

Math 2450: Analytical Geometry and Calculus III Syllabus

I. Institution Information

McCook Community College
A Division of Mid-Plains Community College
1205 East Third Street
McCook, Nebraska 69001

II. Basic Course Information

A. Title.....Analytical Geometry and Calculus III
B. Catalogue Code.....MATH 2450 MC 01
C. Credit Hours.....5
D. Term.....Fall 2015

III. Instructor Information

A. Name.....Mr. Michael Jonckheere
B. Telephone.....308-345-8154 or 800-658-4348, Extension 8154
C. Email.....jonckheerem@mpcc.edu
D. Office.....BH 227

IV. Important Times and Places

A. Class Time.....MTWRF 10:00 – 10:50 PM
B. Class Location.....Barnet Hall (BH) 223
C. Date Class Begins.....8/24/2015
D. Bring required materials to class.....8/31/2015
E. No Class (Labor day).....9/7/2015
F. No Class (Teacher Enrichment day).....10/2/2015
G. No Class (Thanksgiving).....11/25/2015 thru 11/27/2015
H. Last Day to Withdraw.....12/1/2015
I. Date Class Ends.....12/11/2015
J. Final Exam.....Wednesday, December 16, 10:10 AM - 12:10 PM

V. **Catalog Description:** A continuation of MATH 1900. Functions of more than one variable, vector and vector functions, partial derivatives, multiple integrals and applications.

VI. **Program Focus:** This course is designed for the serious student of mathematics. Most students are interested in careers in mathematics, sciences, or engineering.

VII. **Prerequisites:** Completion of MATH 1900 with at least a “C”.

Teacher Responsibilities

VIII. **Teacher Specific Description:** None

- IX. **Course Objectives:** Upon completion of this course a student's grade will reflect their ability to:
- A. Model lines in higher dimensions.
 - B. Graph cylinders and quadric surfaces in a three-dimensional coordinate system.
 - C. Use differentiation, and integration of vector valued functions to analyze velocity, acceleration, arc length, and curvature in higher dimension.
 - D. Calculate the tangent planes to functions of two variables.
 - E. Use the chain rule to differentiate functions of several variables.
 - F. Calculate the directions of steepest ascent of functions of several variables.
 - G. Solve optimization application problems in higher dimensions.
 - H. Use multiple integrals to calculate area, volume, centers of mass, and surface area.
 - I. Use the higher dimensional anti-chain rule to simplify multiple integrals.
 - J. Use the four generalizations of the Fundamental Theorem of Calculus to calculate various types of integrals of vector valued functions of several variables.

X. **Tentative Class Schedule**

- A. Chapter 12: Vectors and the Geometry of Space. Two quizzes.
- B. Chapter 13: Vector Functions (13.4, Motion in Space, will be optional). One quiz.
- C. Chapter 14: Partial Derivatives (14.8, Lagrange Multipliers, will be optional). Two quizzes.
- D. Chapter 15: Multiple Integrals (15.5, Applications of Double Integrals, and 15.10, Change of Variables, will be optional). Two quizzes.
- E. Chapter 16: Vector Calculus. Two quizzes.

XI. **College Student Learning Outcomes:** All MPCC graduates should be able to demonstrate:

- A. Effective use of written communication skills
- B. Effective use of oral communication skills
- C. Efficient use of information retrieval skills
- D. An understanding of the values and traditions of other cultures in the world
- E. Mathematical computational skills to solve problems
- F. Human inquiry skills be scientifically observing, explain, predicting and testing for the purpose of understanding
- G. Critical thinking skills
- H. Appropriate and necessary competencies/skills for academic transfer or employment in their area of expertise
- I. Effective decision making skills

XII. **Instructional Methods:** The method of instruction for this class will primarily be informal lecture.

XIII. **Grading and Evaluation**

- A. Grade breakdown

Category	Number	Portion of Grade
Miscellaneous	4 tasks	0.01
Attendance	44 days	0.04
Homework	36 assignments	0.10
Quizzes	9 tests	0.765
Final	1 test	0.085

- B. **Grading Scale:** After the above breakdown is used to calculate a numerical grade, a letter grade is then determined by the following scale:

Numeric Grade Rounded to Two Decimal Places	Letter Grade
0.00 thru 0.60	F
0.61 thru 0.66	D
0.67 thru 0.69	D+
0.70 thru 0.76	C
0.77 thru 0.79	C+
0.80 thru 0.86	B
0.87 thru 0.89	B+
0.90 thru 0.96	A
0.70 thru 1.00	A+

