

PHY 100S – THE MAGIC OF PHYSICS
Spring Term, 2013
Writing Assignment #1

DUE: By 11:00 AM, Thursday, February 28, 2013 in the Drop Boxes
Late penalty = 5% per day (which also applies to weekend days) for a maximum of 7 days, after which the assignment will not be accepted.

DROP BOXES: The completed assignment should be submitted in the *Drop Box* for your tutorial. There are six boxes – one for each tutorial section, clearly labelled. The Drop Boxes are located in the basement of the Burton tower of McLennan. On the first floor of McLennan there is a stairway with a bust of Newton beside it; the Drop Boxes are at the bottom of that stairway.

INSTRUCTIONS: Make sure your name and student number, and the name of your tutor are on your essay, preferably on all pages in case a page comes loose. Staple all pages together.

MARKING: This writing assignment is worth 10% of the course mark.

TOPIC:

Write a report on a “physics for the layman” book. Some suggestions are given below, but you may suggest your own book, as long as you obtain approval from me or your tutor.

- John Barrow, *Theories of everything: the quest for ultimate explanation*
- Jeremy Bernstein, *Crank, Quarks and the Cosmos*
- Paul Davies, *The Mind of God - the scientific basis for a rational world*
- Paul Davies, *About Time – Einstein's Unfinished Revolution*
- Richard Feynman, *The Character of Physical Law*
- Tim Flanney, *The Weather Makers: The History and Future Impact of Climate Change*
- Murray Gell-Man, *The Quark and the Jaguar*
- James Gleick, *Chaos – Making a New Science*
- Brian Greene, *The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory*
- John Gribbin, *In Search of Schrodinger's Cat*
- Nina Hall (editor), *Exploring Chaos - a Guide to the New Science of Disorder*
- Stephen Hawking, *A Brief History of Time - from the Big Bang to Black Holes*
- Nick Herbert, *Faster Than Light*
- Lawrence Krauss, *Fear of Physics*
- Lawrence Krauss, *The Physics of Star Trek*
- Lawrence Krauss, *Atom*
- Leon Lederman, *The God Particle*
- Alan Lightman, *Ancient Light - our Changing View of the Universe*
- James Lovelock, *Gaia: A New Look at Life on Earth*
- Roger Penrose, *The Emperor's New Mind*
- Lisa Randall, *Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions*
- Martin Rees, *Just Six Numbers*
- Michael Riordan, *The hunting of the Quark: true story of Modern Physics*
- Joseph Schwartz and Michael McGuinness, *Einstein for Beginners*
- George Smoot and Keay Davidson, *Wrinkles in Time*
- Steven Weinberg, *Dreams of a Final Theory*
- Clifford Will, *Was Einstein Right?*

You can find such books in the astronomy (catalogue number 520) and physics (530) sections of public libraries, and in many locations in the University of Toronto library system (see <http://onesearch.library.utoronto.ca/>)

GUIDELINES:

Your book report should consist of a piece of connected English prose arranged in logical order of thought, i.e., with a beginning, a middle, and an end. It should consist of sentences organized into paragraphs. Point form is not acceptable. The report should be approximately two pages or 500 words in length. Double-spaced 12-point type-written is preferred.

Your report should first summarize the physics contents of the entire book, and then discuss the author's description of one phenomenon and the theory that explains it. Read analytically and critically. Make notes as you read, to highlight key points and your opinions and reactions to them. You may well be able to find reviews of these books in the media and on the internet, but so can your tutors and I. Simply copying the material off a web site (or from anywhere else) constitutes plagiarism and will not constitute a valid report. The University of Toronto regards plagiarism as a serious academic offence. The University's guidelines on "***How Not to Plagiarize***" are attached – be sure to read and follow them. Plagiarism is easily spotted - avoid it!

In marking the report, the tutors will consider four main aspects:

- (1) Quality of Research (3 marks) – How well did you review the physics? Depth and intellectual rigour of the report.
- (2) Originality and Conciseness (3 marks) – Incorporation of your own ideas, concise presentation, evidence of understanding of the topic, conviction of the arguments, appropriate use of quotes, quality of paraphrasing and discussion, logical flow.
- (3) English (2 marks) – Clarity, spelling, grammar, quality and flow of writing. We expect the grammar to be correct and the spelling standard.
- (4) Structure (2 marks) – Clear statement of theme, well-defined introduction, main body and conclusions.

RESOURCE SUGGESTIONS:

The University of Toronto has a Writing Centre to assist you with the writing that you need to do for your courses or degree program. They have a webpage with links to a range of resources at:

<http://www.writing.utoronto.ca/home>

Information about Writing Centres can be found at:

<http://www.writing.utoronto.ca/writing-centres>

There is also a separate guide for "Writing in Physics (and other sciences)":

<http://www.writing.utoronto.ca/advice/specific-types-of-writing/physics>

and a more general set of links covering "Advice on Academic Writing":

<http://www.writing.utoronto.ca/advice>

There are many references available on "How to Write a Book Review". Here are a few web sites:

- University of Toronto: <http://www.writing.utoronto.ca/advice/specific-types-of-writing/book-review>
- University of Toronto at Mississauga:
<http://www.utm.utoronto.ca/library/instruction/howtowritebookrev.html>
- LEO: Literacy Education Online: <http://leo.stcloudstate.edu/acadwrite/bookrev.html>

HOW NOT TO PLAGIARIZE

From the Code of Behaviour on Academic Matters:

It shall be an offence for a student knowingly:

(d) to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e. to commit plagiarism.

Wherever in the Code an offence is described as depending on "knowing", the offence shall likewise be deemed to have been committed if the person ought reasonably to have known.

