HSCI 2213:
"THE DARWINIAN REVOLUTION"

The publication of Charles Darwin’s *Origin of Species* in 1859 radically altered prevailing perceptions of the natural history of life and has profoundly shaped western culture ever since. Darwin’s theory of evolution by natural selection placed humanity in the natural order and thus it is unsurprising that it was controversial from the start. The “Darwinian Revolution” was a revolution in culture as well as biology, and we will consider the history of the social, political and theological issues associated with the development of evolutionary thought. In this course students will learn about both the “origins” and the “reception” of Darwinism, the state of natural history before Darwin and the fate of earlier evolutionary hypotheses. Students will be expected to engage with the evidence that Darwin amassed in support of his theory of evolution by natural selection, as well as the range of criticisms, both social and scientific that were brought against it. Students will read an extensive scientific literature from the eighteenth century through to the “Modern Synthesis” in the 1940s, the period in which Darwinian selection was brought together with genetics to form the new science of modern biology.

Time and location:
Tues & Thurs: 9:00-10:15
Hester Hall 181

Office hours:
Thurs. 11:00-13:00
Assessment
Assessment will be by three take-home essays of approximately five pages type-written (each 20% of the course total). And one essay exam (20% of the total). You will also be asked to keep a “reading diary.” This will be collected in and graded at mid term and again at the end of the semester. Each half will gain you up to a further 10%.

More about assessment:

Take home essays: 3x20% = 60% of total
Essays should be sophisticated and informed, reflecting in-depth research. They should have a clear thesis and be appropriately referenced using a recognised citation style. Your professor can give you advice and guidance on this point. See the tips on writing style and the section on grading practices and standard appended to this syllabus. More will be said in preparation for these papers in class.

Essay Examination: 1x20% = 20% of total

Reading diary: = 20% of total
Each week there will be readings and lectures. You are expected to keep a “reading diary” in which you will answer these questions of the set readings for each week:
1. Who was the author? Their name and their significance.
2. What was the main argument the author intended to make and what was its significance?
3. What did you find most interesting about the weeks readings?
You should write no more than a short paragraph for each of these questions.
[Reading diary due in on Thursday 24th October and Thursday December 10th]

Extra credit???
There will be a limited amount of extra credit available for attending a number of the Darwin 2009 public lectures throughout the semester. I will alert you to these as they are scheduled.

COURSE TEXTS

Required:
Additional readings listed below will be placed on D2L.

Important dates

Essay one:
Set: September 10th, Due: September 22nd

Essay two:
Set: October 6th, Due: October 15th

Essay Three:
Set: November 12th, Due: November 24th

Examination:
Date, time and location to be announced.
Reading diary due in on Thursday 24th October and Thursday December 10th
CLASS SCHEDULE

Week One: (Read Quammen to p.51.)
Tuesday August 25th:
"Charles Darwin", "Darwinism" and "The Darwinian Revolution":
Some significant questions...
In this class we shall talk about evolution. What it is, what it isn’t and why some people still find the very idea controversial. We shall discuss what we mean by "Darwinism", its cultural and historical importance, and whether we can really talk about a "Darwinian Revolution."

Thursday August 27th:
The "Struggle for Existence": Scarcity, industry, competition and progress.
Charles Darwin was born in 1809 into a wealthy middle class family in England. In this class we will consider what life was like in England in the nineteenth century. During this period England was in the midst of the industrial revolution. It was a time of unprecedented change politically as well as economically. Immense wealth existed in the face of slum housing and grinding poverty. Mining and industry also drove advances in many of the natural sciences, including mineralogy and geology.
Reading:

Week Two: (Read Quammen to p.83)
Tuesday September 1st:
William Paley's Natural Theology
Although England’s economy was undergoing dramatic changes, in many senses the politics that mattered, those of the Anglican ruling elite, were based on stability. There is no separation of church and state in England, and long-established Anglican theology underlined the incumbent conservative politics of the nation. William Paley (1743-1805) was the English mathematician, theologian and Anglican priest who was most closely associated with "natural theology". In this section of his book Natural Theology, which was mastered by every nineteenth-century university student - Darwin included - Paley described how the order, complexity and apparent purposefulness in nature, compels the careful observer to conclude that the universe and everything in it was the creation of an omnipotent and loving designer. This was know as the "argument from design" or "argument from analogy." This is still the mainstay of present day "creationist" arguments for "intelligent design" - more of which anon.
Reading:

Thursday September 3rd:
Evolution and Extinction in France: Jean Baptiste Lamarck and Georges Cuvier.
Contrary to popular belief, the majority of the thinking public did not believe the Genesis story to be literally true prior to the publication of Darwin's Origin of Species in 1859. However, and in
large part because of the predominant Anglican theology in England, we have to turn to France to see the most open speculations about “transmutation”, as evolution was then termed. The novel and extraordinary fossil finds that were being exposed as a result of mining needed explanation. The most exciting ideas came out of the National Museum in Paris from Jean Baptiste Lamarck (1744-1829) and Georges Cuvier.

