GEOL 200 – Paleontology
Research Paper

A research paper is required in this course with an open topic of your choice. The paper must be a discussion of a paleontological issue and the methods that have been/ should be used to address it. You will be required to submit a short paragraph paper proposal, a bibliography of literature sources, and a final paper.

MINIMUM REQUIREMENTS:

- The paper can be no less than 6 and no more than 10 pages long, excluding abstract, graphics, and references.
- The paper must use a minimum of 10 relevant sources, although you probably need more than 10 to do a good job on the paper.
- The paper must include at least two graphics; one figure (picture or diagram) and one table (chart or graph). Useful graphics communicate information that is difficult to communicate efficiently in text.
- Direct quotes are not acceptable.
- The paper must have sections with headings.

If your paper does not meet the minimum requirements it will not be read. I will give it back to you and count the paper as late with a grade penalty.

WRITING THE PAPER:

- The 6-10 page paper will analyze the issue of your choice. You may support your arguments with the observations or analysis of other researchers (properly credited), but the paper can not be a simple summary of other people's ideas.
- You should synthesize information from multiple sources and analyze the issue, showing why some arguments are correct and why counter-arguments are not valid.
- The tone of the paper should be formal and in the third person. Note the style used in the journal articles you read as background information.
- Because you are not a paleontologist, you are not qualified to make your own arguments without evidence. Therefore, you must critique the ideas of the paleontologists presented in their publication, but don't invent anything.
- Properly cite other people's work. See the citations handout for correct form. Remember, it's always better to use too many citations than not enough.

PAPER FORMAT:

1. **Title.** A succinct title conveys the essence of the paper. Dull but informative is far preferable to clever. It's acceptable for the title to be more than a few words long, as long as it conveys the necessary information. For example, "Why Dinosaurs Could Fly: Comparative Anatomy of Sauropods and Avian Reptiles."
2. **Abstract.** This is a short synopsis of the paper, between 250-500 words long. It should include all the important pieces of the paper, including the conclusion. The abstract is a time-saving device that allows the reader to see at a glance if the paper is relevant enough to be worth reading all the way through. For guidance on writing your own abstract, pay close attention to the structure of the abstracts in the papers you read in your research.

3. **Introduction.** The introduction should set the stage for further discussion. Describe your problem, including references to the early researchers who identified the problem. Assume your reader has no previous knowledge of this topic, but does have a working vocabulary in paleontology. Because this is a technical review, it is not appropriate to use many of the ways your English teacher may have taught you to start a paper (e.g., no clever anecdotes, no suspenseful statements, etc.) Instead, you will state the thesis of your paper almost immediately (e.g., "While a wide variety of explanations have been posed for the extinction of the dinosaurs, none is better supported by the evidence than the impact hypothesis."). Then preview the structure of the paper and the critical arguments. Then provide a transition to the body of the paper. See the handout for more help with your intro.
4. **Body of the paper**. The bulk of your discussion belongs here. This is where you will explain and contrast competing hypotheses on the issue you have chosen. This paper should not be a "book report." I expect you to compare and contrast a variety of opinions on your selected subject. In order to do this, you will need to consult multiple sources, all of which should be research papers. Organize this section by categories of theories, not by individual authors. Here are two examples.
    a. DO NOT do this: "Jones (2006) says that life originated on Mars and fell to Earth on a meteorite. Smith (2005) argues that life began inside the earth and moved to the surface. Goober (2003) says that life originated in pools at the Earth's surface."
    b. DO this: "There are three major theories on the origin of life: that it originated in space and traveled to Earth on meteorites or comets (Doily, 1999; Jones, 2004; Zeon, 2006); that life evolved in geothermal environments inside the earth and later moved to the surface (Smith, 2001; Tootsies, 1999); and that life originated in pools on the earth's surface (Goober, 1997; Smartguy, 1990). There are serious questions remaining for each of these models. If life originated in space....."

REMEMBER that you must cite evidence for your arguments, and that every use of someone else's arguments must include a citation.

