

Day	Date	Class #	Chapter	Title	Notes
M					
W	2-Sep	1	1	Science is an ELF	
F	4-Sep	2	1	Science is an ELF	
M	7-Sep	Labor Day, no class			
W	9-Sep	3	2	Enlightenment	
F	11-Sep	4	3,4	Seashells on Mountaintop; Kangaroos?	
M	14-Sep	5	5	Aristotle & Linnaeus	
W	16-Sep	6	<b>Video-Darwin's Dangerous Idea</b>		Leave for Wurzburg
F	18-Sep	7	<b>Video-Darw</b> Darwin's World (posted)		Wurzburg
M	21-Sep	8	6,7	Voyage of the Beagle (posted)	Wurzburg
W	23-Sep	9	8	Is Earth Old Enough?	
F	25-Sep	10	8	Is Earth Old Enough?	
M	28-Sep	11	9	Evaluating data	
W	30-Sep	12	9	Evaluating data	
F	2-Oct	13	10	Malthus	
<b>M</b>	<b>5-Oct</b>	<b>14</b>	<b>FIRST TEST, THROUGH CHAPTER 9</b>		
W	7-Oct	15	11	Natural selection	
F	9-Oct	16	12	Darwin's Hypothesis	
M	12-Oct	17	13	Crisis in Evolution	
W	14-Oct	18	14	Chemical basis of evolution	
F	16-Oct	19	14	Chemical basis of evolution	
M	19-Oct	20	15	DNA	
W	21-Oct	21	15	DNA	Updated 10/2
F	23-Oct	22	16	The genetic code (GUEST)	Bodrum <b>GUEST COOPERATIVE PAPERS</b>
M	26-Oct	23	17	Story of Planet (posted)	Bodrum <b>GUEST COOPERATIVE PAPERS</b>
W	28-Oct	24	18	Appearance of Oxygen (posted)	Bodrum <b>GUEST COOPERATIVE PAPERS</b>
<b>F</b>	<b>30-Oct</b>	<b>25</b>	<b>SECOND TEST, THROUGH CHAPTER 16</b>		<b>Bodrum VIDEO GREAT TRANSITIONS</b>
M	2-Nov	26	19	Conquest of Land	Death and <b>TEST CHAPTERS 10-16</b>
W	4-Nov	27	20	Great Ages of Planet	
F	6-Nov	28	21	Return to water	See PBS on Great Transformations
M	9-Nov	29	22	Extinctions	See PBS on Extinctions
W	11-Nov	30	23	Violence of Earth	
F	13-Nov	31	24	Competition	
M	16-Nov	32	<b>Video Judgement Day, Inherit the Wind &amp; PBS</b> NIH		
W	18-Nov	33	25	Sexual selection	
F	20-Nov	34	26	Coevolution	
M	23-Nov	35	27	Importance of Disease	Changed from: November 21
W	25-Nov	36	28	<b>THANKSGIVING</b>	AIDS Murder Mystery
F	27-Nov	37	29	<b>THANKSGIVING</b>	Evolution of Humans
M	30-Nov	38	30	<b>AIDS Murder Mystery</b>	Acquiring a Soul
W	2-Dec	39	31	<b>Evolution of Humans</b>	Impact of Evolutionary Theory
F	4-Dec	40	32	<b>Acquiring a Soul</b>	Evaluating Population Measurements
M	7-Dec	41	33	<b>Impact of Evolutionary Theory</b>	Conclusions
W	9-Dec	42		<b>Conclusions, wrap-up</b>	Wrap-up
F	11-Dec	43			
<b>M</b>	<b>14-Dec</b>	<b>44</b>	<b>FINALS WEEK</b>		
W	16-Dec	45	2:30 Class: Final 2:30-4:30		
F	18-Dec	46	3:35 Class: Final 3:35-5:35		

## First Cut of Questions: Science 1000c Fall 2009

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1. Argue for or against the proposition that all properties of life are properties of the element carbon.
2. What is the advantage of respiration over fermentation? What is the disadvantage?
3. Look at any plant or animal within your range. Can you identify how it resolves its problems of water gain and retention, support, and reproduction?
4. What do we mean by the term "adaptive radiation"?
5. What other explanations can you give for a mechanism whereby unused structures are lost during evolution?
6. How many questions can be answered by the theory of continental drift?
7. If the Chicxulub hypothesis is true, why has it not been possible to confirm the argument for the other massive die-offs or extinctions that have occurred?
8. Do you think that mammals could have spread throughout the world if the dinosaurs had not disappeared? Why or why not?
9. For your own life, try to estimate what percent of your budget and your time are invested in activities reasonably considered to be courtship.
10. Do you recall ever having gotten sick shortly after having eaten something unusual, and having felt revulsion to that food afterward? How long did that memory and behavior last? Do you think that the incident relates to the question of aposematic mimicry?
11. Can you identify any alternative explanation that would address the high prevalence of sexuality among both animals and plants?
12. What is the most likely evidence for the origin of AIDS? What supports the argument? What evidence is against the argument?
13. Would you consider *Homo erectus* (Neanderthals) human? Why or why not?
14. What does science do, and what does it not do?
15. Under what laws did your ancestors come to the United States? What restrictions were placed on immigrants from those countries? To what extent were the laws designed with Eugenics goals in mind?
16. How many instances can you identify in which something is accepted as scientific truth, but the opinion reflects the beliefs of the time? Hint: All historical times are valid, not just the modern period.
17. List the three most important ideas that you have learned from this book; give the evidence that backs the idea; and explain why you consider it to be so important.