Reading:

Week Three: (Read Quammen to p.121)
Tuesday September 8th:
Earth History: “Uniformitarianism” and “Catastrophism”
William Whewell (1794-1866) a prominent geologist, minerologist, and longtime Master of Trinity College Cambridge, named the two theoretical explanations of the history of the Earth’s surface, “Catastrophism” and “Uniformitarianism”. The former allowed for significant occasional leaps in explaining the Earth’s natural history, a view associated with Cuvier’s “revolutions”. Uniformitarianism, however, entailed slow and gradual change. Cuvier’s Theory of the Earth (1813) (along with William Buckland’s Geology and Mineralogy (1836)) marked the field until the publication of Charles Lyell’s controversial Principles of Geology (1830-1833). Lyell (1797-1875), a former student of Buckland, proposed a uniformitarian theory of earth’s development suggesting that the earth was much older than previously assumed. Lyell argues that the fossil record is a “poor census taker”.

Reading:

Thursday September 10th: [first essay set today]
Richard Owen (1804-1892) was from Lancaster in England, and had been at school with Whewell, with whom he remained close friends. Trained as a surgeon he was a brilliant dissectionist. He became involved with the Hunterian Collection of specimens at the Royal College of Surgeons in London, and soon became the most distinguished British comparative anatomist of his day. In 1830 he became acquainted with Cuvier and in 1856 he became superintendent of the natural history department of the British Museum. Significantly Owen saw evidence of design in the organisms he dissected, and he wrote a number of important works demonstrating exactly this, in this one, On the Nature of Limbs, Owen outlines homology as evidence for design. An important figure in science, Owen was later to come into conflict with those who advocated for Darwinian evolution, Thomas Huxley in particular.

Reading:
**Week Four:** (Read Quammen to p.152)

**Tuesday September 15th:**

**Charles Darwin and the Voyage of the Beagle.**

Between the end of 1831 and the October of 1836, Charles Robert Darwin (1809-1882), sailed aboard the H.M.S. *Beagle*, a Royal Naval survey vessel, as the captain’s companion. His voyage took him from Plymouth, England, around South America, through New Zealand and Australia, across the Indian Ocean and around the Southern tip of Africa. When he left he was twenty-two with a general university education, five years later he returned to England as a minor celebrity as a result of the many plant animal and geological specimens he had collected during his voyage. His voyage, and not just his visit to the Galapagos Islands, were very important for his later views on speciation and his theory of Natural Selection. Significantly, so too was his timely reading of Thomas Malthus’s famous essay on population.

**Reading:**

Charles Darwin, *Journal of Researches into the Natural History and Geology of the Countries Visited by H.M.S. Beagle* [1839] [Modern versions, like this one, are often entitled *Voyage of the Beagle*


**Thursday September 17th:**

**Darwin’s Voyage on the Beagle (continued).**

It was not only Darwin’s celebrated visit to the Galapagos Islands that led him to his evolutionary conclusions, but he was also led to think long and hard about the divergence and variety of individuals within a species by his encounter with the natives of Tierra del Fuego. Darwin was led to consider both the role of the environment and the role of personal effort as explanatory of the differences between races.

**Reading:**


**Week Five:** (Read Quammen to p.204)

**Tuesday September 22nd:** [first essay due today]

**Evolution in England: The Vestiges of the Natural History of Creation.**

When evolutionary ideas were first mooted in England they scandalised the nation. It was not first voiced by Darwin either. *The Vestiges of the Natural History of Creation* was published anonymously in 1844, by the Scottish publisher Robert Chambers (1802-1871). Chambers presented an argument that in society, as in nature, progress was both natural and inevitable. His book was met with considerable discussion and controversy. It was, in the words of one historian of science, a *Victorian Sensation*. Geologists, and natural scientists attacked the book however for being wildly speculative.

