

**COURSE SYLLABUS**

**Course Title: Calculus III**

Abbreviated Title  
As Appears on Transcript    **Calculus III**

Course Number: **DMAT 273**

Credit Hours: **3 credits [semester credit hours]**

Course Description: A third course in the differential and integral calculus for engineering and science with emphasis on computational techniques, graphical analysis, and algebraic methods. Topics include splines, barriers, Taylor's Theorem, L'Hopital's Rule, infinite sequences and series, selected topics from three dimensional calculus and geometry.

Prerequisite: Successful completion (C- or higher) of Calculus II or equivalent, or consent of instructor.

Course Workload: 3 semester credit hours • 3 student work hours per credit hour • 14 week Carnegie semester = 126 hours student course workload average

Examination Requirements: Proctored written and oral final examination must be passed at 70% or higher to earn passing grade in course. “B” and “A” grade paths have additional examinations and assignments. See <https://www.distancecalculus.com/grades/> for more information.

Course Professor: Robert R. Curtis, Ph.D. <[rcurtis@rwu.edu](mailto:rcurtis@rwu.edu)>, <[robert@distancecalculus.com](mailto:robert@distancecalculus.com)>  
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Accredited by New England Commission of Higher Education (NECHE).  
See <https://www.rwu.edu/academics/accreditation/> for more information.

E-Textbook:

*Calculus & LiveMath* by Robert R. Curtis, Ph.D., adapted from Davis/Porta/Uhl  
*Calculus&Mathematica* courseware series

Mathematical Software:    LiveMath™ Computer Algebra & Graphing System

**ADA ACCOMMODATIONS**

Roger Williams University has a continuing commitment to providing reasonable accommodations for students with documented disabilities. Students with disabilities who need accommodations in order to fully participate in this class are urged to contact Student Accessibility Services, as soon as possible, to explore

the arrangements needed to be made to assure access. Student Accessibility Services is open Monday through Friday from 8:00AM to 5:00PM Eastern Time; Email: [sas@rwu.edu](mailto:sas@rwu.edu) or Voice: 401-254-3841.

For more information about SAS, visit

<https://www.rwu.edu/undergraduate/academics/student-academic-success/student-accessibility-services-sas>

## **COURSE RULES**

### **Academic Honesty**

Academic Dishonesty in a Distance course includes copying or relying upon another person's work. Working with other students is good and encouraged, but the work you submit for this course must be genuinely your own work. Private tutors are allowed, but you must notify the instructor that you have obtained a private tutor to aid in your studies. Any documented instance of Academic Dishonesty will be grounds for immediate failure in this course.

### **Final (and Other) Examinations**

A written and oral proctored final exam will occur at the student's location over video with the course professor; The student must score 70% or higher on this final exam to be eligible to earn a passing grade in the course.

### **Communication**

Communication is the key to success in a Distance course. It is the student's responsibility to keep good communication channels with the instructors during the course; failure to participate in the course does not constitute "dropping" the course (Withdrawal from the course must be requested in writing to the instructors before the completion date deadline)

### **Roger Williams University Policies & Procedures**

Roger Williams University has Policies & Procedures that all students must follow, including the Roger Williams University Student Handbook. Student must agree to follow all stated rules governing student conduct listed on the Roger Williams University website, and at the [Roger Williams University Course Catalog](#)

### **Course Completion 1 Year Rule**

All Distance Calculus students are afforded 1 Year to finish their course from the Date of Enrollment. Students will be placed in the Academic Semester based upon their Date of Enrollment for academic records purposes. If a student does not finish the course, and does not request a Course Withdrawal for a W, then an "F" grade will be issued.

### **No Chatbots / AI**

Students must pledge to **not** use any Chatbot/AI at all - **period**. Student must pledge to **limit** use of search engines (Google, Bing, etc) to a minimal level. Student must pledge to not engage in dishonest disguise of any Chatbot/AI/Search Engine source of information as student's own honest academic work. Verified chatbot usage will result in an "F" course grade, and will be referred to the Roger Williams University Academic Integrity Committee.

## Learning Outcomes for DMAT 273 - Calculus III

1. To understand and compute parametric and Polar function integrals
2. To understand and compute splines and polynomial approximations
3. To understand and compute with Taylor's Theorem
4. To understand and compute with L'Hopital's Rule and using expansions to compute limits
5. To understand and compute sequences and series
6. To understand and compute convergence or divergence of sequences and series
7. To understand and compute 3D vector analysis, dot product, planes, and cross products
8. To understand and compute partial derivatives and tangent planes to a surface

## Syllabus Topics Outline for DMAT 273 - Calculus III

1. Getting Started
  - 1.1. Email and Chat
  - 1.2. Learning About the Course
  - 1.3. Required Hardware
  - 1.4. Software Fundamentals
2. Taylor's Expansion of a Function
  - 2.1 Splines and Smooth Splines
  - 2.2 Points of Contact
  - 2.3 Application: Landing an Airplane
  - 2.4 Taylor Expansion
  - 2.5 Recognizing Familiar Expansions
  - 2.6 Using Expansions for Approximations
  - 2.7 Derivatives and Integrals of Expansions
  - 2.8 Expansions At Other Points
  - 2.9 Newton's Method
  - 2.10 Calculating Limits: L'Hopital's Rule
3. Sequences and Series
  - 3.1 Sequences of Numbers
  - 3.2 Series of Numbers
  - 3.3 Convergence
  - 3.4 Convergence of Taylor Expansions
  - 3.5 Barriers: Radius of Convergence
  - 3.6 Shared Convergence Intervals for Derivatives and Integrals of Functions
  - 3.7 Applications: Drug Dosing
4. Power Series
  - 4.1 Basic Definition
  - 4.2 Convergence Intervals of Power Series
  - 4.3 Ratio Test and Other Convergence Tests
  - 4.4 Finding Series Convergence Values via Power and Taylor Series
5. Polar Coordinates

- 5.1 Basic Graphing
  - 5.2 Recognizable Curves
  - 5.3 Differentiation and Integration in Polar Coordinates
6. Vector Analysis
- 6.1 Vector Arithmetic
  - 6.2 Dot Product, Cross Product
  - 6.3 Planes
  - 6.4 Partial Derivatives
  - 6.5 Tangent Planes