

COLLEGE OF THE HUMANITIES

HUMS4103 (Winter Term) 2010

Some hints on what to expect!

Objective: to make you sufficiently literate regarding some of the significant scientific issues of the day so that you will be able to read the newspapers over the next few years with a critical eye. Also, I want to draw some connections between science and disciplines that you are more familiar with, namely, music and art.

I have invited four guest lecturers to assist me with lectures designed to explain to you the scientific background of their various areas of expertise in terms that a layperson can comprehend.

I can be reached at david_gardner@carleton.ca

The lectures are on Thursdays in Paterson Room 303 at 6.00 – 9.00pm. Lectures begin on Thursday **January 7th, 2010**. The topics to be covered are:

1. Science & Art – a shared creativity? Prof. David Gardner (College)
2. Big Bang Prof. David Gardner (College)
3. Alchemy to Bohr Prof. David Gardner (College)
4. The Fossil Record Prof. Claudia Schröder-Adams (Earth Sciences)
5. Evolution Prof. David Gardner (College)
6. Cell Biology & Genetics Prof. David Gardner (College)
7. Molecular Biology Dr. John Nash (Genomics Researcher)
8. “You are what you eat!” Prof. Gerald Buchanan (Chemistry)
9. Plagues (Black Death, HIV etc) Prof. David Gardner (College)
10. Sex, Drugs & Rock’n’Roll Prof. David Gardner (College)
11. Global Warming Dr. John Stone (Environment Canada)
12. Pollution Prof. David Gardner (College)

Examinations will be:

1. Mid-term Book Review

Imagine you are the junior culture journalist for a national newspaper. In the grand journalistic tradition, given that you hold a Humanities degree, your editor assigns you a book review column for the weekly science page! Your job is to read the assigned books and explain to your readers what they are about and why they should, or should not, bother to read them. **Due on Thursday February 11th during the lecture.**

From the list below of popular science titles, please select one **by Lecture 3** and review it.

| Author | Title | Publisher | ISBN | Library |
|-------------------|---|-------------------|-------------------|---------|
| Alder, K. | The Measure of All Things | Free Press 2002 | 0-7432-1675-X | |
| Braun, S. | Buzz: The Science & Lore of Alcohol and Caffeine | OUP 1996 | 0-19-509289-9 | |
| Boorstein, D. | The Discoverers | Random 1983 | 0-394-40229-4 | yes |
| Bronowski, J. | The Ascent of Man | BBC 1973 | 0-563-10498-8 | yes |
| Chandrasekhar, S. | Truth & Beauty Aesthetics & Motivations in Science (first four chapters only) | UChicagoPress1987 | 0-226-10086-3 | yes |
| Clark, W. | Sex and the Origins of Death | OUP 1996 | 0-19-510644-X | |
| Crawford, D. | The Invisible Enemy: A Natural History Of Viruses | OUP 2000 | 0-19-850332 6 | |
| Dawkins, R. | The Blind Watchmaker | Norton 1986 | 0-393-02216-1 | yes |
| Dawkins, R. | The Selfish Gene | OUP 1976/1989 | | yes |
| Dawkins, R. | The Greatest Show on Earth | freePress 2009 | 978-1-4165-9478-9 | |
| Diamond, J. | Guns, Germs, and Steel | Norton 1997 | 0-393-31755-2 | yes |
| Gleick, J. | Isaac Newton | Pantheon 2003 | 0-375-42233-1 | |

