

WELCOME to PHY1600S !

Effective Communication for Scientists

*Professor Pekka Sinervo: Room MP814A: phone (416) 978-5270: mobile (647) 283-3074
e-mail: Pekka.sinervo@utoronto.ca*

COURSE DESCRIPTION

The course description at <http://hep.physics.utoronto.ca/PekkaSinervo/phy1600/> gives a summary of what we will be tackling. The emphasis on different topics will be influenced by class preference as we proceed in the course.

EVALUATION AND GRADING

It is always a good idea to put down agreements in writing; this is as true in academic situations - pedagogical as well as administrative - as it is in the rest of the world. A Grading Scheme is a contract between instructor and students so it warrants a clear statement. The one I suggest is the following:

Our agreement for PHY1600S is that a **Pass** in this course requires:

- A) **Full attendance at a minimum of 9 of our 12 meetings**
- B) **The submission of at least 7 of the 10 weekly assignments**

Although a few assignments are oral presentations, most are written – 600 words or less! There are several deadlines for most of the written assignments in the week of the class in which they are assigned:

- 1) **midnight on the Thursday** – your first draft to your Reading Buddy for the week.
- 2) **midnight on the Friday** – return to your Reading Buddy of his or her first draft, with your comments and suggestions.
- 3) **9 pm on the Sunday** – your final draft to me.
- 4) **11 am on the following Tuesday. (Assignments that are received by me before 11 am on the following Tuesday will still be accepted for credit though I will not feel bound to provide my comments – see below). Assignments that miss this 4th deadline count for zero, extraordinary circumstances excepted.**

- C) **Completion of at least one each of the weekly in-class exercises (hot topic, joke, extemp*)...extraordinary circumstances excepted.**

Completion of all these requirements will result in a Pass grade.

Failure to satisfy all of these requirements will result in a Fail grade ...if you are still registered!

Once the methods of evaluation have been decided on, “the instructor may not change them without the consent of at least a simple majority of the students enrolled in the course”. The Graduate Office will answer any of your questions on this point.

January 10, 2017

* An extemporaneous speech

AUDITING

I welcome folks who wish to audit the course, but ask you to identify yourself to me, attend regularly, and participate fully in the class activities. If requested, I am willing to read and comment on any assignments you submit – though these would not take priority!

TIMES

The class will run for two hours on Tuesdays in MP408. We start at 11:10 am SHARP (please make every effort to be on time), and finish at 1 pm sharp; I will schedule a 5 - 10 minute break halfway through. **We'll need to find different times for Jan 24.**

ASSIGNMENTS

The assignments are intended to assist you in reaching your own learning goals in the area of communication; it is probable that your effort in each will be directly related to the degree of success you achieve!

Oral Assignments

(i) *Hot Topic*. Each week I will request one or two members of the class (depending on class size) to give a brief presentation (more than 2 minutes, less than 5 minutes) at the next class that provides an interesting summary of a topic of *general* scientific interest, culled from their leisure reading in books, magazines, newspapers, or the Web. The topic can be on any area of research, and should require NO presentation aids apart from, perhaps, the blackboard. I urge you to rehearse at least once before giving this presentation.

(ii) *Jokes*. Each week I will request one or two members of class to prepare a joke to tell at the next class. Any topics are suitable, though if the jokes are scientific in content, so much the better. They should not take less than 1 minute or more than 3 minutes to tell.

(i) *Extemp*. Each week I will request one or two members of the class to give an approximately 1-3 minute speech on a topic that I will announce only at the beginning of the class; speakers can prepare during the time taken for the first two oral assignments. I invite you to email me possible topics!

The class and I will provide immediate in-class oral feedback on all oral assignments.

Written Assignments

(i) *Essays, Reports, Letters, Critiques, Summaries, etc.* I will announce these in each class and all will be available online. I will attempt to promptly provide detailed comments, feedback and suggestions to all assignments that meet the deadline of the following Sunday at 9:00 pm. I will continue to accept written assignments up to 11 am on the following Tuesday; however, I cannot commit to provide comments on any assignment that misses the Sunday deadline. Any written assignment that misses the 11 am Tuesday deadline will count towards fulfillment of the requirements ONLY in exceptional circumstances, or if you have given me previous notice.

Each week I will ask you to choose a different **Reading Buddy**. You will exchange first drafts of your assignments, and mutually provide careful proofreading of each other's assignment, with constructive comments and suggestions for improvement, before returning for final polishing and submission to me.

