BIOL SCI 101-6: First Year Seminar: Understanding Evolution from Seaweed to Salad
Fall 2015
Syllabus

Lectures:	TuTh 3:30 – 4:50 Elder Hall 030 (Seminar Room)
Instructor:	Norman Wickett Hogan 6-120B (sixth floor, room 120B) Office hours: TuTh 1:00 – 2:00 or (gladly) by appointment (email) Phone (847) 467-2769 (Northwestern) or (847) 835-8280 (Botanic Garden) **Preferred contact – email nwickett@northwestern.edu**
Required Books:	Jerry A. Coyne *Why Evolution is True* (Penquin) Rob Dunn *Every Living Thing* (Harper)
Other Material:	Primary scientific literature and other supplemental readings will be distributed on Canvas

COURSE DESCRIPTION

This course will use examples from the plant and animal kingdoms to develop a better understanding of evolution. Topics will range from the origin of photosynthetic life and the biodiversity of marine plants (seaweed), to the colonization of land by plants and the subsequent evolution of economically important crops (salad), to the origin and evolution of major animal groups (e.g., whales, dinosaurs). Emphasis will be on the development of ***critical reading and interpretation***, and ***writing*** for the sciences. For the most part, your success in this class is determined by your own curiosity. By demonstrating that you have thought about the readings (rather than simply reading them), you will be able to contribute more to class discussions, which will lead to a better understanding of the principles of evolution, and more generally, of science. Ultimately this will help you with your assignments and papers.

By the end of this course, you should:

- Be able to discuss in general terms how evolution shaped the diversity of plants and animals that occur on Earth today.
- Be able to identify some of the major groups of plants and animals that occur at present, and have a general idea of what distinguishes them from one another.
- Be able to explain, with an appropriate level of detail, some of the mechanisms by which evolution occurs.
- **Critically read a primary scientific paper and identify its hypotheses, methods, and relevant results*, at a level appropriate for a first-year student.***
- **Write a paper that synthesizes multiple sources of evidence to explain a topic in organismal diversity and evolution.**

POLICIES

While I do not take attendance in class, you will be far more successful if you attend regularly. Additionally, you will be given an overall participation grade based on your contributions to class discussions; it's hard to participate if you are not in the room!

Academic Integrity

All students need to familiarize themselves with the Academic Integrity policies for Undergraduates at Northwestern (www.northwestern.edu/provost/policies/academic-integrity/) and follow them in this course. If there is any evidence of a violation of this policy, it is the Instructor's responsibility **to forward the issue to the Dean's office**.

Requests for Accommodations through AccessibleNU

Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (accessiblenu@northwestern.edu; 847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

EVALUATION

You will be evaluated in this course based on three areas: participation, a presentation, and three written assignments (papers). The breakdown for your final grade is as follows:

Point Distribution		
Participation	5 pts per class	10%
Presentation	done in pairs	25%
Papers	3 (10, 20, 35 %)	65%

Grade Distribution					
93 - 100	**A**	90 - 92	**A-**		
87 - 89	**B+**	83 - 86	**B**	80 - 82	**B-**
77 - 79	**C+**	73 - 76	**C**	70 - 72	**C-**
60 - 69	**D**	< 60	**F**		

No extra credit will be given in this class.

CLASS SCHEDULE

Date	Topic	Reading
Tu Sep. 22	First Day of Class	Introduction Course objectives and expectations (Syllabus)
Th Sep. 24	Introduction to evolution, and the controversy surrounding its teaching Introduction to reading primary scientific papers	*Why Evolution is True*, pages xi-19 *What Evolution Is,* Preface & Chapter 1 (Canvas) *The Greatest Show on Earth*, Chapter 1 (Canvas)
Tu Sep. 29	The evidence for evolution Part I (of many): Fossils and phylogenies	*Why Evolution is True*, pages 20-54 **Paper:** Chiari *et al.* (2012)