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|--------------------|---|-------------------------|-------------------|
| Gould, S.J | The hedgehog, the fox, and the Magister's Pox Harmony, 2003 or any other volume by Stephen Jay Gould | 0-609-60140-7 | |
| Hall, S.S. | Merchants of Immortality | Houghton Mifflin 2003 | 0-618-09524-1 |
| Jolly, A. | Lucy's Legacy | HarvardUPress 1999 | 0-674-00069-2 yes |
| Hawking, S. | A Brief History of Time | Bantam 1988 | 0-553-05340-X yes |
| Hawking, S. | Black Holes & Baby Universes | Transworld 1993 | 0-593-03400-7 yes |
| Hawking, S. | The Universe in a Nutshell | Bantam 2001 | 0-553-80202-X |
| Highfield, R. | The Science of Harry Potter | Viking 2002 | 0-670-03153-4 |
| Kandel, E. | In Search of Memory | Norton 2006 | 0-393-05863-8 |
| Lane, N. | Life Ascending: The ten Great Inventions of Evolution | Norton 2009 | 978-0-393-06596-1 |
| Maddox, J. | What Remains to be Discovered | FreePress 1998 | 0-684-82292-X yes |
| Marks, J. | What it means to be 98% chimpanzee | U California Press 2003 | 0-520-24064-2 |
| Mayr, E. | This is Biology | HarvardUPress 1997 | 0-674-88468-X |
| Medina | The Genetic Inferno – Inside the 7 Deadly Sins | CUP 2000 | 0-521-6404-4 |
| Singh, S. | BIG BANG | Fourth Estate (Harpers) | 0 00 715251 5 |
| Watson, J. | The Double Helix | Atheneum 1968 | |
| Watson, J. | DNA The Secret of Life | Knopf 2003 | 0-375-41546-7 |
| Wolpert & Richards | Passionate Minds – the inner world of scientists | OUP 1997 | 0 19 854904 0 yes |

Some clues about the books:

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| Alder: | Describes the seven year effort to correctly calculate the size of the metre (which was begun during the French Revolution and contains a hidden error!) |
| Braun: | a very readable account on how alcohol and caffeine affect human physiology |
| Boorstein: | the former Librarian of the Smithsonian in expansive mood – a history of how we humans got from there to here. |
| Bronowski: | this book was the companion to the BBCTV series in the early 1970s. Bronowski presents a superbly imaginative series of articles on the nature of human achievement. |
| Chandrasekhar: | I confess this is one of my most favourite books. Chandra is as erudite and searching on Shakespeare and Beethoven as he is on Newton. |
| Clark: | a readable and fascinating account of how cells work – how they begin and end. |
| Crawford: | A lucid exposition on viruses – and mankind's interactions with them. |
| Dawkins: | books that made quite a stir when they were published – including his latest. |
| Diamond: | a fascinating mix of science, anthropology and sociology. |
| Gleick: | A succinct, clear account of the life of one of the great genius' of Western thought (warts and all) |
| Gould: | a writer who can make the obscure not only intelligible but leave you wanting more. |
| Hall: | This book “breathes scintillating life into the most momentous science of our day, assesses the political and bioethical controversies it has spawned...” |
| Jolly: | another good read, as she elaborates her ideas on the origins of human intelligence. |
| Hawking: | <i>Brief History</i> : one of the most successful attempts to explain the erudite ideas of current cosmology. Ditto <i>Black Holes</i> and his latest volume <i>The Universe in a Nutshell</i> . Hawkins holds Newton's old chair as Lucasian Professor of Mathematics at Cambridge and is in the advance stages of Lou Gehrig's disease. An exceptional achievement on all fronts. |
| Highfield: | a superbly imaginative and informative book – though he concedes that broomsticks may never fly! A must for J.K.Rowling fans. |
| Kandel: | A most engaging book. A surprising achievement given that this is part autobiography of a Nobel laureate and part lucid account of how he has transformed our understanding of the brain and of the mind. |
| Lane: | I can't comment yet as I have only just received it – but it looks like a promising read! It is very literate: “The story that unfolds is more dramatic, more compelling, more intricate than any creation myth.” |
| Maddox: | formerly editor of <i>Nature</i> for a quarter-of-a-century, Maddox writes a fascinating book on where the Twenty-first Century might go scientifically. |
| Marks: | “Mark's book is a novel, intellectually provocative, and wittily engaging treatment of a topic now a shibboleth of modern genetics.” |

- Mayr: A summing up of a long career of biological enquiry. Here the holistic approach wins the day!
- Medina: Even the preface is funny! And Dante's *Purgatorio* from *The Divine Comedy* is front and centre as an organizing device for the entire book!!
- Singh: A history of how we have arrived at the BIG BANG theory of the creation of the Universe. Astonishingly, this is a 'page turner'.
- Watson: A classic. You can smell the adrenaline as Watson and Crick race to beat Linus Pauling in unravelling the structure of DNA.
- Watson: Watson in full flood in a "classic telling of the defining scientific saga of our age."
- Wolpert & Richards: A book that reveals scientists as passionate human beings – often equally entranced by the arts as by their science. Some have become expert practitioners in both disciplines.