5. **Conclusions**. This is where you summarize the status of the different theories on the issue and make your arguments as to which is best supported by the evidence.
6. **Literature Cited**. Include an alphabetical list of the references you have cited in your paper. Do not include references you did not directly cite. See separate handout for citation format.
    a. Some forms of reference are entirely unacceptable for this research paper. These include: (1) News reports (in print or online) from newspapers, wire services, and other mass media services (e.g., CNN, MSNBC, etc.); (2) Dictionaries; (3) General textbooks because they are often simply simplified summaries of other peoples' work; and (4) MOST web-based sites as anyone with a computer and html knowledge can produce anything.

SCHEDULE

Friday 11 September : Paper Proposal Due
Friday 10 October : Bibliography Due
Friday 16 October : Paper Outline Due
Wednesday 25 November : Final Paper Due

GEOL 201–Principles of Paleontology

The semester-long research paper, with a topic to be chosen from the following list (or something comparable in scope, but a topic we won't be covering in detail in class), will be an opportunity for you to bring your gain in understanding to study of a particular paleontologic topic or process; **no two students can select the same topic**. Note also that just because something *appears* to be a relatively simple problem doesn't necessarily mean that it ***is*** simple! *Including in-class presentations at the end of the semester*, this will be worth 25% of your grade.

Potential topics include, but are not limited to:

1. Post-Snowball Earth Metazoan Radiation
2. Were Ediacaran Faunas Marine or Terrestrial Animals?
3. Comparative Trilobite Ontogeny and the Evolution of Arthropods
4. Archaeocyathids: Sponges, Corals, or Something Else
5. *Prototaxites*: Fungus, Tree, or Both
6. The Effects of Global Cooling on Marine Invertebrate Populations
7. Paleozoic Insect Diversification as Evidenced from Herbivory
8. Dinosaur Growth Rates Deduced from Bone Histology
9. The Biomechanics of Bipedal Dinosaurs
10. Flying Reptiles: Active Flyers or Gliders
11. Evolutionary History of Marine Mammals: Whales
12. Terrestrial History of C4 Biomass
13. Reconstructing Paleodiets of Tertiary Mammals
14. Living Fossils Other Than The Usual Suspects
15. The Coloration of Fossil Feathers

To help keep you on track, on the next page are some deadlines that are **IMMOVABLE and LITHIFIED**, unless a major catastrophe shuts down the entire campus. **NOTE** that for each item due below, this should be submitted *in written form*, on paper. ***PLEASE* note that I do not accept electronic submissions except for paper topic selection.**

In the **upper right-hand corner** of the first page of each item, should be your name, the class (GEOLXXX), and the date (properly formatted – e.g., March 8, 2014, or 8 March, 2014, but ***NOT*** 3/8/14 – which may be OK for your own informal notes but inappropriate for **any** formal work; be aware that a date written as 3/8 is *also* interpreted as August 3rd in 99% of the world). All written work should be submitted **in 12-point type and double-spaced,** including references. (References should be singlespaced ***only on the final draft!***)

Date	What's Due	Potential Point Value
Friday, 14 February	Topic due	10 pts.; -1 point for each day late
Friday, 28 February	Reference List due	10 pts.; -1 point for each reference <10
Friday, 7 March	Paper Outline	10 pts.; -1 point for each day late
Friday, 14 March	Draft of **Introduction**	10 pts.; -1 point for each day late
Friday, 4 April	Draft of ***complete*** paper	**This WILL be a final draft; I will not accept a rough draft**
Laboratory **7-8 May**	Oral presentation	10 pts.; -1 point for each day late
	Written Synopsis	10 pts.; -1 point for each day late
Friday, 9 May	Final Draft of Paper	65 pts.; -10 points for day late

Grading of References will be based on:

- Are the basic instructions followed with respect to formatting?
- Are these respectable references from the peer-reviewed literature? This would be a journal article, or an article in an edited volume (e.g., a conference proceedings volume). Abstracts from professional meetings are OK if there are few journal articles available on your topic (unlikely, but possible).

- Are there ***at least*** ten viable references? Bear in mind, this is to get you started – your reference list will likely grow as you write the paper.
- Do NOT use any textbooks or other secondary sources
- Absolutely **NO** web sites.

Grading of Outlines will be based on:

- Are the basic instructions followed with respect to formatting? (This includes heirarchy of subheadings – see below)
- Does the outline adequately cover your topic, in such a way that you can use this to structure the paper?
- Remember that the outline SHOULD consist of what will be section and subsection headings – i.e., full sentences are inappropriate.