Please observe the deadlines for each step in the preparation of your final document, and ensure that your Reading Buddy is acknowledged somewhere in your assignment.

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NOTES ON WRITTEN ASSIGNMENTS

Written assignments should be **600** words or **less**. Please use Microsoft Word files, sent to Pekka.sinervo@utoronto.ca before the deadline (if really necessary, I can accept any other electronic form that allows for commenting). Please name your file with your first name followed immediately by the number of the assignment (e.g. pekka5.docx or pekka1.docx). Keep copies of each assignment, at least until the end of the course.

If you must provide a hard copy, use on regular 8x11" paper, with 1" margins, 12 pt, and double-spaced.

I suggest that you borrow or purchase either Alley's *Craft of Scientific Writing* or Strunk and White's *Elements of Style*, to be used as bedside reading for the first few weeks of class. For the poverty-stricken, I have placed both on the Short Term Loan list in the departmental library.

Spelling can be found on the Web: the Miriam Webster dictionary <http://www.webster.com/>, or Canadian spelling at <http://www.luther.ca/~dave7cnv/cdnspelling/> cdnspelling.html. Some excellent advice can be found at <http://www.writing.utoronto.ca/> (and other links from the course homepage); the Engineering site you will use in your first assignment has a wealth of suggestions on all aspects of writing and giving presentations: <http://www.writing.engr.psu.edu/>

Here are some guidelines that apply to **all** written assignments.

- 1) All written assignments should include the following:
 - a) A **title and author** (you!). Aesthetics is important, so use Leading Capitals, and **Bolding** for the title, and centre it. Use lots of white space for readability.
 - b) The name of your **Reading Partner**.
 - c) A **reader**. All written material is directed at a specific audience; make sure you know who that is, and attempt to make your material interesting and vital for that audience.
 - d) An **introductory paragraph**. This is very important, orienting the reader to the material.
 - e) The **body** of the text. The body contains the exposition, facts, arguments. For our assignments this will usually be one or two paragraphs in length.
 - f) A **concluding paragraph**. This usually summarizes the material, and provides a sense of completion.
- 2) Leave lots of white space for good readability.
- 3) **Brevity**, a desired attribute of all good scientific writing, will attract no criticism! Say what you have to say, then **stop!** I look for good grammar, good organization, and, above all, clarity and conciseness.
- 4) Common sins of written material are **redundancy and verbosity**; omit 'very', 'much', 'somewhat', 'really', 'surely', and if a sentence makes as much sense without a word or phrase, remove it! Use simple, down-to-earth language.
- 5) Use a **spell checker!** Neither your Reading Partner nor I should spend time correcting spelling!!!

- 6) **Proof read** several times! “Rewriting is where effective documents are made or lost” (Montgomery). Most authors spend more time on polishing and rewriting than they do in getting the first draft on paper. Your Reading Partner should prove invaluable.
- 7) **Collaborate** early with your Reading Partner to read and critique each other's paper. Don't leave it to the deadline – we are all busy.
- 8) **Read each sentence out loud** - or at least sub-vocally - to ensure it sounds good.

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SOME COMMON GRAMMAR DIFFICULTIES*

LIKE/AS/AS IF: ‘Like’ (a preposition) joins nouns and pronouns, or governs a noun; before phrases and clauses the equivalent word is ‘as’ (a conjunction). The over-use of ‘like’ in modern colloquial speech has made its misuse more likely. However, I support the safer, hard-line position of Strunk and White.

These are acceptable:

1. A is like B. (Here, “like” governs a noun) 2. A behaves as B does. (“as” introduces a clause with a noun and a verb). 3. Mercury is a planet like Venus. (acceptable grammatically, but ambiguous – Mercury, like Venus, is a planet). 4. He eats like a pig.

These, in formal writing, are not: 1. It was like we were thinking out loud. 2. He eats like there’s no tomorrow. 3. Winston tastes good like a cigarette should. 4. She’s a good student, like her brother was before her. 5. It looks like it’s going to rain. 6. “It looks like the party is about to begin”.

However, confusingly, in expressions where the verb is implied rather than expressed ‘like’ is admissible. 1. A behaves like B. 2. She’s a good student, like her brother. 5. It looks like rain. 6. “Fluorescent tubes emit incoherent light, like a common light bulb”. (The construction: “Fluorescent tubes emit incoherent light, as does a common light bulb”, is correct but, in my view, excessively pedantic.)

