

San José State University
Anthropology Department
ANTH 12, Introduction to Human Evolution, Section 1,
Spring 2009

Instructor:	Jonathan Karpf
Office Location:	Clark Hall 404J
Telephone:	408- 924-5721
Email:	Jonathan.Karpf@sjsu.edu
Office Hours:	Monday 10:30 am – 12:30pm and by appointment
Class Days/Time:	MW 9am-10:15am
Classroom:	WSQ 04
GE/SJSU Studies Category:	Core GE, B2/Life Science

Faculty Web Page and MYSJSU Messaging (Optional)

Copies of the course materials such as the syllabus, major assignment handouts, etc. may be found on my faculty web page accessible through the Quick Links>Faculty Web Page links on the SJSU home page. You are responsible for regularly checking with the messaging system through MySJSU (or other communication system as indicated by the instructor).

Course Description

Introduction to Human Evolution is a course designed to allow students to appreciate the evolutionary history of our species and the biological bases that are at the foundation of this process. The course is an introductory one; thus, no specific prior knowledge is assumed. However, during the semester students will acquire basic biological knowledge relating to molecular biology, cell reproduction, cellular and population genetics, the fundamental principles of micro- and macro-evolutionary theory (especially the role of natural selection and genetic drift), and the intellectual background leading to the development of evolutionary theory. This foundation will then be used to explore the specific evolutionary history of major groups of organisms, with a specific focus on human evolutionary history. Comparative perspectives will be incorporated so as to provide a basis for understanding how humans are related to other primates, and what this implies structurally, physiologically, and behaviorally. Furthermore, data provided directly by the fossil and molecular records will be comprehensively reviewed in tracing the major features of human evolution. In summary, this course attempts to place our

species in a clear evolutionary context, and to ask some basic questions relating to human origins: 1) what kind of creature are we, and 2) how did we get to be this way?

Course Goals and Student Learning Objectives

Anth 12 is a Science GE offering (core GE, B2/Life Science). Students should be able to:

1. Use methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations;
2. demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues; and
3. recognize methods of science in which quantitative, analytical reasoning techniques are used.

More specifically, Area B2 Life Science courses such as Anth 12 focus on:

- a. structures and functions of living organisms;
- b. levels of organization of living systems, from atom to planet;
- c. strategies for survival and reproduction;
- d. patterns of evolution;
- e. principles of genetics, including the basis for variation; and
- f. interaction of organisms and their natural environment.

SPECIFIC COURSE OBJECTIVES:

In addition to the above overall objectives of all life science GE courses, Anth 12 also has several more specific learning objectives. By the completion of this course, students should be able to:

- develop critical thinking skills;
- distinguish testable hypotheses from non-testable ones;
- distinguish among different kinds of explanations, especially how hypotheses differ from non-scientific explanations, as well as from more general theories;
- demonstrate an understanding of the methods and limitations of scientific investigation;
- recognize how evolutionary theory is part of a wider scientific approach to understanding the universe;
- recognize the nature of one's own biases and the methods scientists utilize to control for bias;
- appreciate the historical development of the Western scientific tradition, especially as related to the formulation of evolutionary theory;
- distinguish between the primary factors influencing evolutionary change (natural selection, sexual selection, mutation, gene flow and genetic drift), and recognize how these factors are integrated into a single, synthetic theory of evolution;
- differentiate and apprehend the interrelationships of basic life processes at the molecular, chromosomal, cellular, individual, populational, and species level;
- discern how basic life processes such as sexual reproduction and recombination influence genetic variation, and the role such variation plays in evolution;
- recognize how humans fit within an organic continuum and how this organic diversity is interpreted and organized in classification schemes;

- understand the relationships of humans to other organisms - especially the other primates;
- appreciate how patterns of human individual and populational diversity can (and cannot) be explained biologically; and
- distinguish science from pseudo-science and “pop-science”, and apply a scientific approach to answer questions about the earth and environment.

