CVEN 302-300 Course Calendar

The following table presents a tentative course calendar for **Summer 2018**. In the Reading Assignment column, "M" stands for the Matlab programming custom book by Chapman and "C" is the numerical methods book by Chapra.

Week	Date	Topics	Lec #	Reading Assignment
1	5/29-6/1	• Course Administration, Introduction, and Introduction to Matlab	1	M: Ch 1
		• Matlab Basics: Data Types and Arrays, Input / Output, Built-in Functions, M-Files, and Plotting	2	M: Ch2-Ch3
		• Programming 1: Logical Operators, Logical Functions, the IF-block, and Plot Customization	4	M: Ch 4
		• Lab 0: Introduction to Matlab		
2	6/4-8	• Programming 2: the WHILE-block, the FOR-block, and Factorization	5	M: Ch 5
		• User-Defined Functions, Iteration, and Debugging Strategies	7	M: Ch 6
		• Function Arguments, Modularity, and Program Generalization	8	M: Ch 7
		• Program Reliability, Error Checking, and Code Optimization	10	C: Ch 1- Ch 3
		• Lab 1: Analysis of Historical Gas Price Data		
3	6/11-15	• Error and the Taylor-Series Expansion	11	C: Ch 4
		• Root Finding: Bracketing Methods	13	C: Ch 5
		• Root Finding: Open Methods	14	C: Ch 6
		• Lab 2: Random Number Generation and Particle Diffusion		
4	6/18-22	• Matrices: Introduction to Matrix Algebra	16	C: Ch 8
		• Matrices: Naïve Gauss Elimination	17	C: 9.1-9.2
		• Matrices: Gauss Elimination and Pivoting	19	C: 9.3-9.5
		• **Exam 1: Introduction to Programming and Numerical Methods, Root Finding**		
5	6/25-29	• Matrices: Inverse and Stability	20	C: Ch 11
		• Regression: Linear Least-Squares Regression	22	C: 14.1-14.2
		• Regression: Function Linearization	23	C: 14.3-14.5
		• Lab 3: Analysis of Wave Data Using Root-Finding Methods		
6	7/2-6	• Lab 4: Analysis of a Statically Determinant Truss		
7	7/9-13	• Modeling: Goodness-of-Fit Measures	25	C: 15.1-15.2
		• Interpolation: Lagrange Interpolating Polynomial	26	C: 17.1, 17.3
		• Calculus: Numerical Integration	28	C: 19.1-19.6
		• Lab 5: Curve Fitting for Stage-Discharge		
8	7/16-20	• Calculus: Numerical Differentiation	29	C: 21.1-21.4
		• IVP: Euler's Method	31	C: 22.1-22.3
		• IVP: Runge-Kutta Methods	32	C: 22.4
		• **Exam 2: Matrices, Regression, Interpolation, Numerical Calculus**		
9	7/23-27	• IVP: Systems of ODEs	34	C: 22.5-22.6
		• BVP: Shooting Method and Finite Difference	35	C: Ch 24
		• Eigenvalues: General Properties	37	Handout 1
		• Lab 6: Earthquake Vibrations in a Multistory Building		
10	7/30-8/3	• Eigenvalues: As Boundary Value Problems	38	C: Ch 13
		• PDE: Combining IVP and BVP Concepts	39	Handout 2
		• Course Review	41	
		• Lab 7: Eigenvalue Analysis of Shear Building Models		
11	8/7	• **Final Exam: Comprehensive**		