2. Final Term Paper (suggest: 10 –15 pages, double spaced)

For the final assignment of the course you are to select a scientific issue that is of concern/interest to you. **Note that science is neither aspects of engineering nor social psychology. Make sure you have my agreement on your topic of choice before submission of your essay.** This will avoid any confusion about putative topics that may be on the borderline of science. I am expecting you to read several (not just one or two) sources for your basic material (which should be revealed in the References section of your essay) and to draw a synthesis and criticism of what you have read. To assist you in your choice the College is subscribing to the weekly *New Scientist* which contains layperson-readable articles on 'hot' scientific issues of the day. (For example, global warming, genetically-modified foods, pollution, etc). These copies will be kept on the library shelves in Room 302. Please read them only in the College rooms and return them to the shelves when you have finished reading them. Other sources of inspiration may be found on the internet – though reader beware! Not all internet sites operate with good scholarly premises. It is wise also to find corroborative articles elsewhere.

The heart of your essay should explain the basic science (as we currently understand it) behind the topic under review with an explanation as to why it is an issue that merits concern and/or interest. **Due on Thursday April 1st during the last lecture.**

The final mark for HUMS4103 will consist of:

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| Fall term Mid-term Book Review | 50% of final grade |
| Fall term Final Term Paper | 50% of final grade |

Prof. David Gardner, Professor emeritus, former Dean of Science

REGULATIONS COMMON TO ALL HUMANITIES COURSES

COPIES OF WRITTEN WORK SUBMITTED

Always retain for yourself a copy of all essays, term papers, written assignments or take-home tests submitted in your courses.

PLAGIARISM

The University Senate defines plagiarism as “*presenting, whether intentional or not, the ideas, expression of ideas or work of others as one’s own.*” This can include:

- reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another’s data or research findings;
- failing to acknowledge sources through the use of proper citations when using another’s works and/or failing to use quotation marks;
- handing in “*substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs.*”

Plagiarism is a serious offence which cannot be resolved directly with the course’s instructor. The Associate Deans of the Faculty conduct a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They range from a mark of zero for the plagiarized work to a final grade of “F” for the course, and even suspension from all studies or expulsion from the University.

GRADING SYSTEM

Letter grades assigned in this course will have the following percentage equivalents:

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| A+ = 90-100 (12) | B+ = 77-79 (9) | C+ = 67-69 (6) |
| A = 85-89 (11) | B = 73-76 (8) | C = 63-66 (5) |
| A - = 80-84 (10) | B - = 70-72 (7) | C - = 60-62 (4) |
| D+ = 57-59 (3) | D = 53-56 (2) | D - = 50-52 (1) |

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| F | Failure. No academic credit |
| WDN | Withdrawn from the course |
| ABS | Absent from the final examination |
| DEF | Official deferral (see “Petitions to Defer”) |
| FND | Failure with no deferred exam allowed -- assigned only when the student has failed the course on the basis of inadequate term work as specified in the course outline. |

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean.

WITHDRAWAL WITHOUT ACADEMIC PENALTY

The last date to withdraw from Fall term courses is November 16, 2009. The last day to withdraw from Fall/Winter (full year) and Winter term courses is March 12, 2010.

REQUESTS FOR ACADEMIC ACCOMMODATION

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www.carleton.ca/equity/accommodation/student_guide.htm

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www.carleton.ca/equity/accommodation/student_guide.htm

Students with disabilities requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you **only** require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the last official day to withdraw from classes in each term. For more details visit the PMC website: http://www.carleton.ca/pmc/students/acad_accom.html

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://carleton.ca/equity/accommodation>

PETITIONS TO DEFER

Students unable to complete a **final** term paper or write a **final** examination because of illness or other circumstances beyond their control or whose performance on an examination has been impaired by such circumstances may apply in writing within five working days to the Registrar's Office for permission to extend a term paper deadline or to write a deferred examination. The request must be fully and specifically supported by a medical certificate or other relevant documentation. Only deferral petitions submitted to the Registrar's Office will be considered.

ADDRESSES: (Area Code 613)

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| College of the Humanities 520-2809 | 300 Paterson |
| Classics and Religion Office 520-2100 | 2A39 Paterson |
| Registrar's Office 520-3500 | 300 Tory |
| Student Academic Success Centre 520-7850 | 302 Tory |
| Paul Menton Centre 520-6608 | 500 Unicentre |
| Writing Tutorial Service 520-6632 | 4 th floor Library |
| Learning Commons 520-1125 | 4 th floor Library |