IP Schedule: Fall 2015

Day	Date	Topic	Readings	Notes & Assignments
T	25 Aug	Introduction; term paper discussion; "3 questions" exercise	All readings and materials for this class can be found under the Files tab in Canvas (for amusement; read if you want to): Perry (1963) "Examsmanship and the liberal arts"	Links for the IP Synthesis/Review paper: Peer review Instructions for your paper TREE instructions to authors Annotate anonymously
Th	27 Aug	Trends papers What makes a study integrative or synthetic? What makes a study original and creative?	Read at least one: He et al. (2010) Reddy & O'Neil (2009) Bro-Jorgensen (2010) Pelejero et al. (2010) extra tidbit: a freeware add-in that will help you visualize relevant citation maps: http://cmap.ihmc.us/	Other Trends papers you might want to look at for examples/ideas: Brodie et al. (1995) Sih et al. (1998) Dufty et al. (2002) Bininda-Emonds (2004) Rickleffs (2007) de Queiroz & Gatesy (2007)
Note: Weekend Field coming up; trip to Seahorse Key Laboratory or Whitney Marine Lab -- *Independent projects* Dates **TBA**				
Disease Dynamics (Pulliam)		*Conceptualizing and building models*		

T	1 Sept	Dynamical Fever - Introduction to Models and Model Worlds		Download and install R and R studio
Th	3 Sept	Models of Biological Systems, and Formulating Research Questions		
T	8 Sept	Intro to case study (Ebola in West Africa), and Creating a model world	Bellan et al 2014	***Talk to your advisor about potential paper topics***
Th	10 Sept	Infectious Disease Dynamics and Ebola case study		
T	15 Sept	Communicating about Model Worlds		
Th	17 Sept	Alternative model structures		
T	22 Sept	NSF pre-doctoral fellowships IP paper topics-- review/discussion of proposed topics	Review Instructions for NSF GRFs You can look at successful application in the Files subdirectory NSF GRFs	***Topic paragraph of IP papers due (bring a hard copy to class & submit via Assignments)*** If you are looking for funding, these might be useful (the second link is a set of old source put together by UF graduate students):

				FYI BGSA: awards and funding Other
Sigma Xi deadline is Oct 15 (and March 15) annually; NSF GRF deadline is in early Nov (4-8, depending on field; Nov 8 for Life Sciences).				
Inference (Ponciano)			*Inference and statistical issues*	
Th	24 Sep	*Introductory lecture*		
T	29 Sep	*Guided discussion (Q/A session) of homework and of reading*	Ellison and Dennis (2010) "Paths to statistical fluency for ecologists" Dennis (2001) "Statistics and the Scientific method in Ecology"	Homework related to readings and introductory lecture (Fisher's "tea lady" experiment!).
Th	1 Oct	Guided discussion of D. Strong's paper	Strong et al (1999) "Model Selection for a subterranean trophic cascade: Root-feeding caterpillars and entomopathogenic Nematodes"	HW 1: Questions 1-3
T	6 Oct	Continue discussion from Tuesday		HW 1: Questions 4
Th	8 Oct	Guided discussion: Have Ecologists/experimentalists learned from Hurlbert's paper written 30 years ago? What	Hurlbert (1984) Underwood (1991)	Open ended questions about Hurlbert (1984) and Underwood (1991)

		does "pseudoreplication" means for Ecologists nowadays? Is there still discussion around this term?		
T	13 Oct	Continue discussion		
Th	15 Oct	Discussion: Paper Abstracts		***Abstract of IP papers due (bring a hard copy to class & submit via Assignments)***
Neutral theories (Baer)			*Neutral models in evolution and other fields: the null to which we compare our results*	
T	20 Oct	Adaptation (or Not)	Nitecki and Hoffman 1993; Gould, S. J. and R. C. Lewontin. 1979. *Proc. Royal Soc. Lond. B*. 205: 581-598. Queller, D. 1995. *Quart. Rev. Biol*. 70: 485-489.	G&L provide a classic introduction to the potential pitfalls of the uncritical assumption that any biological feature is an adaptation. Queller provides a pointed, and hilarious, rebuttal from the standpoint of what used to be called "sociobiology"
Th	22 Oct	Neutral theories in Complex Systems	Maruvka et al. 2011. *PLoS One* 6: e26480; Simon H. 1955. *Biometrika* 42: 425-440	Maruvka et al. and Simon provide a series of examples from a variety of disciplines in which purely neutral processes (i.e., no underlying directionality) can result in observed distributions that are often interpreted has having

				resulted from a directed process (e.g., human talent or natural selection). The Simon paper is a foundational study from a 20th century polymath.
T	27 Oct	"The" Neutral Theory, &c	CFB notes Kimura, M. 1968. *Nature* 217: 624-626. Hahn, M. 2008. *Evolution* 62:255-265	Kimura '68 lays out "the" Neutral Theory of molecular evolution, from which all other "neutral theories" in biology take their inspiration. Hahn provides an alternative perspective on the 40th anniversary year
Th	29 Oct	Biochemistry (and Genetics), I	Kacser, H. and J. A. Burns. 1981. *Genetics* 97: 639-666; Kacser and Burne 1981. Correction	A classic paper in which the property of genetic dominance is argued to be a result of (more or less) undirected biochemical kinetics rather than the outcome of adaptive evolution
T	3 Nov	(Evolutionary) Biochemistry and Cell Biology, II	Lynch, M. 2013. *Proc. Natl. Acad. Sci. USA* 110: E2821-E2828	Lynch argues that the multimeric structure of proteins, and the phylogenetic distribution thereof, is the expected outcome of an evolutionarily neutral process
Th	5 Nov	Neutral Models in Ecology	Leigh, E. G., Jr. 2007. *J .Evol. Biol*. 20: 2075–2091	***IP papers Due Sunday Nov 8, at midnight (submit via Assignments)*** An insightful and readable critique

				of Hubbell's Neutral Theory of Community Ecology. Gotta love a theoretician named "Egbert"
T	10 Nov	Reviewing scientific papers (and grants)		
Evolutionary aspects of Cancer (St. Mary)			*The independence of cells in a multicellular context*	
Th	12 Nov	Brief introduction Discussion of required readings	Primary: MaynardSmith_Szathmary_Ch9 MaynardSmith_Szathmary_Ch10	
T	17 Nov	Guest lecture by David Oppenheimer Discussion	Primary: Leigh 1999	
Th	19 Nov		Primary: Meyer et al 2012 Woods et al 2006 Supplementary: Blount et al 2008	
T	24 Nov	Guest lecture In class group projects	Primary: Parker et al 2013 Sassi et al 2012 Supplementary - Information about	Readings and exercises for group projects: Tamura et al 2011 Lab 3 Prelab: Introduction to the NCBI

			mutations in cancer genomes Alexandrov et al. 2013	Lab 3: Sequence comparison and mutations
Th	26 Nov	Thanksgiving	NO CLASS	
T	1 Dec	Group projects continued		***Reviews of IP papers due by midnight (submit under Assignments)***
Th	3 Dec	Project presentations		
T	8 Dec	The peer review process: what we've learned. Discussion: Has your fitness increased (from IP)? Hou et al 2010	none (we'll also do teaching evaluations)	***Final revisions of IP papers due 17 Dec by midnight (submit under Assignments)***