ATTAINING THE COURSE OBJECTIVES:

At a general level, this course concerns primarily the nature of the evolutionary process - how it works - and how scientists have come to understand the process, (and even more generally, how science as a “way of knowing” seeks to comprehend and generalize about natural phenomena in the known universe). The specific evidence relating to understanding human evolution is then used to illustrate how these evolutionary biological processes operate. In addressing the fundamental questions relating to human origins, you will be challenged to think critically, apply sound scientific methodologies, understand and assess quantitative data, and communicate your knowledge in both oral discussion and written form.

At SJSU students are encouraged to recognize that education is a participatory experience. Thus, each student is expected during the semester to contribute to further refining the course objectives (so better to articulate your individual expectations and needs), to give feedback to the instructor regarding the adequacy of your learning and how well the course assessment tools measure that learning, and how these assessment tools might be improved. Finally, each student is challenged to be engaged in the exploration of the fascinating material covered in this course, to participate in class discussions, to ask questions, and to relate in assignments and exercises how you can apply these concepts to your own life; that is, to be an active participant in your own education. The most important contribution this course can make to your education is to provide you with greater ability to *think critically*. As a result, this skill will contribute permanently to your further education; that is, for the remainder of your lifetime. Never consider your education completed when you leave the University, but continue to build your knowledge by using and refining the skills learned here.

DEPARTMENT OF ANTHROPOLOGY OBJECTIVES.

The Department of Anthropology seeks to enhance student knowledge and skills in a number of areas. Each course offered by the department fulfills one or more of the following ten objectives:

1. Understanding culture as the distinguishing phenomenon of human life, and the relationship of human biology and evolution.
2. Awareness of human diversity and the ways humans have categorized diversity.
3. Knowledge of the significant findings of archaeology, cultural anthropology, and physical anthropology, and familiarity with the important issues in each subdiscipline.

4. Knowledge of the history of anthropological thought and its place in modern intellectual history.
5. Comprehension of migration, colonialism, and economic integration as significant phenomena shaping contemporary global society.
6. Ability to access various forms of anthropological data and literature.
7. Awareness of the importance and value of anthropological knowledge in contemporary society, and the ability to apply it to social issues.
8. Knowledge of the research methods of the subdisciplines of anthropology, and the ability to apply appropriate research methods in at least one subdiscipline.
9. Ability to present and communicate anthropological knowledge and the results of anthropological research to different audiences.
10. Knowledge of political and ethical implications of social research

Required Texts/Readings

Textbook

- 1) Exploring Biological Anthropology: The Essentials, (1st ed) Craig Stanford, John Allen and Susan Anton., (2008).
- 2) Darwin For Beginners, Jonathan Miller (1982) **begin reading this book immediately.**
- 3) The Cartoon Guide to Genetics, Larry Gonick and Mark Wheelis (1992)
- 4) Required handout packet/reader sold in the **4th** class (**W 2/4**) for \$8.00, tax included. In addition to handouts, this reader includes some articles, all your out-of-class **writing assignments**, the two **practice exams** to be used to prepare for your two midterms, as well as 3 **practice quizzes**. If you don't purchase it in class that day, you may purchase it after that date at Maple Press, San Carlos St. between 10th & 11th. In addition, you are encouraged - but **not** required - to purchase the **recommended** Human Evolution Coloring Book, especially if you are a primarily visual learner.

Classroom Protocol

MAKE-UP POLICY:

Make-up exams will not be given unless 1) a phone message AND an email are left before the scheduled time of the exam, 2) the reason for missing the exam is important, beyond your control and 3) is verifiable by a reliable source. In the case of illness, an official note from a physician or nurse-practitioner is required. There will only be one make-up exam given, and it will be different than the original exam. If you are going to hand written work in late, you must also notify the instructor before the due date of the written assignment. There will be a penalty for written work handed in late if the reason is not important, beyond your control and verifiable by a reliable source. All assigned work - especially writing assignments - must be completed in order to pass the course.

