Course: Global Change Biology

In the year 2000, atmospheric chemest Paul Crutzen suggested that humans had fundamentally changed Earth systems so much that is was time to declare a new Geological epoch: the Anthropocene. While this proposal has yet to be formally accepted, the impact of the statement has given rise to a whole new scientific sub-discipline seeking to understand the impact of these massive Earth systems changes on living organisms: Global Change Biology. Using primary scientific literature as a guide, in this course we will 1] explore the two major drivers of global change, global climate change from anthropogeneic greenhouse gas emisions and land used change and 2] investigate the impacts and feedbacks of the changes on the organisms around us.

This course will consist of two, 60 minutes meetings per week. *Prerequisites:* Introduction to Life Science or permission of instructor.

Week	Lecture	Reading
Part I: What's Changing		
Week 1	1] Introduction to Climate Change 2] A tale of climates past	Dobrowski 2012, IPCC Crowley and North 1988
Week 2	3]Climate future 4] Feedbacks	IPCC, Williams and Jackson 2007 Cox 2000, Sabine 2004
Week 3	5]Introduction to Land Use Change 6] Urbanization: Scope and Scale	Foley 2005 Schneider 2009, Seto 2010
Week 4	7] Protected areas 8] Interacting drivers	Naughton-Treves 2005, Joppa 2009 Mantyka-Pringle 2012,Hof 2011
Part II: Biological Impacts		
Week 5	9] Thermal Tolerance and Stress 10] Plant Physiology	Kaliq 2014, Deutsch 2008 Korner 2006, Pooter and Navas 2002
Week 6	11] Phenology 12] Dispersal and Migration	Cleland 2012 Schloss 2012,Colwell 2008
Week 7	13] Genetic changes 14] Fragmentation and Bottlenecking	Carrol 2007 Jump 2006, Riley 2006
Week 8	15] Extinction 16] Patterns of community change 1	Thomas 2004 Olden 2001, Clavel 2011
Week 9	17]Invasive speices 18] Pests and Pathogens	Liu 2017, Sax 2008 Raffa 2008, Harvell et al 2002
Week 10	19] Eutrofication 20] Ocean Acidification	Diaz 2008, Schindler 2008 Anthony2008, Kroeker 2013
Week 11	21] Novel Ecosystems 22] Urban Ecology	Hobbs 2009 Arnfield 2003, Grimm 2008
Part III: Management		
Week 12	23]Carbon Farming, Ecological Restoration 24] Assisting and Assisting and assisted migration	Lindenmeyer2012, Harris 2013 Nunez 2013, Willis 2009

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