

Bossier Parish Community College
Master Syllabus

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.

Textbook(s) (when applicable): Thomas, George B. Calculus, 14th edition. Pearson, 2018. ISBN: 9780321884077

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:

(The letter designations at the end of each statement refer to the learning outcome(s).)

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 planes 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.

Nondiscrimination Statement: Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

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