**Anthropology 290a Office: 308 Asbury**

**Evolution for Everyone Office hours:** 10-11TuTh, 1:30-3 W

**Professor D. La Lone** Other times by arrangement

**Fall 2011**

**Evolution for Everyone**

Evolution for Everyone is, of course, an exploration of one of the most important ideas in the history of science. Without assuming previous background in biology, we will explore what evolution is and how it works. But, in doing so, we will not box our vision and imagination within the bounds of any single academic department. Although evolution is commonly taught in biology departments as evolutionary biology, our premise is that this extraordinarily powerful framework for understanding life and behavior really belongs to everyone. By exploring interconnections across fields of knowledge, we’ll show how the evolutionary framework may lead you to find new insights on innumerable topics.

Some objectives:

Students will gain a rich understanding of evolutionary theory. In most basic terms for now, one demonstration of that understanding is the ability to discuss the key points without repeating clichés such as “survival of the fittest” or that adaptive traits are selected “for the benefit of the species.” The main points can be stated in just three or four steps, so let’s get it straight!

Students will see how vast our evidence is, and that fossils, though numerous, are only one part (and perhaps not even the most important part) of the evidence.

With solid understanding of the framework, students will then be able to appreciate how useful and powerful the evolutionary framework is across many academic disciplines. It offers a way for scholars across the curriculum to share ideas and research in creative ways.

Especially in reading David Sloan Wilson’s work, students will see how a vast range of interests may be seen in new and creative ways.

Students will see how they too can be a “genius”----as Professor Wilson puts it “it takes a great theory, not great intelligence.”

As their genius begins to awaken, students will find they can read and interpret scientific research with sophistication and confidence.

And students will have the opportunity to show their accomplishment in their writing---they may direct their work toward publication in the **EvoS Journal** (or maybe even *Behavior and Brain Sciences).*

**And** students may find insights in the research that can inspire genuine impact on their well-being and happiness.

**Required Texts:**

**David Sloan Wilson, *Evolution for Everyone***

**Mark Pallen, *The Rough Guide to Evolution***

**Robin Dunbar, Louise Barrett, and John Lycett, *Evolutionary Psychology***

These are the common readings everyone will share and discuss. Of course, there will be much more reading, ranging from current research articles to current news items. Many of the additional readings will be directly keyed to each student’s growing interests in our topics.

**Writing and Discussion**

Written work

Careful and thorough reading of source materials is critical for careful, thorough and clear writing. Clear writing is also an indicator of clear thought.

Throughout the term we will have a number of opportunities to develop carefully thought-through written commentaries and discussions.

For a start, we will have an exam exploring your understanding of how evolution works ***after*** you have listened to class discussions and read materials carefully and thoroughly. It will be important for you to show, for example, why clichés such as “survival of the fittest” and “for the benefit of the species” do **not** represent understanding of how evolution works.

Then you will have opportunities to explore and develop your thought on evolutionary perspectives in a series of essays. By the time of the final, you should be prepared to offer sophisticated commentary on what is now the hottest approach to understand and explain human behavior.

Each of these writing opportunities will contribute 100 points toward your class score.

Additional contributions toward your score will come from your class participation.

Class participation

Class participation will be a significant part of your grade. You will be expected to come to each class prepared to discuss the readings. Although the discussion is most important, participation may take more than one form. You will always be encouraged to speak, and you will have additional ways to participate, such as taking the role of discussion facilitator, bringing up questions in class, preparing written questions for discussion.

Essay 1 How Evolution Works---An Informed Account, October 3

Essay 2 Exploring a topic from an EvoS perspective, October 14

Essay 3 Evolution of Mind and Culture, November 11

Essay 4 Cooperation, November 28

Final: Evolution and human behavior

What follows is an outline of this term’s Evolution for Everyone course topics. It does not specify all the research articles that will be made available/assigned according to the interests you discover as we move forward. It does not specify guest speakers, since we are still working to accommodate many schedules. And………we’ll need to stay flexible throughout the term, so don’t panic!

