

Instructor: Michael Bergwell

Class Time: Thu 5:30-9:00 pm

Office: C158

Course Location: E225

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Office Hours: M 5-6 pm, T 4:30-6, W 3-3:30, R 4-5 and by appointment

Pre-requisite: Calculus II, MAT 256

Text: Calculus by James Stewart, 7th edition

Webassign used – not required. Course Key: trcc.mohegan 5787 0549

Course Description: Vectors, dot, cross product, equations of lines and planes, functions of several variables, limits and continuity, partial derivatives, chain rule, gradient, maximizing and minimizing functions of several variables, Lagrange multipliers, multiple integrals, polar, cylindrical, spherical coordinate systems, vector fields, line integrals, Green's, Stokes' and the Divergence theorems. (Note: **All exams are open note only, no book or copies of the book may be used**)

Measurements: Quizzes - 20%, each exam – 20% (total of 60%), and final exam - 20%.
Grade equivalents: A 93 – 100, A- 90 – 93, B+ 87 -89, B 83 – 86,
B- 80 – 82, C+ 77 – 79, C 73 – 76, C- 70 – 72, D+ 67 – 69, D 63 – 66,
D- 60 – 62, F below 60. (Note: Final exam can replace lowest exam)

Attendance: Your attendance, participation in classroom work and preparation for each class is required and is essential to your success in the course. If you cannot attend the class for a period of time, please contact me so we can make arrangements for makeup work. Make-up exams will not be given unless I am notified ahead of time with a valid excuse, doctor's note, etc. A student's final exam grade will replace the lowest regular exam grade.

Support Services: Tutorial services. Meeting with me for an extra help.

Class Cancellation: 1. In case of inclement weather, check the college website for class cancellations or call 860-886-0177 for recorded message on the college phone.

Plagiarism and Academic

Honesty: At TRCC, we expect the highest standards of academic honesty. The Board of Trustees' Proscribed Conduct Policy prohibits cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism.

Disabilities Statement: Students with disabilities, who may require special accommodations and support services, are encouraged to notify:

1. Chris Scarborough, who is coordinating services to students with disabilities.
2. The instructor during the first two weeks of class.

Section	Topic
Ch. 12	
12.1	Three Dimensional Coordinate Systems
12.2	Vectors
12.3	The Dot Product
12.4	The Cross Product
12.5	Equations of lines and Planes
Ch. 13	
13.1	Vector Functions
13.2	Derivatives and Integrals of Vector Functions
13.3	Arc Length
13.4	Motion in space: Velocity, Acceleration
	Exam (Chapters 12, 13) 2/20
Ch. 14	
14.1	Functions of several Variables
14.2	Limits and Continuity
14.3	Partial Derivatives
14.4	Tangent Planes, Linear Approximation
14.5	The Chain Rule
14.6	Directional Derivatives, the Gradient Vector
14.7	Maximum and Minimum Values
14.8	Lagrange Multipliers
	Exam (Chapter 14) 3/27
Ch. 15	
15.1	Double Integrals
15.2	Iterated Integrals
15.3	Double Integrals over general regions
15.4	Double Integrals in Polar Coordinates
15.7	Triple Integrals
15.8	Triple Integrals in Cylindrical Coordinates
15.9	Triple Integrals in Spherical Coordinates
15.10	Change of Variables in Multiple Integrals
	Exam (Chapter 15) 4/24
Ch. 16	
16.1	Vector Fields
16.2	Line Integrals
16.3	The Fundamental theorem for Line Integrals
16.4	Green's Theorem
16.5	Curl and Divergence
	FINAL EXAM 5/15

Calculus III course objectives:

Student should be able to:

- Graph in three dimensional coordinate system
- Perform the operations on vectors, find dot and cross products
- Find the equations of lines and planes
- Describe and sketch cylinders and quadric surfaces
- Sketch the plane curve with a given vector equation
- Find the derivatives and integrals of vector functions
- Find the length of the curve and curvature
- Solve problems on motion in space
- Find the domain of a function in several variables, sketch its graph
- Find the limit of the function in several variables, determine the set of points at which the function is continuous
- Find the partial derivatives of the functions
- Find an equation of the tangent plane to the given surface at the specified point
- Find the linear approximation of the function
- Use the Chain Rule to find the derivative of the function
- Find the directional derivatives and gradient vector of the function
- Find maximum and minimum values of the function
- Use Lagrange multipliers to find the maximum and minimum values of function subject to the given constraint(s)
- Evaluate double integrals, double integrals in polar coordinates
- Evaluate triple integrals, triple integrals in cylindrical and spherical coordinates
- Evaluate the integrals by making an appropriate change of variables in multiple integrals
- Sketch the vector fields
- Evaluate the line integrals
- Evaluate the line integrals by using Green's Theorem
- Find the curl and divergence of the vector field
- Find the parametric representation of the surface and its area
- Evaluate the surface integrals
- Use Stokes' Theorem to evaluate surface integrals
- Use the Divergence Theorem to evaluate surface integrals