**Reading:**


**Thursday September 24th:** [Reading Diary due in today]

**The Philosophy of Science and Scientific Proof: William Whewell.**

In this class we consider the philosophy of science, and, in particular, the nature of scientific proof and what made for good science. Debate on this question in England at this time came to centre around what it meant to be a good Newtonian. Arguably the most important writer in this debate was the Cambridge mathematician William Whewell (1794-1866). It is no exaggeration
to call Whewell one of the most influential figures in the history of modern science. The son of a Carpenter, Whewell was recognised as a superb mathematician by a local parish priest, and arrangements were made for his education. Through hard work and scholarships he attended Cambridge University and eventually became Professor of Mineralogy and Professor of Moral Philosophy. He was close to many of the prominent men of science of his day – including Lyell, John Stevens Henslow, Adam Sedgwick and with Darwin during his own student days at Cambridge. In this section from The Philosophy of the Inductive Sciences (1840), Whewell explained how scientists could best use the inductive method to extrapolate knowledge from collections of observations. Whewell’s thinking on this matter was vital to Darwin’s argument for evolution in Origin.

Reading:

Week Six:
Tuesday September 29th:
On the Origin of Species: “One long argument”
Darwin had formulated the basic outline of his theory of natural selection as early as 1838, but he waited for over two decades to publish it. Anxieties about the accuracy of his conclusions, concerns about both public and scientific reaction, and the uproar over the Vestiges in 1844 combined to keep Darwin silent. By the 1850’s, convinced he was correct and both financially and professionally secure, Darwin began discussing his ideas with a close circle of colleagues – among them Charles Lyell and Joseph Dalton Hooker, eventually publishing Origin in 1859 to avoid being forestalled by Alfred Russel Wallace. In this class we will discuss the overall structure of Darwin’s “one long argument,” as well as looking in detail at the opening chapters.

Reading:

Thursday October 1st:
Natural Selection and Speciation
In light of the fact that far more organisms of any species are born than can possibly survive, Darwin argued, only the best fitted to their environment would survive to reproduce. These survivors would tend to pass on their beneficial traits to the next generation. The unfit would, he concluded, be dispassionately exterminated by this same mechanism. Over time these favourable variations would, if they continued to prove advantageous, result in significant morphological changes in the species. In this chapter too Darwin also puts forward his theory of divergence, by which he sought to explain how one species might, through circumstance and selection, be split into two or more distinct species.

Reading:
Week Seven
Tuesday October 6th: [Second Essay Set today]
Difficulties on Theory:
Having laid out the mechanism of his theory of the Struggle for Existence and of the Natural Selection that must therefore ensue, Darwin turned to the objections that he anticipated might be raised against his theory. In chapter six and seven Darwin deals explicitly with a number of reservations that he anticipated his readers might have about the efficacy of selection to accomplish all that he claimed for it.
Charles Darwin, On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life [1859]. Chapters 6&7 and pages 380-384 of chapter 14, starting: “When the views...”

Thursday October 8th:
Ideologies clashing: T.H. Huxley and Sam Wilberforce at the 1860 meeting of the British Association.
A significant aspect of the history of evolutionary thought revolves around the religious controversy it raised. Perhaps the most famous event in this history was the debate between “Darwin’s Bulldog” Thomas Huxley and the Bishop of Oxford, Sam Wilberforce. We will revisit this debate. It was certainly a significant event, but perhaps not for the reasons we might think!
Reading:
Short extract from The Life and Letters of T.H. Huxley, to be provided. Reference will also be made to Huxley’s 1860 Review of Origin in the Westminster Review. See the pdf provided.

Week Eight: (Read Quammen to p.234)
Tuesday October 13th:
Darwinian Natural Theology in England: Charles Kingsley and Water Babies
In contrast to Wilberforce, the Broad-Church Anglican Priest, Charles Kingsley read Darwin’s work as being consistent with Natural Theology. As well as a popular author, with a controversial background in political Radicalism, Kingsley had become tutor to the Prince of Wales and Chaplain to the Queen. – he was thus not without influence! He wrote, spoke, and sermonised (!) extensively on evolution and its religious orthodoxy, but nowhere did he do this more deeply (or more charmingly) than in the fairy tale he wrote in 1862-3, Water Babies.
Reading:

