Syllabus for Math 243 – Calculus III (3)

Section 2 Summer 2018
MWF 10:30 - 11:50 Room: Keller 401

Instructor: John "Curlee" Robertson
Office: Keller 404 E
Office Hours: TBA
Course Description: Vector algebra, vector-valued functions, differentiation in several variables, and optimization.

Prerequisite: A grade of C or better in Math 242 or Math 252A or consent.

Text: *University Calculus (Alternate Edition)* by: Hass, Weir, Thomas, Pearson-Addison Wesley.

Format: This three credit class meets for 240 minutes of lecture per week.

Grades:

Homework: 20%
Quiz: 15 %
Exam 1: 20 %
Exam 2: 20 %
Final Exam: 25 %

Homework: Homework will be posted here:

http://www.math.hawaii.edu/ johncr

Grading Policy: Credit will be based on correct explanations, not correct answers. Neatness counts! Working together is encouraged... cheating is not. I reserve the right to deny credit if I feel a student is copying off another student (or a solutions manual). Homework will be **DUE AT THE BEGINNING OF EVERY CLASS PERIOD**, and **late homework will not be accepted**.
Quiz: There will be a short quiz every Friday at the beginning of class.
Exams: The final exam on the last day of class which will cover all the topics listed on the second page. In other words the final is cumulative.

Academic Honesty: As a University of Hawaii student, you have agreed to abide by the University's academic policy.

Extra Help: Don't hesitate to come to office hours and discuss homework problems.
-The Learning Emporium:
A free tutoring center, located in room 209 of the Bilger Addition.

Attendance Policy: Students are expected to attend classes regularly. A student who incurs an excessive number of absences may be withdrawn from this class at my discretion.

Approximate Timeline:

Weeks 1–2: Vectors and the geometry of space.

(1) Section 11.1: Three-dimensional coordinate systems.
(2) Section 11.2: Vectors.
(3) Section 11.3: The dot product.
(4) Section 11.4: The cross product.
(5) Section 11.5: Lines and planes in space.
(6) Section 11.6: Cylinders and quadric surfaces.

Week 3: Polar coordinates and conics.

(1) Section 3.9: Parametrizations of plane curves.
(2) Section 6.3: Lengths of plane curves.
(3) Section 10.1: Polar coordinates.
(4) Section 10.2: Graphing in polar coordinates.
(5) Section 10.3: Areas and lengths in polar coordinates.

Weeks 3 - 5: Vector–valued functions and motion in space.

(1) Section 12.1: Vector functions and their derivatives.
(2) Section 12.2: Integrals of vector functions.
(3) Section 12.3: Arc length in space.
(4) Section 12.4: Curvature of a curve.
(5) Section 12.5: Tangential and normal components of acceleration.
(6) Section 12.6: Velocity and acceleration in polar coordinates.

Weeks 6 - 10: Partial derivatives.

(1) Section 13.1: Functions of several variables.
(2) Section 13.2: Limits and continuity in higher dimensions.
(3) Section 13.3: Partial derivatives.
(4) Section 13.4: The chain rule.
(5) Section 13.5: Directional derivatives and gradient vectors.
(6) Section 13.6: Tangent planes and differentials.
(7) Section 13.7: Extreme values and saddle points.
(8) Section 13.8: Lagrange multipliers.
(9) Section 13.9: Taylor's formula for two variables.