Week	Monday	Wednesday	Friday
		19-Aug	21-Aug
1		Syllabus + Modeling Experiment	Differential Equations and Modeling
	24-Aug	26-Aug	28-Aug
2	Definitions and Terminology	Separation of Variables, EUT	Slope Field + Phase Line
	31-Aug	2-Sep	4-Sep
3	Using DFIELD + Euler's Method	Integrating Factor	Mixing Problem + **Take-home Quiz 1**
	7-Sep	9-Sep	11-Sep
4	RC-circuit + Using ODE45	Bifurcation	Drawing a Bifurcation Diagram
	14-Sep	16-Sep	18-Sep
5	**Project 1 (The Spruce Budworm)**	**Project 1 Contd. (Hysteresis)**	System of First Order ODEs + **Take-home Quiz 2**
	21-Sep	23-Sep	25-Sep
6	Phase Plane and Nullcline	Lotka-Volterra Model (Basic and Modified) + Using PPLANE	Linear Systems - Matrix basics, The Linearity Principle
	28-Sep	30-Sep	2-Oct
7	Eigenvalue and Eigenvectors	Straight Line Solutions - Two Distinct Real Eigenvalues	Complex Eigenvalues
	5-Oct	7-Oct	9-Oct
8	Trace-Determinant Plane - Degenerate and Defective Cases + **Take-home Quiz 3**	Fall Break	Bifurcation in 2D
	12-Oct	14-Oct	16-Oct
9	**Project 2 (Higher Dim)**	**Project 2 (Higher Dim)**	Second Order Linear ODEs, Harmonic Oscillators
	19-Oct	21-Oct	23-Oct
10	Method of Undetermined Coefficients	Forced Harmonic Oscillation, Resonance	**Project 3 (Double Mass-Spring) + Take-home Quiz 4**
	26-Oct	28-Oct	30-Oct
11	Multivariable Calculus Basics - Tangent Plane and Jacobian	Equilibrium Point Analysis	**Project 4 (Nonlinear Pendulum)**
12	SIR Disease Models	**Project 5 (An approximate SIR model of COVID-19)**	**Project 5 contd.**
	9-Nov	11-Nov	13-Nov
13	Almost Linear Systems	Poincare-Bendixson Theorem and Hopf Bifurcation	**Project 6 (Glycolitic Oscillation)**
	16-Nov	18-Nov	20-Nov
14	Finite Discrete Methods	Discrete Logistic Map - Bifurcation and Chaos	**Take-home Quiz 5**
	23-Nov		
15	Lorenz Map and Chaos	Review	