ATTENDANCE:

After the first few weeks, roll will not be called. Dropping the course is your responsibility, and I will not do it for you should you vanish during the semester. Pay attention to the drop deadline in the online Schedule of Classes. Attendance is both necessary and expected, and it is exceedingly unlikely that you will get anything out of the class - including a passing grade - should you miss many lectures. Class will begin on time and tardiness should be avoided, although you are strongly encouraged to attend lecture even if quite late: if unavoidable, come in quietly and take a seat towards the rear; don't just blow off class if you're late. I also have no problem with you recording class sessions, but you'll probably want to sit up front for good auditory reception.

IMPORTANT CAVEATS AND NOTES:

Cell Phones: Students will turn their cell phones off or put them on vibrate mode before they enter class, and they will put them away. They will not answer their phones in class. Students whose phones disrupt the course and do not stop when requested by the instructor will be referred to the Judicial Affairs Officer of the University.

Computer Use: In the classroom, faculty allow students to use computers only for class-related activities. These include activities such as taking notes on the lecture underway, and finding Web sites to which the instructor directs students during the lecture. Students who use their computers for any other activities will be asked to leave the class and will lose participation points for the day, and, at a maximum, will be referred to the Judicial Affairs Officer of the University for disrupting the course. (Such referral can lead to suspension from the University.) No other electronic devices are allowed in class; this mean no Ipods, Mp3 Players, sidekicks, PDAs, Blackberries, Raspberries, etc. Any student who has one of these devices out in class will be asked to leave the classroom.

Classroom behavior: Expectations about classroom behavior; see Academic Senate Policy S90-5 <<http://www2.sjsu.edu/senate/s90-5.htm>> on Student Rights and Responsibilities.

Finally, in the 31 years that I have been teaching at the university level, I have cancelled class a total of 2 times. Therefore, if you come to class and see a door sign indicating that class is cancelled, you should assume it is a hoax and wait outside the class for a minimum of 15 minutes before leaving. This 15 minute rule is a general rule for all classes, as professors can also run late.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. [Information on add/drops are available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html](http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html). [Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/](http://www.sjsu.edu/sac/advising/latedrops/policy/). Students should be aware of the current deadlines and penalties for adding and dropping classes.

Assignments and Grading Policy

COURSE REQUIREMENTS:

Students will be asked to complete both in-class examinations as well as take-home assignments. Your final grade will be based on a possible 560 points. The bulk of your final grade will be determined by your performance on two midterms worth 100 points

each, and a minimally cumulative final exam worth 150 points. In addition, there will be three take-home quizzes handed out on Wednesdays and due (at 9 am sharp) the following Monday, for a total of 150 points. All of the exams and quizzes will require T&E 0200 scantron forms and a #2 pencil, so you will need to purchase a total of 6 T&E 0200 scantron forms. All exams and quizzes will consist of 5-option multiple choice questions. Finally, because this is a core GE class, part of your grade will be based on doing at least 6 pages (1500 words) of written work, which will be assessed for correctness, clarity, and conciseness. In these assignments, you will have a chance to explore your own responses to the ideas and information you encounter in the class, as well as to deepen your understanding through discussion, reflection, analysis, and research. Some of these will be based on participation in in-class activities (including small-group discussions and class exercises) and on doing both in-class and at-home writing assignments; in particular a comprehensive research exercise which will include data collection, analysis and interpretation of results, and a written report. Complete instructions regarding the research exercise/report and all writing assignments will be handed out in class. All of these assignments and exercises will require you to practice analytical, composition, and critical thinking skills, and will be worth a total of 60 points. Some of these will be in-class assignments and you must be in class for these! Note: There will be significant penalties for late papers, and all assigned work must be completed in order to pass the course.