Grading of Introductions will be based on:

- Are the basic instructions followed with respect to formatting?
- Is the writing clear and understandable? Does it introduce the topic, and its significance?

Grading of draft papers will be based on:

- Are the basic instructions followed with respect to formatting, structure, and references?
- Is this a complete and final draft – or a "rough" on which I'm going to wonder whether I should waste time correcting stuff you plan to change anyway? (This latter sin WILL cost you!)
- Thoroughness of analysis: did you make **full** use of the resources available?
- Organization: Did you organize this in a coherent and logical manner? (***Instructions and guidelines to follow!)*** Are references in proper format, both within the paper and in the "References Cited" section at the end?
- Writing: is the writing clear and understandable, proof-read and spellchecked before you handed it in?

Grading of FINAL papers will be based on:

- Are the basic instructions followed with respect to formatting, structure, and references?
- Did you address any and all the issues I raised on your first draft, or are the same problems here as well?

Note: If you addressed everything I pointed out on your earlier draft, this should be utter pleasure to read. ***NOTE that I reserve the right to return the paper to you ungraded if, in my opinion, it is not yet ready for submission!***

Grading of presentations and synopses will be based on:

- Is your oral presentation clear, organized, and understandable?
- Does your **SYNOPSIS FOR THE CLASS** summarize accurately what you have in your paper, both clearly and concisely?

FINDING SOURCES OF INFORMATION

GeoRef

The premier index to the geological literature is GeoRef, which includes all North American geological literature back into the 18th Century, and almost all relevant foreign literature of the past 80 years. *This is the most outstanding and thorough on-line database in **all** of the sciences*. You can access this through the college Library web page directly.

To get to GeoRef, go to the library home page. Search by TITLE and enter GeoRef. The first result that should come up will be Georef: Electronic Resource. Click on "Connect." That should connect you via the EBSCOhost link. Maximizing the efficiency of this resource is a skill to be acquired, and you need to be aware that HOW and for WHAT you search are carefully structured.

When you find a great source, SOMETIMES you can get the complete text by clicking on that button, but particularly for older journals, this won't work. In such a case, go back to the Library home page (it is usually best to open a new tab in your Internet browser) and search **journals** by **title** for the one you need. Then, go down through the years and volumes to find the issue with the correct pages. Whether you come to your source this way or via the "Complete Text" link, you want to download the complete pdf of the text. This will give you the original article with the original pagination, and **this** is what should be cited in your paper, ultimately – ***not*** the URL of some web link.

It is important to use **primary sources** such as these as much as possible - these are things like journal articles, symposium proceeding volumes, technical reports, etc. You want to **avoid** secondary sources such as textbooks, popular magazine articles (e.g., "Earth", "National Geographic"), and newspaper reports that

begin "according to a story to be published in this Friday's edition of the journal *Geoscience Nature* ...". In that case, GO to the original journal: *Geoscience Nature*, and read ***and use*** the original article.

Go to the original sources! These will be **refereed** journal articles, maps and bulletins and open-file reports of state geological surveys, and scholarly books such as symposium proceedings . For journal articles, we have electronic access to hundreds of journals not in the paper collections - though the electronic versions often are only from the last ten or twenty years or so for full-text versions. (Earlier issues may be accessible only as the abstracts.) Even published secondary sources may NOT be that accurate! Books written for the mass market may have been written by someone who loves an area but doesn't necessary have first-hand research knowledge there. **This is particularly true for some of the books of the "ROADSIDE GEOLOGY" series.** Several of the books in this series have come under harsh criticism in recent years for being very inaccurate in places. Bear in mind as well that these are also a ***secondary*** source – a regurgitation of older work.

AGE of your sources is also significant. Be suspect of anything published prior to 1950 in particular – it's very likely that there's much more recent and worthwhile material available. Materials from before 1930 should be used with extreme caution - they may be interesting from an historical perspective, but scientifically they are almost invariably going to be totally outdated by more recent work. Estimated ages of events in sources published prior to 1965 should be treated with caution; the first radiocarbon dates were produced in the 1950s, and K-Ar is more recent still.

I've asked to see a preliminary list of the sources you've found (minimum of 10) to help ensure you don't put this search off until the last minute, only to find that there's a Ph.D. dissertation at X-University on your topic, but you don't have time to get it! ! ***This has happened!*** Please type these out double-spaced, ***following the format demonstrated on the last page of these instructions***. Put your name, the class, and the date (properly formatted) in the upper right-hand corner of the page, and your paper title centered below this.

