

## ESC103F Engineering Mathematics and Computation: Course Schedule, Fall 2022

Tutorial 0: Sept. 8/9

Unit 1: Review of Vectors (Sept. 12)

Unit 2: Multiplying Vectors using Dot Product (Sept. 13/14)

Tutorial 1: Sept. 15/16

Unit 3: Projecting one Vector on Another (Sept. 19)

Unit 4: Multiplying Vectors using Cross Product (Sept. 20/21)

Tutorial 2: Sept. 22/23

Unit 5: Lines and Planes in 3-D (Sept. 26)

Unit 6: Solving Linear Equations using Row Picture and Column Picture (Sept. 27/28)

Tutorial 3: Sept. 29/30

Unit 7: Working with Matrices (Oct. 3)

Unit 8: Independence, Dependence and Column Space (Oct. 4/5)

Tutorial 4: Oct. 6/7

Thanksgiving: Oct. 10

Unit 9: Matrix Multiplication (Oct. 11/12)

Tutorial 5: Oct. 13/14

Unit 10: Factoring Matrix A into C times R (Oct. 17)

Unit 11: Solving Linear Equations using Elimination (Oct. 18/19)

Tutorial 6: Oct. 20/21

Unit 12: Elimination Matrices (Oct. 24)

Unit 13: Finding Matrix R to Solve  $A\vec{x} = \vec{0}$  (Oct. 25/26)

Tutorial 7: Oct. 27/28

Term test: Oct. 31 (9-11am)

Unit 13 cont'd: Finding Matrix R to Solve  $A\vec{x} = \vec{0}$  (Oct. 31)

**Unit 14: Solving  $A\vec{x} = \vec{b}$  using Gaussian Elimination (Nov. 1/2)**

**Computer Lab 1: Nov. 3/4**

**Reading Week: Nov. 7-11**

**Unit 15: Connecting Rank and the Shape of a Matrix (Nov. 14)**

**Unit 16: Solving the Least Squares Problem (Nov. 15/16)**

**Computer Lab 2: Nov. 17/18**

**Unit 17: Numerical Solutions to First Order Differential Equations (Nov. 21)**

**Unit 18: Higher Order Systems (Nov. 22/23)**

**Computer Lab 3: Nov. 24/25**

**Unit 19: Boundary Value Problems (Nov. 28)**

**Unit 20: Inverse Matrices (Nov. 29/30)**

**MATLAB test: Dec. 1/2**

**Unit 21: Finding the Inverse using Gaussian Elimination (Dec. 5)**

**Unit 22: An Important Theorem and a Good Segue into MAT185S (Dec. 6/7)**

**Final exam: Date to be determined**