Thursday October 15th: [Second essay due today]
“The details left to chance”: Asa Gray, contingency and design in nature.
Asa Gray (1810-1888) was a botanist at Harvard who, following the publication of the Origin, commenced an enthusiastic and a lifelong correspondence with Darwin. Whereas many people thought that Darwin’s theory refuted Paley’s argument from design, in many ways like Kingsley, Asa Gray believed that natural selection was the mechanism through which God brought new species into the world. He was influential in ensuring that the Origin had a ready reception in the United States, and defended the work against the charge of atheism. However, Darwin took him to task in correspondence, and later in public, over his persistent theism.
Reading:

Week Nine: (Read Quammen to p.253)
Tuesday October 20th:
Questioning selection:
The period that followed the publication of Origin has been described by more than one historian as the “Non-Darwinian Revolution.” By the end of the 1860s most naturalists were convinced evolutionists, but few people accepted that natural selection could do all that Darwin said it could. Perhaps most notable were the objections made by the Scottish Engineer Henry Charles Fleeming Jenkin (1833-1885) and the Irish physicist William Thompson (1824-1907), who later became Lord Kelvin. Fleeming Jenkin pointed out that if those organisms with unusually fit traits bred with the less fit of their population, the result would tend to be an averaging out of that trait, rather than its exaggeration to the point of forming new species. William Thompson also questioned Darwin’s theory. His calculations of the earth’s age, based upon deductions about the temperature of the Earth’s core, suggested that the Earth was nowhere near old enough for sophisticated organisms to have evolved through the slow uniformitarian processes favoured by Darwin.

Reading:

Thursday October 22nd:
Further objections:
There were other objectors with other objections. Even Alfred Russel Wallace had misgivings about the capacity for selection to account for the evolution of conscience. In this class we will discuss the objections raised by Wallace, the Duke of Argyll George Douglas Campbell, and the English Catholic anatomist St. George Jackson Mivart. As well as Darwin’s response to them.

Reading:

Week Ten:
Tuesday October 27th:
The Descent of Man and Selection in Relation to Sex.
In the Origin Darwin had carefully skirted the issue of human evolution, however, it was the obvious question that his readers asked, and which many other authors ventured into in light of Darwin’s theory. By 1871 Darwin finally decided to put pen to paper himself in The Descent of Man. In this book Darwin not only speculated about the origins of modern humanity, but also took the opportunity to more fully expound his theory of “sexual selection” a natural force that he saw working sometimes in tandem, and sometimes in opposition to natural selection. In doing so he sought to answer questions raised regarding the evolution of those supposedly unique human characters: morals and aesthetics.
Readings:

Thursday October 29th:
*The Politics of Evolution: Huxley and Kropotkin*
Evolution was taken to have political as well as theological implications. Huxley, as we know, welcomed Darwin’s work as “a Whitworth Gun in the armoury of liberalism”, and he continued to argue that evolution endorsed liberal views throughout his life. Significantly, in 1888 he wrote an article in the periodical *Nineteenth Century* entitled “The Struggle for Existence in Human Society” in which he described nature – and human nature – as being governed by the same rules and passions as governed the gladiators arena. In drawing this conclusion he drew the ire of Peter Kropotkin (1842-1921), a Russian Geographer who was then living in exile in London. Kropotkin was moved to respond, arguing that Huxley had grossly misrepresented Darwin’s work. At least as important for evolution as competition, he argued, was mutual aid. Kropotkin went on to write a number of articles expanding on his point over the next twenty years which were collected in *Mutual Aid* (1902) and *Ethics* (1921). In stressing cooperation over competition, Kropotkin recognised his own anarchist-communist political views in nature. His work which not only naturalised cooperation, but also rejected Malthusianism, was particularly influential in the British socialist movement.

Reading:

Week Eleven:
Tuesday November 3rd:
*August Weismann, E. Ray Lankester and Evolutionary Degeneration and neo-Darwinism*
In this class we will discuss two important developments in thinking about evolution: the idea of evolutionary degeneration, and neo-Darwinism. The former was publicised by Edwin Ray Lankester in his *Degeneration: A Chapter in Darwinism* (1880), the latter by the German cell biologist August Weismann. In the early 1880s Weismann (1834-1914), largely through experiments in which he cut the tails off of successive generations of mice, came to the conclusion that “acquired characters” simply were not inherited, thus significantly undermining the theory of Neo-Lamarckism. Weismann suggested that there were two types of cells in the human body – the somatic cells of the body, that could be altered in the course of our lives, and the germ cells, that contained the essence of life that would be passed on to form the next generation. This latter, he argued, were not influenced by “acquired characters”.