**Evolution for Everyone**

**Fall 2011**

**Foundations**

*Nothing in biology makes sense except in the light of evolution.*

*Theodosius Dobzhansky*

*A curious aspect of the theory of evolution is that everybody thinks he understands it.*

*Jacques Monod*

*Although we will not assume extensive previous background in evolutionary biology, we will* need to review some groundwork to help assure we’re talking about the same things.

Week 1: Getting Started

*Science is largely a way to assure accountability for factual claims.*

*David Sloan Wilson*

*Ignorance more frequently begets confidence than does knowledge: it is those who know little, and not those who know much, who so positively assert that this or that problem will never be solved by science.*

*Charles Darwin*

What is science?

Is science just one of many equally valid “ways of knowing”?

Self-correcting and public

Theory and fact

What are hypotheses?

Testing claims through their implications

Common fallacies that may sound “fair,” but are fatally confused:

“There are two sides to every question.”

“Everyone is entitled to their own opinion, and all opinions deserve equal respect.”

“I have my truth and you have yours.”

“Knowledge is simply the current consensus of those in power.”

**Read:**

**David Sloan Wilson, Evolution for Everyone, Chapters 1 and 2**

**Dunbar et. al., Evolutionary Psychology, Chapters 1-3**

Recommended: Donald Prothero, Evolution: What the Fossils Say and Why It Matters , Chapter

1, “The Nature of Science”

Week 2: The Evolution of Evolution

Darwin didn’t discover evolution…but he did figure out the main mechanism.

**Read:**

**Pallen, The Rough Guide to Evolution, “The Evolution of Evolution” (pp. 3-14)**

Who Was Darwin?

Darwin’s life and world (and some of the myths about him)

**Read:**

**Pallen, “Darwin’s Life and Works” (pp. 15-58)**

Week 3: The Big Ideas and Evidence: How Evolution Explains

Darwin’s framework was remarkably clear and simple:

**Variation is found in all populations**

**Variations may have *consequences***

**Traits are hereditary**

And this allowed him to explain three Big Ideas:

**Species change**

**All life forms share common descent**

**Natural selection is key to understanding change (and stability)**

**Read:**

**Pallen, “Darwin’s Evolution Revolution” (pp. 59-76)**

Darwin’s evidence was extensive, and he characterized **Origin of Species** as an “outline!”

**Read:**

**Pallen, “The Evidence for Evolution” (pp. 77-103)**

Through research in many disciplines, our current knowledge of evolution has gone far beyond

what was known in Darwin’s time. Our discussion will of course expand on Darwin’s insights

on natural selection and sexual selection, but we’ll also include recent work on evolutionary

forces in addition to natural selection. For example, we’ll work from discoveries that have

revolutionized understanding of genetics, new discoveries about developmental biology and

evolution (“evo-devo”), new understandings of environmental adaptations through “niche

construction.” We will also introduce ongoing cutting-edge work that takes evolutionary

sciences beyond the “Modern Synthesis” into an “Extended Synthesis.”

Week 4: Starting to Become a Genius: Starting Professor Wilson’s ***Evolution for Everyone***

*It takes a great theory, not great intelligence…*

*David Sloan Wilson*

Growing expertise in an infinite number of subjects!

Why is selection such a big deal?

Understanding burying beetles.

Adaptation isn’t necessarily benign, but *goodness can evolve.*

Understanding psycho monkeys.

Who says it’s an adaptation? What are floppy ears for?

Dancing with ghosts, terror of what’s not even there anymore, foolish comfort with car texting

How do we know what a can opener is for?

*Why is “survival of the fittest” such a misleading phrase that you will be encouraged* ***not*** *to say it?*

*The trouble with lemmings: why should we also erase the expression “for the good of the species”? (the problem of “altruism”)*

*The impolite dining custom of cannibalism: why are adaptations not necessarily “good”?*

*Why were floppy ears advantageous and selected for? Why are “psycho monkeys” selected for?*

*Why do we stuff ourselves with foods that make us obese and threaten diabetes and heart disease?*

*Why are we afraid of high speed vertical motion (falling from cliffs) but not afraid of high speed horizontal motion (driving on freeways)?*

*If our emotions are learned, can we learn to be just as terrified of daisies as we are of snakes?*

*How can infanticide be adaptive?*

*Does success mean selfishness?*

*Are “rugged individuals” most likely to be winners?*

**Read: David Sloan Wilson, *Evolution for Everyone***, Chapters 3-10

**Essay 1: How Evolution Works---An Informed Account, October 3**

Week 5: Exploring Wonderful Questions in New Ways

What you can discover without being a specialist: pregnancy sickness and hot chilies

Why do people kill each other?