Do **not** be afraid to "mine" the sources (references) at the end of a recent paper that you found to be valuable. That's why they're there – so you can go to the original papers cited by the author of the other paper. You may find materials of value to your study that the other person only found peripherally useful for his or hers. This is also why YOUR references must be accurate and properly formatted.

Interlibrary Loan

Bear in mind that the our Library is not a major research library, and you may find that a key paper may only be available through Interlibrary Loan (these usually come now as PDFs via email). **Remember that interlibrary loan services take time** - and though it's far faster than it used to be, it may take a week for something to arrive, possibly longer, though if available through NExpress it can be here in 24-48 hours. (It may be faster, but don't PLAN on it! This is NOT something to try the week before a paper is due!) MANY items are now available digitally.

STRUCTURE OF THE PAPER

Initially, you will prepare a structured outline for your paper which will serve well to help you arrange your thinking logically from beginning to end. Overall you will need an introduction, followed by a discussion of the geological problem, and end with a summary. The introduction should outline, in a short paragraph, why the paper is being written and what you will be discussing. Your overall outline may look like that below. **Remember that your outline headings and subheadings will ALSO be the major headings and subheadings in your finished paper!**

Bear in mind in constructing your outline that in discussing geologic units or features, you ALWAYS discuss them in order of **de**creasing age. You **start with the oldest unit**, and work your way up through the geologic column. This is because it was in this order that they originated!

The **ABSTRACT** comes first, and should **summarize your major findings** in one or two short paragraphs, or a page at most. This is the last section that is written, but goes at the very beginning of the paper. Abstracts will **not** have references – these properly go in the main body of your text, where you are speaking more elaborately.

The **Introduction** states what you are going to do and why it's significant: Why should anyone read your paper? This provides the setting that frames your discussion and the paper should be written in the **THIRD person**

Illustrations, whether scanned from published works or your own art, are welcome as well. *These should be referred to in the text*, so readers know to look for them. If these are photocopied, clean up the

margins (delete extraneous material, using Adobe Photoshop) and insert either within the body of the text or, for full-page figures, sequentially on a separate sheet *within the manuscript*, on the page immediately following the first mention of the figure. Include a reference for each such copied illustration. Don't try to get fancy and wrap the text around your figure – make the figure large enough to be clear, and **center it and the caption** in the middle of the page. This also makes it FAR easier for you to rearrange your text and accompanying illustrations should you decide to rearrange things later.

Number all figures and tables sequentially: the first figure is Fig. 1, the first table is Table 1, etc. **Every figure and table also needs a short caption telling what it is** and why it is important; otherwise, you're saying to the reader, "Here's a related picture. Figure out for yourself what it has to do with my paper." **Captions** should be in **10 point** type, single-spaced, and in the same font as the main text; they should have indented margins on both sides, so that they are centered beneath the figure but not the full width of the page.

Figures **must** be referenced, as you would anything else taken from the work of others, unless you've made them up yourself based on written descriptions. **If** copied directly from a published work and unaltered in any way, they are referenced as "*from* Lamom and MacKenzie, 2006". If you've redrawn the figure based on what was in the report, or modified the original even very slightly (e.g., you just inserted a location dot on someone else's map), it would be properly referenced as "*after* Lamom and MacKenzie, 2006."

REMEMBER, it is critically important that ANY and ALL materials (books, maps, scientific papers, etc.) that you use should be properly referenced. Using the work of others without proper acknowledgment is PLAGIARISM and UNACCEPTABLE in any field of inquiry. [You are urged to read the section on Academic Honesty in the Student Handbook; see below.] The need for acknowledgment of sources is particularly true for ANY direct quotes. A set of examples depicting what is and is not plagiarism is included later in this handout. IF IN DOUBT, YOU SHOULD ALWAYS REFERENCE! Careers have been seriously affected in a negative way, when people got a little too free in using the work of others without proper acknowledgment. Once the word is out that someone does this, no one will work with or trust them, and their career is essentially finished. You should also feel free to ask me for help as well. Please just don't wait until the day before the paper is due!