Reading:

Thursday November 5th:
In the mid-1880s Herbert George Wells (1866-1946) was a young science student with a passion for zoology. Significantly he studied under Huxley and Lankester. Huxley by this time was an established figure at what was shortly to become the Royal College of Science – a sure sign of how much society had changed in just twenty years. Wells was deeply impressed with Huxley’s
Malthusian biology, and although he went on to become a famous author and socialist, after graduating he worked briefly as a science teacher (writing his 1893 *Textbook of Biology*, the first biology textbook in the English Language), and later, as a science journalist. Although first introduced to Weismann’s work as a student, it was through his science journalism that Wells really engaged with Weismann’s theory of heredity. Wells, like many of his (and our own) contemporaries, saw profound social implications in biology, and Weismann – coupled with the Malthusianism he had learnt from Huxley – radically influenced his views about socialism. Although credited with founding the genre of “science fiction”, Wells rejected this accolade, arguing that his books were “fantasies of possibility”, and he explored many of these themes in his fictional works, notably *Time Machine* (1895).

**Reading:**

**Week Twelve:**
**Tuesday November 10th:**
*Continuous or Discontinuous Evolution? The meaning of Mendel’s peas.*
Hugo de Vries (1848-1935), a Dutch physiologist, was one of three biologists who independently rediscovered the 1865 work of Gregor Mendel on inheritance. At the time, Mendel’s work was interpreted as an alternative to Darwinian selection. This was largely because de Vries argued that evolution occurred in “jumps”, as opposed to Darwin’s belief in a uniformitarian gradual and continuous change. As a result he argued that evolution occurred in fits and starts as new mutations appeared. William Bateson (1861-1926) was an English biologist and advocate of Mendelism and was the founder of the science of genetics. In this piece Bateson presented the problems that biologists confronted in explaining the precise mechanisms of evolution. Bateson certainly believed that evolution occurred, and most other biologists viewed the article as a call to action, but religious critics of evolutionary theory used it to attack the reality of evolutionary change.

**Reading:**

**Thursday November 12th:** [Third essay set today]
*Eugenics in England and America:*
Francis Galton (1822-1911) was an anthropologist and pioneer in the study of the intelligence of mankind. He also coined the word “eugenics” to describe the science of racial improvement. Darwin’s cousin, Galton was also a respected researcher and held a chair at University College London. In *Hereditary Genius* (1869), a book that impressed Darwin, Galton sought to quantify the hereditary relationship between members of high social position (which he took for a measure of their inherent quality), and their offspring. Charles Benedict Davenport (1866-1944) was an American evolutionary biologist who led the study of genetics and its application to eugenic ends in the United States. In 1902 he founded the Station for Experimental Evolution in Cold Spring Harbor, New York, and in 1910, the Eugenic Record Office to promote and disseminate eugenic research and employed Harry Laughlin who became one of the most influential figures in the history of eugenics. He was responsible for bringing the infamous case BUCK v BELL that sought legal precedent for the forcible sterilisation of the feebleminded.

**Reading:**
Week Thirteen:
Tuesday November 17th:
Evolution in the Class Room: The Scopes Monkey Trial
In the early 1920s, several southern states passed legislation prohibiting the teaching of evolution in public schools, the Tennessee law declaring that it was a crime to teach that “man had descended from lower animals.” In a challenge to the constitutionality of these legislations the American Civil Liberties Union instigated the famous Scopes Trial in Dayton, Tennessee in 1925. The trial made national news, not least because of the celebrity advocates for each side, William Jennings Bryan for the State and Clarence Darrow who defended Scopes. Immortalised in the public mind through the televised play Inherit the Wind, the trial – and its consequences - have been somewhat misrepresented.

Reading:

Thursday November 19th:
2009 History of Science Society meeting, Phoenix, AZ:
No class today.

Week Fourteen:
Tuesday November 24th: [Third essay due today]
The Modern Synthesis: the role of theoretical population genetics.
Julian Huxley (1887-1975), grandson of Thomas Henry Huxley and brother of the novelist Aldous Huxley, was an important evolutionary biologist in his own right. In the mid-twentieth century he helped to develop what he termed the “modern synthesis”, a multi-disciplinary effort to synthesise existing knowledge in biology, and to identify short-comings and agree on the essential elements of evolutionary theory. Crucial work was done by population geneticists to show that even small variations could spread through a population and accumulate to have significant results.
Reading:
H.B.D. Kettlewell, "Darwin's Missing Evidence".