XIV. Makeup Policies.

- A. **Missing a Homework Due Date or Project:** I will accept homework early. I will accept homework under my office door. Homework is late when turned in after the start of class on the day it is due and will be marked down 50%. You only need to get credit for about 90% of the homework/project points to get 100% in that category. This allows you to miss 5 homework assignments or projects without a penalty.
- B. **Missing a Lecture:** Students are responsible for reading material in the textbook corresponding to the missed lecture, though they may do this during my student consultation hours.
- C. **Missing a Test:** You may take any exam up to 4 weekdays early. You may take any exam up to 4 weekdays after the end of an excused, documented absence. Early or make-up exams may be in an alternate format, and must be taken in the SSC.
- D. If you miss an exam but I reject your excuse or you have no documentation or you cannot make the above times within 4 weekdays, then I will use relevant questions on the final exam to give you some points for the missed exam if possible. Be warned that this usually results in a very low exam grade.

XV. Student/Teacher Consultation Hours

- A. Tuesdays and Thursdays 9:00 – 9:50 AM or 11:00 – 11:50 AM in my office (BH 227)
- B. By appointment

XVI. Students with Disabilities: Mid-Plains Community College is committed to providing a discrimination-free environment for its students with disabilities. If you are a student with a documented disability, and assistance is needed, please contact: Robin Rankin, MPCC North Campus and MPCC Extended Campus's 308-535-3637, Chris Turner, North Platte South Campus, 308-535-3715, or Brandon Lenhart, McCook Community College 308-345-8128. Or contact us through e-mail at disabilityservices@mpcc.edu.

XVII. Nondiscrimination policy: Discrimination on the basis of such factors as national or ethnic origin, race, color, age, gender, sexual orientation, marital status, religion, disability, or veteran status in any program, service, activity, or aspect of the College is prohibited. All persons admitted to or employed by Mid Plains Community College have the same rights and privileges. The College follows a strict policy of nondiscrimination in administering its educational policies, recruitment and admissions policies, loan and scholarship programs, employment practices, athletic, and other College-sponsored programs.

Student Responsibilities

XVIII. Materials

- A. The textbook “Calculus” by Steward (7e, ISBN 9780583497817) is required
- B. The associated complete multivariable solution manual (ISBN 9780840049476) is required.
- C. A scientific calculator is required.

XIX. Student Responsibilities: Students are required to

- A. Join the CampusWeb Course Group associated with this class by start of the second week.
- B. Obtain the textbook and bring it to the last day of class in the first week.
- C. Obtain the solution manual and bring it to the last day of class in the first week.
- D. Obtain a scientific calculator and bring it to class the first day of the second week.
- E. Attend each of the 60 scheduled class days with electronic devices other than a calculator turned off and out of sight.
- F. Spend 10 hours per week outside of class on homework and test study.
- G. Complete each of the 46 homework assignments in the following way:
 - 1. Attempt each homework problem without looking at the solution.
 - 2. Then use the solutions in the solution manual to correct any wrong work.
 - 3. Submit each assignment before the beginning of class on its due date found on the course schedule.
- H. Visit me during my student consultation hours (and/or the math table or the tutors in the SSC) for help.
- I. Complete each of the 9 quizzes and the final without a graphing calculator.

XX. **Withdraw from Class Procedure:** If a student wishes to withdraw from this class they must complete an official withdrawal form and turn it in. Students who do not formally withdraw may receive a grade of F.

XXI. **Academic Honesty:** All cases of cheating or plagiarism shall be handled at the discretion of the instructor involved. Students may be disciplined by immediate dismissal from the course with an “F” grade. Two such course dismissals make the student subject to expulsion from college of the Mid-Plains Community College Area.

XXII. **Chain of Resolution:** Any questions or concerns regarding this course should first be directed to the instructor. If you feel that you and the instructor have not reached a resolution, you may contact the Division Chair. Contact information is:

- A. Division ChairSally S. Thalken
- B. DivisionMathematics & Science
- C. Emailthalkens@mpcc.edu
- D. Phone308-535-3759

XXIII. **Disclaimer:** This syllabus is not a contract and the instructor retains the right to make changes in the course’s schedule, policies, and requirements as necessary so long as those changes are consistent with the policies of MPCC and do not affect transferability.