toward your grade. If you miss a quiz, and want to make it up, you must have a good reason, tell me immediately, and make it up within a week (and no later than our last class). It is your responsibility to find a mutually agreeable time to make up a quiz.

[more on the back]

HOMEWORK: Homework will be assigned frequently. It won't be collected.

FINAL EXAM: There will be a cumulative final exam. Everyone must take it. It's not a common final (different MA243 instructors will give different finals). Most or all of the problems will be "long answer/show your work"-type problems, but up to 15% of the points *might* be multiple choice or True/False.

GRADES: Grades will be computed using this formula:

Quizzes (20 @ 20 points apiece)	400 points
Final	100 points
TOTAL	500 points

Letter grades will be assigned by the rule: A: 90% - 100%, B: 80% - 90% C: 70% - 80%, D: 60% - 70%, F: 0 – 60%. There will be little or no "curve".

Note: **the remainder of this document describes the material in the course. These descriptions and lists are *not* guaranteed to be exhaustive. You are responsible for learning any material which I teach in class and appears in the homework.**

COURSE DESCRIPTION:

Solid analytic geometry; vector functions in three dimensions; partial differentiation; directional derivative and gradient; line integrals; multiple integrals.

GOALS:

The purpose of this course is to provide students with the ability to apply calculus to vector-valued functions and to functions of several variables that can arise in complex engineering and scientific problems.

COURSE LEARNING OUTCOMES:

1. Solve problems of analytic geometry in 2 and 3 dimensions using algebraic and geometric properties of vectors.
2. Graph, differentiate and integrate vector-valued functions of a real parameter and apply these methods to problems involving velocity, acceleration and arc length.
3. Construct equations of lines, planes and quadric surfaces and sketch the graphs of surfaces described either parametrically or in the form $z = f(x,y)$.
4. Compute partial derivatives, directional derivatives and gradients, and interpret these quantities graphically.
5. Set up and calculate double integrals over a variety of two dimensional regions using either rectangular or polar coordinates as needed to perform the integrations.
6. Set up and calculate triple integrals over a variety of three dimensional regions using rectangular, cylindrical or spherical coordinates as needed to perform the integrations.
7. Compute area, volume and surface area, mass and center of mass using double or triple integrals.
8. Use the Jacobian determinant to change variables when calculating double and triple integrals.
9. Evaluate the line integral of a vector field over a path.
10. State and prove Green's Theorem and apply it to problems involving line integrals.
11. Evaluate surface integrals of a vector field over a given surface.