To summarize, your final semester grade in this course will be based on the following:

- Take-home quizzes: 3 X 50 pts. = 150 (26.8%)
 - Midterm exams: 2 X 100 pts. = 200 (35.7%)
 - 6 pgs of quantitative exercise, report, & other writing assignments = 60 (10.7%)
 - Final exam: 150 (26.8%)
- TOTAL POINTS: 560 (100%)

GRADING:

Grading will be based on percent mastery, with 88-100% = A, 78-87% = B, 65-77% = C, 50-64% = D, and lower than 50% = F. However, should the performance of the class fall below these arbitrary grade cutoffs, then students will be ranked according to the total points accrued and the course grade will be assigned according to a normal distribution, with the average performance given a middle "C" and the grade ranges determined by the standard deviation (i.e., a curve). Therefore, only A's and B's will be awarded if no class member receives less than 78% of the total points, and students will not be competing with each other. However, even if no one receives 88% of the total possible points, the highest ~7-15% will still receive A's. Plus grades are given to those within 1% point of a major grade change, while minus grades are only given to students bumped up to a higher grade based on improvement on the final exam.

EXAMS:

Midterm #1 will cover sessions 1 through 12, and is on Monday, March 9.

Midterm #2 will cover sessions 13 through 20, and is on Monday, April 13.

The final exam will be minimally cumulative (i.e, previous midterm questions), with an emphasis on the last 9 sessions and readings, and will be held on Monday, May. 18 from 7:15-9:30 am. Note: The time of the final is not my choice; all classes that begin earlier

than 10:30 have finals that begin at 7:15 am. So if you don't want 7:15 finals, don't enroll in classes that begin earlier than 10:30. :)

You will need to memorize a fair amount of specialized vocabulary, and to think through biological ideas which are unfamiliar to you; both of these activities require time and effort. You are expected to take notes in class and to do the reading on time, so that you can follow the development of ideas and information, and so that you can bring questions and comments to class and to the instructor's office hours in a timely fashion.

GUIDELINES FOR ALL OUT-OF-CLASS WRITING ASSIGNMENTS:

1. Do not put any sort of cover or title page on your papers.
2. Staple the pages together in the upper left-hand corner. Note: a paper clip is not a staple...
3. In the upper right-hand corner of the first page only, please provide the following info:
 - Your name (first name first, last name last)
 - Anth 12(1)
 - Paper #X
 - The due date
4. This 4 line block of information should be single-spaced and as close to the upper margin of the first page as possible. The paper itself should be double-spaced.
5. Nothing else should appear at the top of the paper; no title, not my name: nothing.
6. Skip one line only (i.e. a double space) and begin the body of your paper. The first sentence of the first paragraph should indicate the topic of the writing assignment.
7. Do **not** worry about formal paper construction, i.e., an introductory paragraph, a formal concluding paragraph or whatever; simply **address the questions asked**.
8. **Number** your pages at the bottom middle of each page.
9. No **margin** should be larger than 1"; that means **all** margins: left, right, bottom (and the top of all pages other than the first page).
10. If the assignment is for 3 pages, this means 3 **complete** pages; not 2 and 1/2, not 2 and 3/4, but 3 full pages. Points will be deducted for short assignments. It is probably to your advantage to go a few sentences over the minimum if you aren't certain about length.
11. **Left justify only**. Do **not** justify the right margin; leave it ragged.
12. Use "standard" fonts, and do not use any font larger than 12 point or smaller than 9 point.
13. Use **5-space indentations** for new paragraphs; do **not** use line-breaks between paragraphs.
14. **DO NOT QUOTE!** All of the writing should be in your own words. If you need to summarize the content of another person's writing, identify your source and paraphrase. This is good practice; if you can paraphrase accurately, then you understand what the person is saying. **NO QUOTES!**
15. **DO NOT PLAGIARIZE!** There are SEVERE penalties for plagiarism (i.e., copying directly or close to directly someone else's words and representing them as your own). Plagiarism is cheating. Cheating at the university is grounds for: receiving an M for the assignment, receiving an M in the course, and/or suspension or expulsion from the university. So do not use direct quotes and do

