



# Human Evolution

## **MSCI-361P, Human Evolution**

Department of Mathematics and Science, School of Liberal Arts and Sciences

### **Course Description:**

In this course we will investigate how evolution has shaped the human species, with a particular emphasis on the dialogue between biological and cultural evolution. We'll consider the connection between our evolutionary origins and contemporary civilization by analyzing modern art, design, and architecture in light of human evolutionary history. Throughout the semester you will develop an informed perspective for assessing the degree to which human evolutionary history exerts an influence on contemporary culture.

Upon completion, this course is worth three (3) credits.

**Meeting Time:** Tuesdays, 2:00 pm to 4:50 pm, Engineering 108

**Instructor:** Dr. Christopher Jensen  
Assistant Professor, Department of Math and Science  
<http://www.christopherxjensen.com/>  
**Office:** ARC Lower Level, Room G-49  
**Email:** [cjensen@pratt.edu](mailto:cjensen@pratt.edu)  
**Phone:** 718-636-3572, x3572 from the BK campus

**Office Hours:** Mondays 12:30 to 2:30 pm, Tuesdays 12:30 to 1:30 pm *or by appointment*

### **Course Goals:**

- To understand the process of evolution.
- To discover how paleontological and genetic information has been used to reconstruct the evolutionary history of human beings.
- To explore the prehistoric environment that shaped the evolution of human beings, and to imagine how this environment has affected the way we interact with our present environment.
- To understand the historical pattern of human migration.
- To consider why creativity evolved as a distinctly human trait.
- To understand how human social behavior, particularly cooperation, might have evolved.
- To appreciate that cultural evolution is a significant contributor to human society, and to contrast the ways in which human behavior is influenced by our biological and cultural evolution.

**Learning Objectives:** Successful completion of *Human Evolution* will allow you to...

- Describe how evolution has shaped the human species.
- Explain how scientific evidence has been used to reconstruct the process of human evolution.
- Depict the environment(s) in which human beings evolved.
- Discuss the interaction between biological and cultural evolution.
- Analyze modern art, design, and architecture in light of human evolutionary history.
- Develop an informed perspective for assessing the degree to which human evolutionary history exerts an influence on contemporary culture.
- Envision or produce a work of art, design, or architecture informed by an appreciation of human evolutionary history.

## Assessment Criteria:

Below is a summary of how you will be graded in this course. All grades will be posted on the *LMS*, so please take advantage of the fact that you can always know how you are doing in the course.

Contribution to Grade	Category	Description
20%	<i>Participation</i>	We'll be discussing course readings in light of our own particular concerns. I'll have questions for you; I will expect you to have questions for me. Come to class having read and thought about assigned readings, ready to actively engage in dialogue.
25%	<i>Assignments</i>	You will complete assignments during class and as homework. Some of these assignments will be done individually, others will require group cooperation. I will be grading each assignment based on its clarity of thought, level of insight, and contribution to class dialogue.
15%	<i>Quizzes</i>	You can count on a quiz at the beginning of each class session. Based on the assigned readings for each day, these quizzes will provide you with the opportunity to demonstrate that you understood the material. You are free to use your notes but not the actual readings on your quiz.
15%	<i>Midterm Project</i>	I will ask you to choose a work of art, designed object, or architectural construction and analyze this product through the lens of human evolutionary history. You will submit a formal paper as well as a short abstract summarizing your ideas. During class, you will present your analysis to the class and lead a short discussion.
25%	<i>Final Project</i>	For your final project, you will suggest how an understanding of human evolution should inform the future of art, design, or architecture. This project can be something you make (a piece of art, a designed object, or an architectural design) or a piece of written work. You will present your product to the class, highlighting how an understanding of human evolution informed your creative process. The class will have a chance to critique your work and ask questions.



***Under no circumstances will personalized extra-credit work be provided for students who have missed classes or failed to submit work on time***



### ***Lateness and Absence:***

***Of Students:*** I expect you to arrive to class on time. Students who arrive more than 20 minutes late will receive a zero for the day's quiz. In addition, lateness and absence can adversely affect your participation and assignments grades.