Th Oct. 1	How to construct evolutionary trees	**Paper:** Baldauf (2003) **Exercise:** In-class, not for credit
Tu Oct. 6	Vestigial organs, and more evidence for evolution How to use Web of Science	*Why Evolution is True*, pages 55-85 *The Wild Life of our Bodies* (Canvas) **Paper:** Sisu *et al.* (2014)
Th Oct. 8	Biogeography: What the distribution of species tells us about evolution	*Why Evolution is True*, pages 86-110 *What Evolution Is*, Chapter 2 (Canvas) **Paper:** Austin *et al.* (2010)
Tu Oct. 13	Natural and sexual selection	*Why Evolution is True*, pages 111-167 **Paper:** Bromham *et al.* (2013)
Th Oct. 15	The origin of species: How do species arise?	*Why Evolution is True*, pages 168-169 **Paper:** Rieseberg & Blackman (2010)
Tu Oct. 20	Human Evolution	*Why Evolution is True*, pages 190-233 **Paper:** Prüfer *et al.* (2014)
Th Oct. 22	Presentation 1: Coelacanth, a living fossil Presentation 2: The Mammoth genome	**Paper (group 1):** TBA **Paper (group 2):** TBA
Tu Oct. 27	Presentation 3: The origin of land plants Presentation 4: The first flowering plants	**Paper (group 3):** TBA **Paper (group 4):** TBA
Th Oct. 29	Presentation 5: Dinoflagellates Presentation 6: Parasitic plants	**Paper (group 5):** TBA **Paper (group 6):** TBA
Tu Nov. 3	Presentation 7: Carnivorous plants	**Paper (group 7):** TBA
Th Nov. 5	The discovery and naming of species	*Every Living Thing*, Chapters 1-3 **Paper:** Kress *et al.* (2015)
Tu Nov. 10	Cataloguing and classifying life	*Every Living Thing*, Chapters 4-6 **Paper:** Mora *et al.* (2011)
Th Nov. 12	The discovery and origin of new forms of life	*Every Living Thing*, Chapters 7-10 **Paper:** Peterson *et al.* (2011)
Tu Nov. 17	Life in space: Astrobiology	*Every Living Thing*, Chapters 11-14
Th Nov. 26	**NO CLASS** - Thanksgiving	
Tu Dec. 1	**NO CLASS** – WCAS Reading Period	
Th Dec. 3	**NO CLASS** – WCAS Reading Period	
Tu Dec. 8	**NO CLASS** – Final Exam Period	
Th Dec. 10	**NO CLASS** – Final Exam Period	

ASSIGNMENT SCHEDULE

Assignment	Date	Objective
Paper 1	Tu Oct. 6	**Assigned** (see Canvas for details)
	Tu Oct. 13	**Due**
Paper 2 and Presentations	Tu Oct. 13	**Assigned** (see Canvas for details)
	Th Oct. 15	Use this time to find journal articles for your paper and presentation **Groups 1 and 2:** meet with Norm to go over your presentation
	Tu Oct. 20	**Due:** Paper choices and outline **Groups 3 and 4:** meet with Norm to go over your presentation
	Th Oct. 22	**Presentation:** Groups 1 and 2 **Groups 5 and 6:** meet with Norm to go over your presentation
	Tu Oct. 27	**Due:** First draft of Paper 2 **Presentation:** Groups 3 and 4 **Group 7:** meet with Norm to go over your presentation
	Th Oct. 29	**Presentation:** Groups 5 and 6
	Mo Nov. 2	Individual discussions with Norm about paper drafts
	Tu Nov. 3	**Presentation:** Group 7 Individual discussions with Norm about paper drafts
	Tu Nov. 10	**Due:** Final draft of Paper 2
Paper 3	Th Nov. 12	**Assigned** (see Canvas for details)
	Mo Nov. 16	Individual discussions with Norm about final paper
	Tu Nov. 17	Individual discussions with Norm about final paper
	Tu Dec. 8	**Due**