Course Prefix and Number: MATH 252  Credit Hours: 3-3-0

Course Title: Calculus III

Course Prerequisites: A grade of “C” or higher in MATH 251 or consent of instructor.


Course Description: Topics include first-order differential equations; infinite sequences and series; parametric equations and polar coordinates; vectors and the geometry of space; and vector-valued functions and motion in space.

Learning Outcomes:
At the end of this course, the student will:

A. solve first-order differential equations;
B. analyze infinite sequences and series;
C. write and graph parametric equations and polar coordinates;
D. apply vectors and the geometry of space; and
E. apply vector-valued functions and motion in space.

Course Objectives:
To achieve the learning outcomes, the student will or will be able to:

1. find solutions, slope fields, and Euler’s Method; (A)
2. solve first-order linear equations; (A)
3. solve applications; (A)
4. find graphical solutions of autonomous equations; (A)
5. solve systems of equations and phase planes; (A)
6. use sequences; (B)
7. use infinite series; (B)
8. perform the integral test; (B)
9. perform comparison tests; (B)
10. perform the ratio and root tests; (B)
11. use alternating series, absolute and conditional convergence; (B)
12. use power series; (B)
13. use Taylor and Maclaurin series; (B)
14. find convergence of Taylor series; (B)
15. use the binomial series and applications of Taylor series; (B)
16. perform parametrizations of plane curves; (C)
17. use calculus with parametric curves; (C)
18. use polar coordinates; (C)
19. graph in polar coordinates; (C)
20. find areas and lengths in polar coordinates; (C)
21. use conic sections; (C)
22. apply conics in polar coordinates; (C)
23. use three-dimensional coordinate systems; (D)
24. apply vectors; (D)
25. find the dot product; (D)
26. find the cross product; (D)
27. apply lines and places in space; (D)
28. apply cylinders and quadric surfaces; (D)
29. apply curves in space and their tangents; (E)
30. apply integrals of vector functions; projectile motion; (E)
31. apply arc length in space; (E)
32. apply curvature and normal vectors of a curve; (E)
33. apply tangential and normal components of acceleration; (E) and
34. apply velocity and acceleration in polar coordinates. (E)

Course Requirements: All students are required to take a comprehensive final exam.

Course Grading Scale:
- 90 – 100 = A
- 80 – 89 = B
- 70 – 79 = C
- 60 – 69 = D
- 0 – 59 = F

Attendance Policy: The college attendance policy is available at
http://www.bpcc.edu/catalog/current/academicpolicies.html

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.

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