***Of Assignments:*** Late assignments will be penalized by 10% per day.

***Excuses:*** There are very few legitimate reasons to miss all or part of a class session or for submitting assignments after the stated deadlines. In order for an absence or lateness to be excused, you must provide formal documentation stating which classes/deadlines were affected and explaining the reason behind the absence; all documentation will be subject to strict verification. Valid excuses include family emergencies and personal health issues. The following reasons do not excuse lateness or absence: oversleeping, excessive work load in other classes, inability to use the *Learning Management System*, or "forgetting".

## Weekly Units:

Week	Date	Major Topic(s)	Key Questions	Readings
1	Jan. 18th	<b>Introduction to Evolution</b>	<p>What is evolution?</p> <p>What mechanisms drive evolution?</p> <p>What are the limitations of evolutionary processes?</p> <p>On what time scale does evolution operate?</p> <p>What evidence substantiates patterns of evolution?</p> <p>How do we depict evolutionary patterns?</p>	<p>Review Berkeley's Evo-101 site at <a href="http://evolution.berkeley.edu/evolibrary/article/evo_01">http://evolution.berkeley.edu/evolibrary/article/evo_01</a></p>
2	Jan. 25th	<b>Evidence for Human Evolutionary Origins</b>	<p>What evidence helps us understand the evolutionary development of hominids?</p> <p>What were the major evolutionary innovations of the hominid species? When did human culture emerge?</p>	<p>Stringer and Andrews p. 6-13, 16-19, 24-33, 38-49, 130-139</p> <p><i>Scientific American</i> "Once We Were Not Alone" &amp; "The Human Pedigree"</p> <p>CHOICE reading on Neanderthals</p>
3	Feb. 1st	<b>The Environment that Produced Human Beings</b>	<p>What environment stimulated most of human evolution?</p> <p>How have human systems of perception been influenced by this environment?</p> <p>What threats were faced by early humans?</p> <p>How did this environment influence human social behavior?</p>	<p>Stringer and Andrews p. 50-79</p> <p>AIA "Evolutionary Psychology and Workplace Design"</p> <p><i>Scientific American</i> "Four fallacies of pop evolutionary psychology"</p>
4	Feb. 8th	<b>The Human Diaspora</b>	<p>Where did humans originate?</p> <p>What was the pattern of human dispersal?</p> <p>How has dispersal led to human diversity?</p>	<p>Stringer and Andrews p. 20-23, 140-165, 176-181, 192-199</p> <p><i>Scientific American</i> "Traces of a Distant Past", "Does Race Exist?" &amp; "Lovers, Not Fighters?"</p> <p><i>NPR</i> "Tracing Human Migration Through DNA"</p>
5	Feb. 15th	<b>Culture 1: Tool-making &amp; the Dawn of Human Technology</b>	<p>How did changes in human locomotion and diet favor the creation of tools?</p> <p>When did human culture emerge?</p> <p>What were the earliest tools and how were they made?</p> <p>How have tools evolved through time?</p>	<p>Stringer and Andrews p. 184-191, 208-215</p> <p><i>Scientific American</i> "Food for Thought", "Morning of the Modern Mind", &amp; "The Iceman Reconsidered"</p>
6	Feb. 22nd	<b>Culture 2: Early Art &amp; the Evolution of Creativity</b>	<p>When did humans transition from making tools to making art?</p> <p>What is the evidence for the evolution of human creativity?</p> <p>What was the adaptive advantage of creative expression?</p>	<p>Stringer and Andrews p. 166-169, 216-221</p> <p><i>Scientific American</i> "Rise of the Modern Mind"</p> <p><i>Evolution for Everyone</i> "The Vital Arts"</p>
7	Mar. 1st	<b>Culture 3: Emergence of the Social Human Being</b>	<p>How has human culture evolved?</p> <p>What is the role of culture in facilitating human sociality?</p> <p>Why do human beings form social groups?</p> <p>How did human tribal life influence our evolution?</p> <p>How has the nature and importance of culture changed throughout the evolution of the human species?</p>	<p>Stringer and Andrews p. 200-207, 222-225</p> <p><i>Scientific American</i> "Bonobo Sex and Society" &amp; "Wag the Dog"</p> <p><i>Science</i> "Why We Are Different" &amp; "Evolution of the Social Brain"</p>