Do **NOT** use **Appendices** in your paper, either for figures or other information. These should be fully incorporated into the text of your paper if they are important. If they're not that important, they shouldn't be there in the first place. Appendices are most appropriate for lengthy tables of data in a highly technical study, but most frequently are used as a simple way of avoiding incorporating non-text materials into a report.

THE TECHNICAL ASPECTS OF WRITING

A paper should be written in the ***third*** person, in clear, concise English. It should ALWAYS be typed, **double-spaced**, with one-inch margins on all sides. (Figure captions and particularly your references should be typed single-spaced ***on your final draft***; type them double-spaced on the first draft.) NOTHING should be hand-written on either your draft or final copy: not page numbers, reference citations, or anything else; set page numbers by opening "View" and choosing "header" on a Mac. (Various word-processing software for PCs will have their own ways of doing this.)

You should have a **title page**, with the title of your paper centered about 1/3 of the way down the sheet, and in the lower right-hand corner: your name, the class [GEOL 251 –Principles of Paleontology], and the date.

A **full header** on each page after the title should have your name and ***abbreviated*** title (e.g., "Trilobite Ontogeny") on the left, and the page numbers in the upper-right. These latter look better if set off with some punctuation, and the entire header should be in a smaller font (e.g., 10 point) than your paper; bold will set it off even better. Note above on this page, that the font for this header is in 10 point bold italics. In Microsoft Word, go to "Format" and "document" to click on "different first page" so you don't get a header and page number on your title page.

The main body of the paper starts on the second page, with the paper title repeated at the top of the page. This and all subsequent pages should be numbered. The references should begin on a new page, and should include ONLY those papers that are actually cited in the text of your paper; the appropriate page heading is "References Cited", not "Bibliography". [The latter is used in some other fields, and is a listing of works you consulted without necessarily actually citing them in the paper; ***don't*** use this form here

or in any scientific writing, and don't list any papers here that were not actually *cited* in yours.]

Using the computer editor is a relatively painless, easy-to-learn way to get professional-looking results. One nice advantage of this is that you can use the computer to check your spelling. The computer will go through your entire manuscript and list those words it doesn't recognize (uh, like "pygidium"). This will include any technical terms (e.g., 'taphonomy') as well as words you have simply misspelled, such as 'worj' for 'work'. **HOWEVER**, note that *a spell-checker will NOT catch or correct grammatical errors*, such as using "their" for "there", "do" for "due", "lead" for "led", etc. You have to **proof-read** your paper to catch these, as well as more blatant errors such as leaving a word out of the middle of a sentence. Grammar-checkers are getting better at catching the dumb errors, but are still not perfect.

References in geology, and the sciences in general, are handled differently than they are in the social sciences and humanities. For instance, in most scientific papers, footnotes are **not** used. It is preferred to state, for instance, that "The meraspid period of , ontogeny is marked when the first transverse joint is articulated between the cephalon and pygidium, known as tagmosis (Hughes, 2006)." In you cite TWO papers by the same author, published the same year, the first you cite would be Li, 1996a and the second would be Li, 1996b. Remember, the reason for these in the first place is to provide a resource for your readers. Something may be of peripheral interest to YOU from Li's paper, but someone else reading your paper might well wish to follow it up and find out what this author had to say in more detail. You can readily find yourself in this precise position - when someone else references something in passing that may be the MAIN focus of your own paper. **YOU** will want to be able to look it up yourself to find out more, and there are few things more frustrating than to have a promising reference that you can't find! Accuracy in this IS important!

Citing a paper by two authors is OK - e.g., "Crônier and Forte (1998) have shown that the the contraction and disappearance of the pronounced posteromedial notch in the pygidium first is seen in the early Cambrian." If there are *three* or more authors, use the first author's last name, with 'and others' or *et al.* (which is just an abbreviation for the Latin *et aliis*, which means 'and others'). Thus, "Dai et al. (2013) has shown that as the boundary between the thorax and pygidium migrated posteriorly there is no change in the trunk segment number." Be consistent internally; that is, don't use "*et al.*" in one place, and "and others" in another. Note that in scientific papers in general, **MLA reference format is NOT used**! **NOTE AS WELL** that references entered at the end of a sentence are enclosed within that sentence, ***prior*** to the period, NOT after.