not plagiarize; instead, respond in your own words. If there is any hint of plagiarism (including two students turning in substantially similar papers) you will receive an “M” in the course and I will file an academic dishonesty report which can lead to your expulsion from the university. NOTE: I utilize 4 different plagiarism software programs, including 3 which search the net. Please familiarize yourself with the Policy on Academic Dishonesty in both the online schedule of classes, the online course catalog (<http://info.sjsu.edu>) and the handout in class. You have **no** reason to go to the internet for these papers; please do not make me fail you...

16. We will be using **Turnitin.com** this semester. Begin by surfing to **<http://www.turnitin.com>** and setting up a student account. You will need the **class ID#**, which for S’09 Anthropology 12(1) is: **2548908**; Password = **evolution**. Please also take the plagiarism training which you can find at: **http://www.turnitin.com/research_site/e_home.html**.
17. **Proof-read** your paper. Points will be taken off for sloppy grammar, syntax and spelling. Especially if English is not your first language, it may be useful to have your paper proof read by a native English speaker who writes well, or at the Learning Center in Student Services.
18. Points will be taken off for not following instructions.
19. Points will be taken off for late papers that are unexcused; 1/2 of the points if turned in within 2 days of the due date. Any later will fail to earn points but will count towards the GE minimum.

University Policies

Academic integrity

Students should know that the University’s [Academic Integrity Policy is available at \[http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf\]\(http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf\)](http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf). Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for [Student Conduct and Ethical Development is available at \[http://www.sa.sjsu.edu/judicial_affairs/index.html\]\(http://www.sa.sjsu.edu/judicial_affairs/index.html\)](http://www.sa.sjsu.edu/judicial_affairs/index.html).

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

ANTH 12 (1)/ Introduction to Human Evolution, Spring 2008, Course Schedule

*GE Area B2 Student Learning Objectives:

Students should be able to:

1. Use of methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations;
2. demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues; and
3. recognize methods of science in which quantitative, analytical reasoning techniques are used

Table 1 Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
Week 1	1/26-1/28	Course logistics DFB: 3-45, An introduction to anthropology DFB: 46-81, In-class writing assignment#1 & survey #1 Ch. 1 [These will address GE Learning Objectives #1 & #2]*
Week 2	2/2-2/4	The nature of realities DFB: 82-100, Introduction to the scientific method, Religious vs. scientific explanations, LAST DAY TO DROP A CLASS! Science as a way of knowing: DFB: 101-137 Small group activity: hypothesis formulation [Addresses GE Learning Objectives # 1 & #3]* Reader Sale! Read instructions for O.C. Paper #2
Week 3	2/9-2/11	A brief history of evolutionary thought Ch. 2, Darwin's reasoning: Differential Reproduction DFB: 138-176, Darwin (and Wallace's) theory: Natural Selection CGG: 1-36; LAST DAY TO ADD A CLASS OR CHANGE GRADE OPTIONS! Darwin's evidence: Beagles, tortoises and finches Ch. 9
Week 4	2/16-2/18	The Pliocene hominid origin, or: "Look ma, no hands!" Ch. 10, Genus <u>Australopithecus</u> , or: I love Lucy; More evidence: embryology, the comparative approach, and vestigial structures
Week 5	2/23-2/25	Fitness, natural selection, moths, tapeworms, Ch. 5, the non-human primates and measures of species success; Darwin's problems: To blend, or not to blend...CGG: 37-78; Take-home Quiz #1 (50 pts.) [Addresses GE Learning Objectives #1, #2 & #3]*
Week 6	3/2-3/4	Mendelian genetics: Sex and the single gene...Ch. 4 Take-home Quiz #1 DUE! ; Mendelian genetics, or What's an allele? CGG:

Week	Date	Topics, Readings, Assignments, Deadlines
		79-96 REVIEW SESSION FOR EXAM #1: (Time TBA)
Week 7	3/9-3/11	MIDTERM EXAM #1 (Have your T&E 0200 form filled out correctly!) [Addresses GE Learning Objectives #1, #2 & #3]*; Segregation, independent assortment & crossing over CGG: 97-10
Week 8	3/16-3/18	Mendelian genetics: modes of inheritance; Mendel reconsidered: polymorphism, linkage, dosage and codominance, O.C. Paper #2 DUE! [Addresses GE Learning Objectives #1, #2 & #3]*
Week 9		
Week 10	3/23-3/27	SPRING BREAK!
Week 11	3/30-4/1	Intro to cell biology and a molecule called DNA, Ch. 3; DNA structure: Purines, pyrimidines, and nucleotides CGG: 104-128, Take-home Quiz #2 (50 pts.) [Addresses GE Learning Objectives #1 & #3]*
Week 12	4/6-4/8	DNA function: RNAs, protein synthesis and gene products CGG: 129-163, Take-home Quiz #2 DUE! ; Still more on DNA, or What's really an allele? REVIEW SESSION FOR EXAM #2: (R or F: Time TBA)
Week 13	4/13-4/15	MIDTERM EXAM #2 (Have your T&E 0200 form filled out correctly!) [Addresses GE Learning Objectives #1, #2 & #3]*; Amplification, gene regulation, telomeres and Dolly the sheep, CGG: 164-210, OC Paper #3 (Quantitative Assignment) discussed in class
Week 14	4/20-4/22	Evolution in human populations: Sickle Cell Anemia, Ch. 6 Lactose "Intolerance", or Milk isn't good for everybody; More on Natural Selection and the other forces of evolution, Ch. 5, Genetic Drift: fruitflies, bottlenecks and cheetahs...
Week 15	4/27-4/29	Modern human "racial" variation in an evolutionary perspective Ch. 13 The transition to genus <u>Homo</u> and the spread of culture, pp.112-121

Week	Date	Topics, Readings, Assignments, Deadlines
		<p><u>Homo ergaster</u> and <u>Homo erectus</u> or : Out of Africa Ch. 11-12 Neandertals, the origin of modern humans, or: mtDNA and All about "Eve"; Modes of Selection and the "Coolidge Effect", Ch. 7 Take-home Quiz #3 (50 pts.) [Addresses GE Learning Objectives #1 & #3]*</p> <p><u>Session</u> <u>Date</u> <u>Topic</u> <u>Text</u></p>
Week 16	5/4-5/6	<p>On the origin of species, or: Did you hear the one, Ch. 5 about the Chihuahua and the Great Dane? Take-home Quiz #3 DUE!; Macroevolutionary principles, or Whence species? Ch. 5, Modes and tempos in evolution: Red Queens and hopeful monsters, OC Paper #3 (Quantitative Assignment) DUE! [Addresses GE Learning Objectives #1 & #3]*</p>
Week 17	5/11-5/13	<p>The origin of life, terrestrial vertebrates & mammals Ch. 7; The origin of the primates: trees and/or insects? Ch. 11, Macroevolution: Adaptive radiation, extinction, convergence, homology, tectonics, cladistics, and behavior of the primates. SURVEY #2 [Addresses GE Learning Objectives #1, #2 & #3]*</p>
Week 18	5/14	<p>Review Session for Final Exam (Time/Place TBA)</p>
Final Exam	5/18	<p>FINAL EXAMINATION (7:15-9:30 am) NOTE THE TIME DIFFERENCE! (Have your T&E 0200 form filled out!) [Addresses GE Learning Objectives #1, #2 & #3]*</p> <p>* [NOTE: Chapters 8, 14, and 15 are quite interesting and may be read for interest, although they are not required and no exam questions will be based on them.]</p>