Thursday November 26th:
Thanksgiving Break: No Class.
Week Fifteen:
Tuesday December 1st:
The Modern Synthesis in the field:
As we have seen, natural selection was popular with Pearson and Weldon especially because it seemed to explain the morphological changes that he observed among populations of organisms in response to changes in their environment. The work of H.B.D. Kettlewell on 'peppered moths' allowed him to demonstrate that the morphological changes that he observed as this species responded to changes in their environment were tied to the selection and heredity of specific genes. Kettlewell published his work on the eve of the 100th anniversary of the publication of the Origin of Species.
Reading:

Thursday December 3rd:
Levels of selection and the "Altruism Equation":
Since the publication of origin there had been debate about two related things. First, what was the "unit of selection", was it the individual, the group, or the species that was selected? The implications of this were significant for the second question: that of the apparent existence of altruism in nature. If selection worked purely on an individual, then how could it possibly have resulted in the altruism and mutual aid that people observed in nature? Critics of group selection, however, argued that it was a woolly concept that had fatal problems of its own. The work of William Hamilton showed that apparently "altruistic" behaviour could be explained as a result of what came to be called "kin selection." Individuals that acted in a way that increased the survival chances of their own close relatives (who carried some of the same genes as themselves) would thus in effect be acting to preserve copies of their own genes. This idea was popularised by Richard Dawkins in his 1976 work The Selfish Gene.
Reading:
To be assigned

Week Sixteen:
Tuesday December 8th:
Sociobiology and its critics:
Richard Dawkins' work followed fast on the heels of Edward Wilson's monumental 1975 book Sociobiology. Wilson's book was controversial in the breadth of the claims he made regarding the application of the same explanatory framework of animal behaviour to human society. Could all aspects of human life: religion, ethics, and indeed the very existence of society be explained in terms of biology? Wilson answered "Yes!" emphatically. His views, perhaps unsurprisingly, did not go unopposed.
Reading:
E. O. Wilson, extracts from Sociobiology, and On Human Nature.

Thursday December 10th: [Reading diary due in today]
Creationism and Intelligent Design: On Teaching the 'Debate'?
The Scopes Trial was clearly not the end of Creationist attempts to prohibit the teaching of evolution in American classrooms, or indeed, to gain equal time for what they termed “Creation Science” — the argument that there is scientific evidence for the Divine Creation — as an alternative to the scientific evidence for evolution. Indeed both Arkansas and Louisiana passed legislation to this effect in the late 1970s. Following the ruling of Judge Overton in January 1982 that the teaching of Creation Science alongside evolutionary explanations of the development of life on earth is unconstitutional, an appeal to the U.S. Supreme Court was made on behalf of the State of Louisiana. This in turn resulted in the 1987 case Edwards vs. Aguillard — in which the unconstitutionality of teaching Creation Science in public schools was upheld. More recently Creationism re-emerged in the form of “Intelligent Design” — a similar set of claims, but in which there is no explicit reference to a Christian God as the designer. However, in Pennsylvania in 2005, in the case of Kitzmiller vs Dover Area School District, Judge Jones also ruled the teaching of “Intelligent Design” unconstitutional. – It is unlikely, however, that this will be the end of the matter...

Reading:
Extract from Kitzmiller vs. Dover School Area District, filed December 20th 2005.

Essay Four will be set as a Final Examination. The date, time and location will be announced in due course.
Course Formalities and Expectations

Attendance and Participation:

Attendance in class is mandatory. If you repeatedly miss class without good cause you will receive a written warning. Persistent absences may result in your receiving a failing grade for the course. For this reason if you have good cause to miss class, it is imperative that you discuss this with your instructor BEFOREHAND.

Academic Integrity and Plagiarism:

Plagiarism is the unacknowledged appropriation of someone else’s words, ideas, or work which is then represented as your own. It will not be tolerated and carries significant and serious penalties. At a minimum you will receive 0% for the assignment, and your name put on record. It is possible that you might receive 0% for the course, and in extreme cases may be expelled from the college. You are therefore strongly recommended to educate yourself regarding what plagiarism is and how to avoid it. Your instructor and/or the staff at the writing centre will be happy to advise you on this matter if you are in any doubt.

NB: Be aware that ignorance of what constitutes plagiarism will not be accepted as an excuse for it. If at any time you are unsure of how to cite material, your instructor or writing centre staff will be happy to advise you.