Week	Date	Major Topic(s)	Key Questions	Readings
8	Mar. 8th	<b>Culture as an Adaptation</b>	How have human culture and biology co-evolved? Are cultural evolution and biological evolution analogous? How do biological and cultural factors drive modern human behavior?	<i>Scientific American</i> "The Power of Memes" <i>TED Talks</i> "Susan Blackmore: Memes and 'emes" <i>Fiberculture</i> "Material Culture Evolution"
	Mar. 15th	<b>Spring Break, No Class</b>		
9	Mar. 22nd	<b>MIDTERM PAPER DISCUSSION</b>	In what ways do contemporary art, design, and architecture interpret human biology? What characteristics of these human products are products of our own biological predispositions? What is the relative importance of human culture versus biology in shaping design? How can we improve upon contemporary design based on our understanding of human biology?	<i>Student Midterm Project Abstracts</i>
10	Mar. 29th	<b>AMNH FIELD TRIP</b>		
11	April 5th	<b>Human Nature: Why We Are the Way We Are</b>	How do genes and the environment interact to produce human traits? In what ways are humans hard-wired to a particular environment? To what extent does developmental plasticity allow humans to adapt to changes in the environment?	<i>Scientific American</i> "The Search for Intelligence" <i>The Ape and the Sushi Master</i> "Down with Dualism!" <i>Evolution for Everyone</i> "How I Learned to Stop Worrying and Love Genetic Determinism"
12	April 12th	<b>The Evolution of Cooperation</b>	How does individual selection shape human behavior? Is kin selection an important driver of human evolution? What is the role of higher-level selection in modifying individual behavior? How did human cooperation evolve?	<i>Nature</i> "The Nature of Human Altruism" <i>New Scientist</i> "Survival of the Selfless" <i>Scientific American</i> "The Mind of the Market"
13	April 19th	<b>The Modern Human Environment</b>	How has human culture evolved over the last thousand years? What challenges to our biologically evolved traits are presented by the modern human environment? In what ways might humans evolve in response to this environment?	<i>New York Times</i> "Selection Spurred Recent Evolution" <i>Scientific American</i> "Need for Speed?" CHOICE reading on future human evolution
14	April 26th	<b>The Promise and Limitations of Evolutionary Understandings</b>	What foundation should scientific understanding provide to social activities and policies? What are the limitations of scientific understanding when applied to social problems?	<i>Scientific American</i> "Evolution in the Everyday" & "Dennett's Dangerous Idea" <i>TED Talks</i> "Daniel Dennett on Memes" <i>Phillip E. Johnson</i> "Daniel Dennett's Dangerous Idea"
15	May 3rd	<b>FINAL PROJECT DISCUSSION</b>	How can we incorporate an understanding of human evolution into our art/design/architecture work?	<i>Student Final Project Summaries</i>

<b>Important Dates</b>	
<b>Date</b>	<b>Event</b>
Week 03	<i>Midterm Paper assigned</i>
Tuesday, <b>February 15th</b> @ 11:59 pm EST	<i>Midterm Paper Proposal due</i>
Tuesday, <b>March 8th</b> @ 11:59 pm EST	<i>Midterm Paper (including Abstract) due</i>
Week 08	<i>Final Project assigned</i>
Tuesday, <b>March 22nd</b> @ 11:59 pm EST	<i>Final Project Proposal due</i>
Tuesday, <b>April 5th</b> @ 11:59 pm EST	<i>AMNH Assignment due</i>
Tuesday, <b>April 19th</b> @ 11:59 pm EST	<i>Final Project (including Project Summary) due</i>

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### **Learning Management System (LMS):**

During the course of the semester, we will make extensive use of Pratt's *Learning Management System (LMS)*. I recommend that you use the *Firefox* browser to access the *LMS* via this page: <http://lms.pratt.edu/> (I discourage you from using the *my.pratt.edu* entrance point, as it is not always working). Use your ONEKEY username and password to log in. I expect you to check the *LMS* several times a week for announcements, reading assignments, and updates to your class grade (note that you can also set the *LMS* to send you email messages every time our class page is updated). I will be using the *LMS* to send email announcements throughout the semester, so please make sure that you check the email address listed under your *LMS* profile regularly. "I forgot to check my Pratt email" is a valiant but invalid excuse.

