

	Topic	Details/Activities	Reading or homework due
Aug 26	Introduction	Complex systems, self-organization, non-linear dynamics, and networks; individual-based simulations – what is all this Netlogo install, the syllabus Experiment with Conway's 'Game of life'	Wikipedia article on 'On Growth and Form' by D'Arcy Thompson
Aug 28	Introduction	Methods, measures, and controversy about the 'complex systems' approach How do models help in science What happened in the Netlogo models you tried?	Ball 'Hits, Misses and Close Calls: An Image Essay on Pattern Formation in On Growth and Form' Install Netlogo on your computer and run three of the library models to see what other people have used it for Ball news article
Sep 2	Review of relevant fields	Questions askedrea Zj...@F of complex systems/networks in different fields What is your research, and do networks/complex systems play a role in it? Start planning for Netlogo exercise	Bornholdt 'Less is more in modeling large genetic networks' Read Netlogo Manual and work through the tutorial: pp21-64
Sep 4	Social insects as example	Complex collective behavior in insects from simple individual rules; what are the questions, and what methods are used to solve them; results and limitations of these Discuss your model plans	Propose Netlogo model or modification
Sep 9	Animal social networks	Empirical studies on animal networks, goals and outcomes Start programming Netlogo model	TBD
Sep 11	Animal social networks	Discussion led by [redacted]	Blonder et al. on network dynamics Clarkson on network terminology
Sep 16	Human social networks	Guest lecture by sociologist Ron Breiger	TBD
Sep 18	No class	You should be working on your Netlogo model	TBD
Sep 23	Human social networks	Discussion led by [redacted]	TBD
Sep 25	Human organizations	Guest lecture by economist Ken Koput	TBD
Sep 30	Human organizations	Discussion led by [redacted]	TBD
Oct 2	Social sciences and	Differences in approaches, data, questions; how can we learn from	TBD

	Natural sciences	each other? (Discussion) What is R, how to install it	
Oct 7	Individual-based models vs network analysis	Progress on Netlogo model How does your research relate to networks? What could 'network analysis' do for you? Plan on analysis for R exercise Benefits and limitations	Try to install R on your computer; come with questions Be prepared to report on your progress with the Netlogo model
Oct 9	TBD	Help with R analysis	Watch R tutorial videos that suits you
Oct 14	Complex systems	(adaptive or adapted, evolution and complexity, evolved vs. engineered systems)	TBD
Oct 16	<i>No class</i>	You are working on your Netlogo model and on the network analysis in R	TBD
Oct 21	Engineered complex systems	(computer networks, collective robotics)	TBD
Oct 23	Engineered complex systems	Partial solar eclipse!	TBD
Oct 28	Individual-based models	Show off your model to class Discuss what you learned from individual-based modeling	Final Netlogo model due
Oct 30	Ecosystems as networks	Wikipedia; what do you plan to write about?	Check Wikipedia entries on topics of interest relating to class material
Nov 4	Food webs	Guest lecture by ecologist Neo Martinez	TBD
Nov 6	Pollination and other species interaction networks	Discussion led by [redacted]	TBD Who's who files due
Nov 13	Networks in ecology	Discussion led by [redacted]	TBD
Nov 18	Systems biology	Guest lecture by molecular biologist Ryan Gutenkunst	TBD
Nov 20	<i>No class</i>	Further work on R analysis	TBD
Nov 25	Systems biology	Discussion led by [redacted]	TBD
Nov 27	TBD	Discussion led by [redacted]	Wiki article due
Dec 2	TBD	Discussion led by [redacted]	TBD
Dec 4	Conclusions	What did you do and find in your R analysis? Will you use indiv.-based simulations, network analysis, or other complex systems science in the future, and how?	Final R analysis write-up due
Dec 9	Conclusions	(what network analysis method/measure for which question?)	TBD
Dec 11	<i>No class</i>	Finish your Wiki article!	Revised Wiki article due