Direct quotes from sources *should be avoided* unless they're particularly eloquent or succinct. Otherwise, put what you've found in the source in your **own** words, as hard as that may be. English is rich enough as a language that you can almost always find at least two good ways of saying any one thing. In those instances where you do use a direct quote, the way to properly do that in the paper would be "to include the specific page number in the text, but not in the references cited at the end of the paper" (Boyd, 1998, p. 314). You'll undoubtedly see many good examples as well in the outside papers you'll all be reading for this class.

If you have a technical report that isn't comparable to the examples given, look in a recent issue of the *Geological Society of America Bulletin*, *Geology*, or *GSA Today* (in the magazine rack in the Lounge) to see how something similar may have been handled there, or ask me for help.

In the references section, all references cited are listed alphabetically by the last name of the first author and chronologically by date (oldest reference first); ALL authors' names are given for papers with multiple authors, even if there's a dozen of them. Wight and DeFrancis, 1996a will also be listed before Wight and DeFrancis, 1996b. DOUBLE-CHECK your references for accuracy and completeness, and make sure you don't mix them up yourself! Remember that the reason for putting references in the paper in the first place is so people can find them! And note that Evans and Hartnett (1996) is **NOT** the same as Hartnett and Evans (1996). The correct author order is that which appears on the printed paper, and should not under any circumstances be rearranged in your references.

Also, if you are reading a review paper that summarizes much of what is known on a major aspect of your topic, and if the author of the paper you're reading makes references several other peoples' work, ***you should go to the original sources as much as possible***. THEY MAY BE MISCITED!

But if Lewtan and Mitchell wrote a major literature review in 2002, and cited ***obscure and unavailable*** works by Pattamaphon (1943), Romeo (1921) and Liedermann (1937) [e.g., they were published in Afrikaans in the Proceedings of the Witwatersrand Academy of Sciences of South Africa], in your own writing you will have to provide a reference that cites (Pattamaphon, 1943; Romeo, 1921; and Liedermann, 1937; all as cited by

Lewtan and Mitchell, 2002). **All** of these references will, however, go in your references at the end of the paper. Such secondary citations, however, **will not be acceptable** for any materials available in the CBB or UMaine libraries or via Internet access elsewhere.

HEADINGS

Normally, the headings in your paper will follow the structure of your outline. Major section headings should be capitalized, bold, centered. Sub-section headings and sub-sub-section headings would appear flush-left, bold underlined, and 1/2-indented left flush, italicized. Thus, they should appear as shown below.

MAJOR HEADINGS Subsection heading

Sub-Subsection Heading (NOTE: indented **less** than a full paragraph tab)

Hopefully, you shouldn't need to go to further sub-levels in section headings. It's rarely necessary except in extremely complicated works.

EXAMPLES OF WHAT DOES AND DOES NOT CONSTITUTE PLAGIARISM

Plagiarism is the use of another's work without proper acknowledgment of her or his contributions, thereby implying (or in the most egregious cases, declaring) that the thoughts, the work presented, is your own original contribution. This is a serious offense in any intellectual endeavor; legally, it's called fraud. Penalties are stiff and covered fully in the student handbook. Deliberate cut-and-paste from Internet sources (like *Wikipedia*) is now one of the most egregious ways this rears its ugly head at college. Examples are presented here to help you recognize when you may be slipping into that mode in your writing. When in doubt, provide a reference! At the beginning level, they will be more numerous than they would be if you were presenting your own original research.

The original text:

"Environmentalists are also questioning whether EPA and USDA have adequate legal authority to regulate biotechnology. Margaret G. Mellon of the Environmental Law Institute, says USDA has little to rely on except the National Environmental Policy Act in attempting to protect the environment. This statute simply requires that actions be examined for their environmental impact, but provides scant regulatory authority. 'What the department needs are marching orders from Congress to protect broad environmental interests, rather than just those of agriculture,' says Mellon."

- from: Crawford, M., 1986: Regulatory tangle snarls agricultural research in the biotechnology arena. **Science**, v. 234, p. 275-277 (17 October, 1986).

Proper use of source:

There are major problems faced by the Department of Agriculture in trying to protect the environment. According to Margaret Mellon of the Environmental Law Institute, the only legal statute available to the USDA is the National Environmental Policy Act, which provides very little authority for the USDA to regulate activity (Crawford, 1986).