I try to make the assignments, announcements, and other documents I post on the *LMS* as universally-readable as possible. The only proprietary program you will need to have loaded onto your computer is *Acrobat Reader*, which can be downloaded here: <http://www.adobe.com/products/acrobat/readstep2.html>. I strongly recommend that you use *Acrobat Reader*, rather than another program, to read all of the PDF's provided in this class.

**\*Important\*:** If you should have any problems with the *LMS*, immediately contact me via email or phone, or visit the **Help Desk** in the basement of the Engineering Building (they can also be contacted at x3765 or [helpdesk@pratt.edu](mailto:helpdesk@pratt.edu)). In order for me to verify claims of *LMS* outages, I must hear from you when the *LMS* problem occurs, not hours or days later.

### **Reduced-Paper-Use Classroom:**

Whenever possible, we will reduce the amount of paper that this course consumes. All of your out-of-class assignments, including the two-dimensional components of your two projects, must be submitted electronically via the *LMS*. Your work will be graded and returned electronically. Please do your best to reduce the amount of printing that you do for the course.

## **Readings:**

You will be assigned a series of reading materials from popular science periodicals, books, and the scientific literature. Your main “textbook” will be:

Stringer, C., and P. Andrews. 2005. *The Complete World of Human Evolution*. Thames & Hudson, London. (ISBN #978-0500051320)

This book is required and can be purchased from the PrattStore. All other readings will be posted on the LMS. You are encouraged to save paper by viewing these readings electronically (as opposed to printing them out).

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## **Classroom Civility and Academic Honesty:**

I expect you to maintain the civility and integrity of our course in and out of the classroom. In class, this means arriving on time, turning off cell phones and refraining from sending text messages, maintaining focus on class discussion, respecting the right of others to speak, and leaving the classroom in good condition (among other things). Out of class, this means properly citing all work that is not your own.

Any disruptive, disrespectful, or dishonest behavior will be promptly reported to the appropriate campus authority. Students must adhere to all Institute-wide policies (listed in the *Bulletin* under “Community Standards”) which include policies on attendance, academic integrity, plagiarism, computer, and network use. Please see <http://www.pratt.edu/policies> (click on *Judicial Procedures*) for policies and procedures for handling academic conduct issues.

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## **AMNH Trip:**

On March 29th, our class will not meet. Instead, you will be given an assignment to be completed based on a trip to the **American Museum of Natural History** in Manhattan. The trip is self-guided, and you can complete this assignment anytime during the month of March. Further details will be provided in class during Week 07.

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## **Help with Writing:**

Both major projects in this class will require you to produce written work. All students can benefit from feedback on their writing. I am happy to read and respond to rough drafts of either assignment, provided they are emailed to me no later than 5 days before the day the paper is due.

Pratt’s *Writing and Tutorial Center* can also help you produce the best project possible. The center is located on the 1<sup>st</sup> Floor of North Hall (it has all the great fish tanks... you can’t miss it!). Call them at (718) 636-3459 or send an email to [wtc@pratt.edu](mailto:wtc@pratt.edu) to make an appointment.

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## **Rights of Students with Disabilities:**

Any student eligible for and requesting academic accommodations due to a disability is requested to provide a letter of accommodation from *Disability Services* within the first few weeks of the semester. Please contact Mai McDonald, Disability Services Coordinator, in the *Office of the Vice President for Student Affairs*, Main Building, Lower Level: 718-636-3711. See [http://www.pratt.edu/student\\_life/student\\_services/disability\\_services/](http://www.pratt.edu/student_life/student_services/disability_services/) for more information.