Why economic inequality is deadly

Animal personalities

Species as collections of diverse individuals

How might our personalities be shaped by genes, early development (and the other stuff on the

continuum)?

*Do animals think, act intentionally, experience emotions?*

*Do animals have a sense of fair play? What about sympathy, empathy, compassion, morality?*

**Read: Wilson, Chapters 11-15**

Week 6: Natural Selection for Beauty and Goodness

What is beauty?

Evolutionary theory of aesthetics

Good, evil, and the virtuous slime mold

*Why do humans make music?*

*Are elephants, gorillas, and bowerbirds artists?*

**Read: Wilson, Chapters 16 and 17**

Week 7: Groups All the Way Down

Some commonly misconceived concepts, with some remedies from Dr. Wilson

No, we do not have a “selfish gene” that makes us selfish!

Traits and behaviors are not selected “for the good of the species.”

Humans are not built for “rugged individualism.”

Competition is not the only game.

Groups all the way down

Note to Maggie Thatcher: there is no such thing as individuals---only societies and their nodes

Cells working together for the common good

The wisdom of the hive, decentralized intelligence

*Yet again: the question of “altruism”*

**Read: Wilson, Chapters 18, 19, 20**

**Essay 2: Exploring a topic from an EvoS Perspective ( Wilson’s chapters 11-20), October 14**

Week 8: Rethinking evolution---the central contribution of cooperation

One of the dramatic transformations in research in Evolutionary Sciences has been a major shift toward exploring the foundations of co-operation. In evolutionary biology this began with the problem of “altruism.” Altruism did not mean what it means in everyday usage, yet recent research has brought us toward exploring evolutionary foundations for sympathy, empathy, compassion, and, yes even altruism and morality.

The three C’s of human evolution

The egalitarian ape

Pointing out shared intentions, sharing points

The evolutionary power of laughter

Dance, music, visual arts, literature

*Ape Genius, the minds of non-human apes.*

**Read: Wilson, Chapters 21-24**

**Dunbar, Chapter 7**

Week 9: Language, symbolic thought, and culture

Kanzi and Alex

Thinking in groups vs. the solitary genius

The power of culture

Approaches to cultural evolution

*The question of culture in non-human animals.*

**Read: Wilson, Chapters 25-27**

**Dunbar, Chapters 8-9**

**Pallen, “Philosophy and the Arts” (pp. 238-263)**

**Essay 3: Evolution of mind and culture, November 11**

Week 10: Darwin’s Cathedral

*There is so much more to religion than belief in supernatural agents…*

*David Sloan Wilson*

Evolutionary study of religion

A video of a Wilson talk on evolution and religion:

[Evolution and Religion: Two sideshows and the main event](http://video.google.com/videoplay?docid=6517898195781116586) (video)  
Hampshire College, March 2007

**Read: Wilson, Chapters 28-30**

**Dunbar, Chapter 10**

Week 11: Evolutionary foundations of decency

Beyond the cliché of “nature red in tooth and claw,” the naturalness of competition, and “greed is good”

The naturalistic fallacy

Cooperation as a central force in evolution

Evolutionary bases of sympathy, empathy, and compassion

**Read: Wilson, Chapters 31-36**

**Dunbar, Chapter 11**

**Highly Recommended: Frans de Waal, The Age of Empathy**

**Essay Four: Cooperation, November 28**

Weeks 12 through 14: Applying Evolutionary Insights to Human Behavior

The most visible applications of the evolutionary framework in the study of human behavior have come from evolutionary psychology. Evolutionary psychology has swept through behavioral sciences dramatically (and often amusingly), so we’ll take a quick (perhaps superficial) look at evolutionary psychology and its critics.

**Read: Dunbar, Chapters 4-6**

**Pallen, “Other Sciences” (pp. 215-237)**

**Final: Evolution and Human Behavior**