Plagiarism:

There are also questions as to whether EPA and the USDA have adequate legal authority to regulate the new biotechnology. For instance, USDA has little to rely on other than the National Environmental Policy Act in attempting to protect the environment. That statute requires that the agency examine actions for their environmental impact, but doesn't provide the USDA with any significant authority to regulate actions.
The USDA further argues that regulation is the responsibility of the EPA to .....

This is the most common and serious kind of error. The problem in this second example is that, even though much of the material is NOT quoted directly from the article by Crawford, it is simply rephrased from that source without proper acknowledgment. Whether the offense is a direct quote, or a paraphrased passage such as the above, failure to acknowledge properly a source you used is considered plagiarism.

Plagiarism:

Environmentalists are questioning whether EPA and USDA have adequate authority to regulate biotechnology. The USDA has little to rely on except the National Environmental Policy Act in trying to protect the environment. This law requires that actions be examined for their environmental impact, but provides little regulatory authority. "What the department needs are marching orders from Congress to protect broad environmental interests, rather than just those of agriculture," says Margaret Mellon of the Environmental Law Institute (Crawford, 1986).

*The problem here is that even though a reference is cited, much of the text of what is written is only **SLIGHTLY** reworded (paraphrased) from the original text yet is not cited as a quote. It is nonetheless close to a direct quote in many places. Key is that you are supposed to be putting this material **into your own words**, not just stringing together passages from all your sources into some sort of coherent whole. **In addition to rephrasing the original in your own words**, you also need to include a second reference to Crawford, 1986, preferably after the first sentence in the paragraph, to make it clear that this is your source for most of this material.*

SAMPLE REFERENCES: THIS IS TO SHOW PROPER FORMATTING following SEPM style! (*NOTE that these are reverse-indented: the first line is flush left, and subsequent lines for a single entry are indented!* In Word 2010, the tab selector is above the vertical ruler on the left. Hover over the tab selector to see the name of the type of tab stop that is active. **U**se the Hanging Indent to Insert the hanging indent marker, which indents all lines other than the first line.**)**

[Book]

Erwin, D.H., 2006, Extinction: How Life on Earth Nearly Ended 250 Million Years Ago: Princeton University Press, Princeton, NJ, 320 p.

[Theses and Dissertations]

Danehy, D. R., 2010, Terrestrial vegetation reconstructions spanning the Paleogene-Neogene boundary in the Ethiopian highlands. M.S. Thesis, Southern Methodist University, 172 pp.

[Journal article, single author]

Hughes, N.C., 2007, The evolution of trilobite body patterning: Annual Review of Earth and Planetary Sciences, v. 35, p. 401-434.

Liu, J., 2009, Marine sedimentary response to the Great Ordovician Biodiversification Event; examples from north China and south China: Paleontological Research, v. 13, p. 9-21, doi: 10.2517/1342-8144-13.1.009.

[Journal article, multiple authors]

Hughes, N.C., Chapman, R.E., and Adrain, J.M., 1999, The stability of thoracic segmentation in trilobites: a case study in developmental and ecological constraints: Evolutionary Development, v. 1, p. 24-35.

Tonggang, Z., Yanan, S., and Algeo, T.J., 2010, High-resolution carbon isotopic records from the Ordovician of south China; links to climatic cooling and the Great Ordovician Biodiversification Event (GOBE): Palaeogeography, Palaeoclimatology, Palaeoecology, v. 289, p. 102-112, doi: 10.1016/j.palaeo.2010.02.020.

[Article in edited volume]

Allen, J. P., and Gastaldo, R.A., 2006, Sedimentology and taphonomy of the Early to Middle Devonian plant-bearing beds of the Trout Valley Formation, Maine: *in* Greb, S.F., and DiMichele, W.A., eds., Wetlands Through Time: Geological Society of America Special Paper 399, p. 57-78.

[USGS Professional Paper]

Smith, G.O., and White, D., 1905, The geology of the Perry basin in Southeastern Maine: USGS Professional Paper 35, 107 p. + 6 plates.

[USGS Bulletin]

Rueger, B. F., 1996, Palynology and its relationship to climatically induced depositional cycles in the Middle Pennsylvanian (Desmoinesian) Paradox Formation of Southeastern Colorado: *U. S. Geological Survey Bulletin 2000-K*; 22 p. + 4 plates.