Bossier Parish Community College
Master Syllabus

Course Prefix and Number: MATH 253 **Credit Hours:** 3-3-0

Course Title: Calculus IV

Course Prerequisites: A grade of "C" or higher in Math 252 or consent of instructor.

Textbook(s) (when applicable): Thomas, George B. Calculus, 14th edition. Pearson, 2018. ISBN: 9780134439020

Course Description: Topics include partial derivatives; multiple integrals; integration in vector fields; and second-order differential equations.

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

A. perform partial derivatives;
B. perform multiple integrals;
C. perform integration in vector fields; and
D. perform second-order differential equations.

To achieve the learning outcomes, the student will be able to:
(The letter designations at the end of each statement refer to the learning outcome(s).)

1. apply functions of several variables; (A)
2. compute limits and continuity in higher dimensions; (A)
3. perform partial derivatives; (A)
4. apply the chain rule; (A)
5. use directional derivatives and gradient vectors; (A)
6. find tangent planes and differentials; (A)
7. find extreme values and saddle points; (A)
8. use Lagrange multipliers; (A)
9. use Taylor's Formula in two variables; (A)
10. apply partial derivatives with constrained variables; (A)
11. compute double and iterated integrals over rectangles; (B)
12. compute double integrals over general regions; (B)
13. find area by double integration; (B)
14. use double integrals in polar form; (B)
15. use triple integrals in rectangular coordinates; (B)
16. find moments and centers of mass; (B)
17. find triple integrals in cylindrical and spherical coordinates; (B)
18. use substitutions in multiple integrals; (B)
19. use line integrals; (C)
20. use vector fields and line integrals: work, circulation, and flux; (C)
21. find path independence, conservative fields, and potential functions; (C)
22. apply Green's Theorem in the plane; (C)
23. find surfaces and area; (C)
24. find surface integrals; (C)
25. use Stokes' Theorem; (C)
26. use the divergence theorem and a unified theory; (C)
27. compute second-order linear equations; (D)

28. compute nonhomogeneous linear equations; (D)
29. perform applications; (D)
30. compute Euler equations; (D) and
31. find power series solutions. (D)

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.

Title VI, Section 504, and ADA Information
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