YOU SHOULD CHECK THIS LINK

http://libraries.ou.edu/help/tutorials/academicintegrity/player.html

OU operates an equal opportunities policy. For information on Disability Resources and Policy see: The Disability Resource Centre web site: http://drc.ou.edu/

Work that is late will not be graded unless there are exceptional documented circumstances
Tips on Effective Essay Writing

Since writing an effective essay is not a straightforward task, and improving your essay technique is one of the most important skills you will learn during any class, here are some initial suggestions. First write some general notes on what you already know about the subject of your essay, outlining the most striking points. Think why these points are so important, and what they entail for the particular methodological or ethical approach with which you are concerned. Then turn to the notes taken during class and to the set readings themselves, as well as any further background readings you may have identified through bibliographic surveys. Continually re-examine your list of striking features and the organisational structure you have imposed upon them, and think how these materials might help you to articulate your analysis more clearly. When you are ready, sketch an outline of your argument, and then write your first draft. Make sure that to the best of your knowledge there are no logical gaps in your argument. If you can identify some, go back to the literature to see if you can close them. This second look at the literature (and your reading notes) is important. Once you have constructed a hypothesis, you will be able to test it against the arguments of the various authors, and to find those who support your case, and those who are your opponents. (note: having your own hypothesis is the point at which the essay truly becomes your own contribution to the debate). You are then ready to proceed to the second phase.

Writing multiple drafts is a good way to produce a good essay, especially if you can gain some distance from early drafts, for example, by having someone else read them. This is how professional academics work, and so you should try to do so too. You are encouraged to exchange your essays with one another and discuss your work with your colleagues as the course progresses. You should be aware that essays written the night before they are due invariably read like they were written the night before they were due, and as a result often appear ill-considered, disorganised, and incoherent. You should aim to manage your time to allow for at least two drafts and revisions. This will pay significant dividends in terms of the quality of your submitted work, and correspondingly, with the grade you can expect. Your tutor will be happy to discuss early drafts of your work, as will staff at the writing centre.

What makes a good essay

Introduction and argument: A good essay does not simply summarise the argument of the text(s) under examination. It also involves you constructing a coherent narrative about how those texts relate to a broader argument of your own. So, a good essay might start off with a short introduction to the particular element of the topic that you discuss. This might be followed with a similarly brief account of what you intend to say and how you intend to convince the reader of your argument, which brings us to the importance of clear organisation.

Argument and organisation: A good essay should not simply be a list of points about the subject under examination, all arranged in a haphazard manner. It should instead take the reader step by step through the argument so that they will end up seeing the logical progression of your
narrative, even if they might not agree with your conclusions. This means that after a good introduction, each subsequent paragraph should introduce one particular idea about the episode and finish with a statement that prepares the reader for the next paragraph and its particular idea. These paragraphs should be arranged in a logical sequence that takes the reader from the introduction to the conclusion, which means, of course, that the paragraphs should not contradict each other. A good organisation of these steps then depends critically on a very clear understanding of your essays’ aims and objectives. A clear understanding of your readers’ likely assumptions is equally important to avoid their misunderstanding any part of your argument. Think of it as a chess game, and so always try to put yourself in your readers’ shoes! Do not annoy them unnecessarily by forcing them to ask ‘where is this essay going?’

**Evidence:** A good essay should not only be a logical argument, but it should have the aim of convincing your reader of your point of view. To this end each point of the argument should be backed by evidence from the literature you have consulted, as is appropriate to the specific point being made. Importantly, direct quotes or paraphrases of the text or other literature should be carefully referenced, in footnotes and in a full bibliography of all works cited.

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**Preferred reference style**

**Article:** First name(s) and last name(s), ‘Title’, *Journal Title*, Volume, (Year), Page-Page, on p. XXXX or pp. XXXX-XXXX (if you are quoting or referring to specific passages).

**Book:** First name(s) and last name(s), *Title*, (Place of publication: Publisher, Year), Page (p. XXXX) or pages (pp. XXXX-XXXX).

**Essay in an edited collection:** First name and last name, ‘Title’, in First name(s) and last name(s) (ed. or eds.), *Title*, (Place of publication: Publisher, Year), Page-Page, on p. XXXX or pp. XXXX-XXXX (if you are quoting or referring to specific passages).