You've already heard the warnings about plagiarism. Obviously it's against the rules to buy essays or copy from your friends' homework, and it's also plagiarism to borrow passages from books or articles or websites without identifying them. You know that the purpose of any paper is to show your own thinking, not create a patchwork of borrowed ideas. But you may still be wondering how you're supposed to give proper references to all the reading you've done and all the ideas you've encountered.

The point of documenting sources in academic papers is not just to avoid unpleasant visits to the Dean's office, but to demonstrate that you know what is going on in your field of study. Get credit for having done your reading! Precise documentation is also a courtesy to your readers because it lets them look at the material you've found. That's especially important for Internet sources.

The different systems for formatting references are admittedly a nuisance. See the advice file "[Standard Documentation Formats](#)" for an overview. But the real challenge is establishing the relationship of your thinking to the reading you've done. Here are some common questions and basic answers.

1. *Can't I avoid problems just by listing every source in the reference list?*

No, you need to integrate your acknowledgements into your own writing. Give the reference as soon as you've mentioned the idea you're using, not just at the end of the paragraph. It's often a good idea to name the authors ("X states" and "Y argues against X") and then indicate your own stand ("A more inclusive perspective, however, . . ."). The examples on the next page demonstrate various wordings for doing this. Have a look at journal articles in your discipline to see how experts refer to their sources.

2. *If I put the ideas into my own words, do I still have to clog up my pages with all those names and numbers?*

Sorry—yes, you do. In academic papers, you need to keep mentioning authors and pages and dates to show how your ideas are related to those of the experts. It's sensible to use your own words because that saves space and lets you connect ideas smoothly. But whether you quote a passage directly in quotation marks, paraphrase it closely, or just summarize it rapidly, you need to identify the source then and there. (That applies to Internet sources too: you still need author and date as well as title and URL. The file "[Standard Documentation Formats](#)" gives examples for a range of types.)

3. *But I didn't know anything about the subject until I started this paper. Do I have to give an acknowledgement for every point I make?*

You're safer to over-reference than to skim. But you can cut down the clutter by recognizing that some ideas are "common knowledge" in the field—that is, taken for granted by people knowledgeable about the topic. Facts easily found in standard reference books are considered common knowledge: the date of the Armistice for World War I, for example, or the present population of Canada. You don't need to name a specific source for them, even if you learned them only when doing your research. They're easily verified and not likely to be controversial. In some disciplines, information covered in class lectures doesn't need acknowledgement. Some interpretive ideas may also be so well accepted that you don't need to name a specific source: that Picasso is a distinguished modernist painter, for instance, or that smoking is harmful to health. Check with your professor or TA if you're in doubt whether a specific point is considered common knowledge in your field.

4. ***How can I tell what's my own idea and what has come from somebody else?***

Careful record-keeping helps. Always write down the author, title and publication information (including the specific identifying information for online publications) so you can attach names and dates to specific ideas. Taking good notes is also essential. Don't paste passages from online sources into your draft: that's asking for trouble. As you read any text—online or hard-copy—summarize useful points for yourself, whether electronically or in handwriting. If you record a distinctive phrase or sentence you might want to quote, put quotation marks around it in your notes to remind yourself that you're copying the author's exact words. And make a deliberate effort as you read to notice connections among ideas, especially contrasts and disagreements, and to jot down questions or thoughts of your own. If you find as you write that you're following one or two of your sources too closely, deliberately look back in your notes for other sources that take different views; then write about the differences and why they exist. (See the advice file "[Taking Notes from Research Reading](#)" for more tips.)

5. ***So what exactly do I have to document?***

With experience reading academic prose, you'll soon get used to the ways writers in your field refer to their sources. Here are the main times you should give acknowledgements, with examples showing different ways of working them into your own prose. (You'll notice many different documentation systems in the following examples; see the handout file "[Standard Documentation Formats](#)" for guidance and examples.)

a. Quotations, paraphrases, or summaries:

If you use the author's exact words, enclose them in quotation marks, or indent passages of more than four lines. But it's seldom worthwhile to use long quotations. In literary studies, quote a few words at a time and comment on them. In other disciplines, quote only when the original words are especially memorable; scientific writing rarely used quotations. In most cases, use your own words to summarize the idea you want to discuss, emphasizing the points relevant to your argument. Be sure to document these paraphrases or summaries even when you are not using the exact original words. Mentioning the author's name indicates where the borrowing starts and stops and gains you some reflected glory for responding to the experts.

e.g. As Morris puts it in *The Human Zoo* (1983), "we can always be sure that today's daring innovation will be tomorrow's respectability" (p. 189). [APA system]

e.g. Northrop Frye discusses comedy in terms of the spring spirit, which he sees as representing renewal and integration (*Anatomy* 163). The ending of *The Tempest* fits this pattern. [MLA system]

b. Specific ideas used as evidence for your argument or interpretation:

First consider whether the ideas you're mentioning are "common knowledge" according to the definition in point 3 above; if so, you may not need to give a reference. But when you're relying on ideas that might be disputed by people in your discipline, establish that they're trustworthy by referring to authoritative sources.

e.g. In September 1914, more than 1300 skirmishes were recorded on the Western Front.⁸ [traditional endnote/footnote system]

e.g. Other recent researchers (4, 11, 12) confirm the finding that drug treatment has little effect in the treatment of pancreatic pseudocysts. [numbered-note system for biomedical sciences]

c. Distinctive or authoritative ideas, whether you agree with them or not:

The way you introduce the reference can indicate your attitude and lead into your own argument.

e.g. In 1966, Ramsay Cook asserted that Canada was in a period of instability (174). That period is not yet over, judging by the same criteria of electoral changeability, economic uncertainty, and confusion in policy decisions. [MLA system]

e.g. One writer (Von Daniken, 1970) even argues that the Great Pyramid was built for the practical purpose of guiding navigation. [APA system]