DISTANCE CALCULUS @ RWU ROGER WILLIAMS UNIVERSITY

COURSE SYLLABUS

Course Title: **Computational Finite Mathematics**

Abbreviated Title As Appears on Transcript: `Comp Finite Math`

Course Number: DMAT 145

Credit Hours: 3 credits [semester credit hours]

Course Description: A single course on finite mathematics for business majors. Topics include linear equations, matrices, linear programming including geometrical and simplex methods, optimization, mathematics of finance, sets and counting, probability, markov chains, and game theory.

Prerequisite: Successful completion of 3 years high school mathematics (C- or higher) or instructor consent.

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>, <robert@distancecalculus.com>
Roger Williams University, Extension School, 1 Empire Plaza, Providence, RI, USA 02903.
Roger Williams University, 1 Old Ferry Road, Bristol, RI 02809.
Accredited by New England Commission of Higher Education (NECHE).
See https://www.rwu.edu/academics/accreditation/ for more information.

E-Textbook:

Finite Math & LiveMath by Robert R. Curtis, Ph.D.
Applied Finite Mathematics by Rupinder Sekhon (Connexions)

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 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 145 - Computational Finite Mathematics

1. To identify, manipulate, and understand the core concept of functions
2. To understand and compute the key components of linear equations
3. To understand and compute matrix algebra and systems of linear equations
4. To understand and compute the concept of linear programming, and various methods of analysis
5. To study topics in Mathematics of Finance
6. To understand and compute set notation, analysis, and counting
7. To understand and compute the core topics of Probability and Sampling
8. To understand and compute with the Conditional Probaiblity formula
9. To understand and compute Markov Chains
10. To understand and compute the basics of Game Theory

Syllabus Topics Outline for DMAT 145 - Computational Finite Mathematics

1. Getting Started
   - 1.1. Email and Chat
   - 1.2. Learning About the Course
   - 1.3 Required Hardware
   - 1.4. Software Fundamentals

2. The Big Picture
   - 2.1. Solving (easy) equations in 1 variable.
   - 2.2. What if you can't solve for x?
   - 2.3. Finding solutions numerically
   - 2.4. Finding solutions graphically
   - 2.5. Solving equations of more than 1 variable

3. Functions
   - 3.1. Function notation
   - 3.2. Data sets
   - 3.3. Graphing functions
   - 3.4. Data sets and smooth curves
   - 3.5. Domain and Range
   - 3.6. Algebraic combinations of functions

4. Linear Functions
   - 4.1. Algebraic definition
   - 4.2. Slope
   - 4.3. Graphing linear functions by hand
   - 4.4. Properties of linear functions
   - 4.5. Linear data sets
   - 4.6. Applications

5. Matrices
   - 5.1. Connection to systems of linear equations
   - 5.2. Matrix operations
   - 5.3. Solutions of systems of linear equations

- 5.4. Matrix Inverses
- 5.5. Row Operations
- 5.6. Applications to Cryptography
- 5.7. Leontief Models

6. Linear Programming
   - 6.1. Systems of Linear Inequalities
   - 6.2. Feasibility
   - 6.3. Minimization and Maximization
   - 6.4. Geometry of Linear Programming
   - 6.5. Simplex Method

7. Mathematics of Finance
   - 7.1. Simple and Compound Interest
   - 7.2. Present Value
   - 7.3. Classification
   - 7.4. Applications

8. Sets and Counting
   - 8.1. Definitions
   - 8.2. Tree Diagrams
   - 8.3. Permutations

9. Probability
   - 9.1. Sampling and Probability
   - 9.2. Independence
   - 9.3. Tree Diagrams and Combinations
   - 9.4. Conditional Probability
   - 9.5. Binomial Probability
   - 9.6. Markov Chains
   - 9.7. Game Theory