**Web site:** http://www. (Full site address): First name(s) and last name(s), ‘Title’, Date accessed.

[You may use any recognised style of referencing – as long as you are consistent]

Accurate referencing is not simply a matter of avoiding any accusation of plagiarism, but also of leaving open the possibility for your readers to explore the point you make in greater detail than is appropriate to the argument of your essay. It is perhaps needless to say, but you must always take care that your quotations or references support your point, and this may sometimes mean that you will have to explain how this is the case.
Style: A good essay should also be written well, attentive to syntax, grammar and spelling. This is not because your reader is pedantic, but because good syntax and grammar helps clarify your argument. For example, if you compare the passive statement ‘it was said that...’ with the active statement ‘so-and-so said that...’, in the second statement you are providing the reader with much more, possibly important information about ‘so-and-so’, and you will not beg questions about who exactly ‘said that...’. Also, when you write in one sentence that ‘so-and-so said’, and ‘so-and-so says’ in the next, your readers might wonder about chronology and the order of causes and effects. Wanting good spelling may seem even more pedantic, but why risk aggravating your reader when you can use the spell-checker? Lastly, always have a good dictionary at hand, because different words for the same concept often convey different meanings, some of which may not fit well with the point you are making. (You should be aware however, that common dictionary definitions of terms may lack the nuances of how we might interpret these terms in historical perspective philosophy (for instance a dictionary is unlikely to give you a full appreciation of the changing meaning of a word like “evolution” for example). You might also consult subject specific dictionaries (A Dictionary of Biology, for example). If you are in doubt about how an author is using a word, you should feel free to ask).

You are encouraged to review each other’s work in progress, and to provide comments to the author on the effectiveness of their argument. You should be aware that this is an important part of learning how to write, (and to be a generous member of an academic community) and remember that a thorough review of someone else’s essay probably benefits you more than the author, as you discover how others go about their task and thus what might be the limitations of your own compositions.

The writing and the peer review of your essays in such a painstaking fashion will enable you to further develop your research skills. You will improve the effectiveness of your handling of primary and of secondary materials and thus your understanding of the historical significance of the development of environmental thought. Moreover, you should find that the exercise helps you advance your ability to analyse material and express an argument in a persuasive and informed manner.
GRADING PRACTICES AND STANDARDS

<table>
<thead>
<tr>
<th>Percent</th>
<th>Letter Grade</th>
</tr>
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<tbody>
<tr>
<td>90-100</td>
<td>A exceptional</td>
</tr>
<tr>
<td>87-89</td>
<td>B+ competent</td>
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<tr>
<td>84-86</td>
<td>B competent</td>
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<tr>
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<td>D- inadequate</td>
</tr>
<tr>
<td>00-59</td>
<td>F unacceptable</td>
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</tbody>
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The following guidelines offer a characterisation of the type of work that might be associated with various ranges of grades. The intent here is to encourage general consistency across faculty and Graduate Teaching Assistants, and to give a guide to what is required in academic writing rather than to provide precise specifications.

90% to 100% (A)

“A” grade work is exceptional, showing strong evidence of original thinking and good organisation. The student will have shown a capacity to analyse and synthesize information, as well as a superior grasp of the subject matter in hand and an ability to make sound critical evaluations based upon an extensive knowledge base. Work of this standard should be well argued, well documented, and well written.

80% to 89% (B- to B+)

Work of this grade is competent, showing evidence of a reasonable-to-solid grasp of the subject matter. It should also show evidence of critical and analytical thinking. The work should also indicate a familiarity with the literature. It should be clearly written, accurate and coherent, including major points from the course material and an appreciation of their importance.

70% to 79% (C- to C+)

Work of this grade is of adequate performance, showing a fair understanding of the subject matter and an ability to develop solutions to simple problems in the material. It
may include some errors and slight misconceptions, but should be indicative of a reasonable engagement with the course material. An acceptable although uninspired piece of work, it should not contain serious errors, but may lack style and vigour in its articulation.

60% to 69% (D- to D+)

Work of this grade is adequate, but poor. Poorly articulated and lacking in a coherent argument it may also lack sufficient documentation. Although it may provide some relevant information, it omits many important points and contains a number of substantial errors or misconceptions.

00% to 59% (F) Inadequate.

Work of this standard is inadequate, showing little or no understanding of the subject matter. Exhibiting little evidence of critical and analytic skills, this work contains only a limited or irrelevant use of the literature. Poorly articulated it is likely to lack coherence and be difficult to comprehend. Work of this grade is not of degree standard.