

Methods of Applied Mathematics

Spring Curriculum

Week	Seminar	Non-Linear Dynamics	Discrete Mathematical Biology	Computer Modeling
1	Seminar <i>Life's Other Secret</i> , by Stewart Preface-Ch 3	Stability and Bifurcations Strogatz 3.0-3.3	Dynamic Modeling Allman 1.1-1.2	NetLogo Lab: Introduction to NetLogo
		Pitch Fork Bifurcations Strogatz 3.4-3.5	Discrete Non-Linear Models Allman 1.3-1.5	
2	Seminar <i>Life's Other Secret</i> , by Stewart Ch 4-7	Catastrophes Strogatz 3.6-3.7	Discrete Linear Systems Allman 2.1.2.2	NetLogo Lab: Writing Procedures in NetLogo – search for the top
		Flows on a Circle Strogatz 4.0-4.2	Eigenvectors and Eigenvalues Allman 2.3-2.4	
3	Seminar <i>Life's Other Secret</i> , by Stewart Ch 8,10-12	Non Uniform Oscillator Strogatz 4.3-4.5	Modeling Molecular Evolution Allman 4.1-4.2	NetLogo Lab: Programming with Patches Cellular Automata and the game of life.
		Phase Portrait Review Strogatz 6.0-6.5	Base Substitutions Allman 4.3-4.4	
4	Seminar <i>Blind Watchmaker</i> , by Dawkins Ch 1-4	Index Theory Strogatz 6.6-6.8	Phylogenetic Distance Allman 4.5 Workshop	NetLogo Lab: Programming with Breeds Predator-Prey models
		Test on Ch 3 and 4	Test on Ch 1,2 and 4	
5	Seminar <i>Blind Watchmaker</i> , by Dawkins Ch 5-8	Limit Cycles Strogatz 7.0-7.2	Phylogenetic Trees Allman 5.1-5.2	NetLogo Lab: Models of Evolution
		Lienard Systems Strogatz 7.3-7.4	Tree Construction Allman 5.3-5.4	
6	Seminar <i>Blind Watchmaker</i> , by Dawkins Ch 9-11	Oscillators Strogatz 7.5-7.6	Genetics Allman 6.1-6.3	NetLogo Lab: Spontaneous Order and Pattern formation
		Bifurcations Revisited Strogatz 8.0-8.1	Gene Frequency Allman 6.4	
7	Seminar <i>The Garden in the Machine</i> by Emmeche Preface and Ch 1-3	Hopf Bifurcations Strogatz 8.2-8.3	Workshop	NetLogo Lab: Prisoners Dilema:
		Global Bifurcations of Cycles Strogatz 8.4-8.7	Evolutionary Game Theory	
8	Seminar <i>he Garden in the Machine</i> by Emmeche Ch 4-7	Lorenz Equations Strogatz 9.0-9.2	Evolutionary Game Theory	NetLogo Lab: Hubnet Activity Evolution of Cooperation
		Strange Attractors Strogatz 9.3-9.4	Evolutionary Game Theory	
9	Seminar TBA	TBA	TBA	TBA
		Cumulative Final Exam	Cumulative Final Exam	
10	Presentations	Presentations	Presentations	Presentations