## GENERAL COMMENTS ON THE TEST:

See points # 6 and #7

If you have a number marked as #? and encircled by a question in your test, many people were doing the same thing, and my comment is listed according to the numbers below the double line. If you got less than a B on question 7, and particularly if you are a business major, consider that you lost your investment in avocado futures.

THERE IS STILL FORGIVENESS. If you present a good paper (see discussion section) and do MUCH better on the final, the final will be heavily weighted for your grade. To do well on the final, you MUST

- Demonstrate that you can read and interpret a simple graph correctly.
- Display understanding and evaluation of the material, as evidenced by good documentation of each argument that you make for each question, not just generalities.
- Answer each question by acknowledging and addressing the point of the question, the main principle that the question is trying to get you to see.
- Realize that you are responsible for material in the book and in lecture, and are prepared to use the principles that you have learned to document a new argument with the evidence and logic that you have acquired.

## TO PREPARE FOR THE FINAL:

- Prepare your answers in advance. You have the questions. Think about them and how you would answer them.
- If you are not certain what the question means or what the answer is, reread the appropriate chapter, look it up in the index, post a question online, or otherwise resolve the issue.
- Pay attention to bulleted points in lecture or in the book. They are bulleted for a reason, to help you to organize important concepts and comparisons.
- Pay attention to what I emphasize in lecture. I emphasize points because they are important and are likely to be tested.
- Define your terms at the beginning of your answer. It will help you to organize and focus your answer.
- Be sure you answer all parts of each question.
- Each question has a point. Wandering off toward “good feelings” without mentioning the point will get little credit.
- Document your arguments with evidence (facts and mechanisms). I cannot read into the answer what you do not say.
- Literacy in graph reading is a standard part of cultural literacy. Consider the explanation of graphs (<http://lockshinlab.org>, click on the Graphbook tab), up through “Non-linear functions” in Part 3, to be REQUIRED READING.

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The numbered comments:

- #1. **(REFERS PRIMARILY TO QUESTION 1)** Is there more to the theory of evolution than struggle for existence and survival of the fittest? Did Darwin add anything to the theory? How about natural selection of the most fit (define "fit") and descent with modification? Did Malthus say anything about evolution?

- #2. **(REFERS TO QUESTION 4)** Prepare your answers in advance. If you do not understand the terms, look them up in the book, since the questions come from the ends of each chapter (This one is discussed on pp 231-233 and is indexed as "genetic code"), listen in lecture, or ask on the discussion section. "Code" refers to the sequence of three bases that is translated into one amino acid, nothing else. **DEFINE YOUR TERMS AT THE BEGINNING OF THE ANSWER.** It will help direct your answer. **PAY ATTENTION TO POINTS EMPHASIZED IN LECTURE.**
- #3. **(REFERS TO QUESTION 7)** Which is cause and which is effect? The cause (independent variable) belongs on the X-axis (abscissa) and the effect (dependent variable) belongs on the Y-axis (ordinate). See the online explanation of graphs, as highly recommended in lecture and on the discussion section. This is basic knowledge for anyone.
- #4. **(REFERS TO QUESTION 6)** But what was the point of the experiment? Why was it important? It is nice that you found it interesting, but it was mentioned for a purpose. For instance, the point of the Avery-McLeod-McCarty experiment was that the extractable transforming factor was DNA.
- #5. **(REFERS TO QUESTION 3)** Does not answer the question asked (how the sequence of genes on the chromosome was determined). See bulleted points on page 205 in book and extensive discussion in lecture. Define your terms. This will help you to focus on what is asked.
- #6. **(GENERAL POINT)** Logic is necessary to accept an idea. For instance, the delay in accepting the findings of the Avery-McLeod-McCarty experiment was that DNA could not logically carry enough information. Once the logic of its ability to reproduce itself became apparent (Watson-Crick), one had to find the logic of how it could carry information.
- #7. **(GENERAL POINT)** Make a list of your points, as bulleted lists such as are found in the book and lecture. It will help you to form and state your argument clearly.
- #8. **(REFERS TO QUESTION 7)** But your graph shows that rainfall controls temperature.
- #9. **(REFERS TO QUESTION 2)** For Darwin's inferences, see pages 158-163 of book or comments in lecture.