Quick Tip - Do not use ‘like’ if ‘as’ or ‘as if’ will work.

AMONG /AMONGST: Either form is fine; ‘amongst’ is less common than the more modern ‘among’, but it is still in common usage.

AND/BUT: ‘And’ and ‘but’ are co-ordinating conjunctions, used to join individual words, phrases, and independent clauses. This definition implies that they should not normally be used as the first word of a sentence. However, occasionally they can be so used to give emphasis. I recommend that, only if you are very confident of your writing ability, should you start a sentence with ‘and’ or ‘but’.

WHICH/THAT: ‘That’ is restrictive – the bicycle that is in the shed is green (referring to a specific bicycle). ‘Which’ is descriptive, e.g. adding some information about an object that has already been defined - the bicycle, which is in the shed, is green (here, its location is incidental). ‘Which’ is not restrictive. The ‘which’ clause is contained within commas.

COMPRISE/COMPOSE: To comprise means ‘to include’ or ‘to be made of’.

To compose means ‘to make of’ or ‘to form’.

e.g. Water is comprised of H and O - is imprecise (not wrong)

BUT Water is composed of H and O - is better.

Both ‘A soccer team comprises eleven players’ and ‘A soccer team is composed of eleven players’ are both correct. ‘Eleven players compose a soccer team’ is correct, ‘A soccer team composes eleven players’ is not.

* This section is largely from earlier PHY1600 Course Descriptions developed by Professor Tony Key, and I give him credit for much of the work in assembling it. That he and I agree on almost all the advice is some assurance that this is grounded in good practice.

TOWARD/TOWARDS: Both are correct. I prefer the shorter one!

ABBREVIATIONS: In general, do not use abbreviations such as ‘don’t’, ‘can’t’, etc. in formal writing.

ACRONYMS: To be on the safe side, always define acronyms in parentheses immediately after the first use of the full description – e.g. ‘Canadian Association of Physics (CAP)’. Some publications and journals have relaxed this practice, but I still believe it is a useful practice.

PUNCTUATION: Punctuation is like the spice added to food; judicious use adds emphasis, interest, and liveliness, without overwhelming the basic flavour.

- Periods: experiment with removing periods that separate two closely associated sentences.
- Commas: read your work aloud – or at least sub-vocally – and insert commas only where you normally pause. In lists of three or more items, modern usage suggest a comma after each item, including the penultimate one (i.e.x, y, and z). Punctuation in different places changes the meaning – e.g. *A woman without her man is nothing.*
- Dashes: “A dash is a mark of separation stronger than a comma, less formal than a colon, and more relaxed than parenthesis” (Strunk and White). Note the implication: a dash can replace commas, colons, and parentheses. My suggestion is to avoid the use of dashes in formal writing.

Read *Eats, Shoots and Leaves: The Zero Tolerance Approach to Punctuation* by Lynne Truss for a spirited, entertaining and informative discussion on how to make punctuation work correctly.

ADVERBS: Adjectives modify (or qualify) nouns (big, blue, bad, better, etc.); adverbs qualify everything else - verbs, another adverb, a phrase, or a clause. (fast, late, often, yesterday, here, well, better, many words ending in -ly, etc.). Adverbial phrases take the place of one-word adverbs. While adverbs and adverbial phrases add much of the colour and excitement to fiction, poetry, advertising and political discourse, their use should be limited in formal scientific writing where precision is vital. I suggest that you comb your first draft and identify all adverbs and adverbial phrases. Then consider the effect of omitting each one; if the meaning is unchanged or, as is often the case, made stronger or more precise, remove it! – or, if necessary, replace it with more elegant, effective, or precise language. Of course, some adverbs and adverbial phrases are essential; these are the only ones you should retain.

Here are some examples:

- 1) The oven was very hot. *Remove ‘very’ – imprecise. If the temperature is important, provide an estimate or range.*
- 2) In the past, experimenters used silicon to *Remove ‘in the past’ – the verb gives the time.*
- 3) Furthermore, this theory predicts ... *Remove ‘furthermore’ – adds little to the meaning.*
- 4) As such, the reasoning is faulty. *Remove ‘As such’ – this phrase adds nothing to the meaning. Never use it!*
- 5) Students were incredibly enthusiastic. *Remove ‘incredibly’ – this word should never be used in good writing unless it means ‘impossible to believe’.*
- 6) The results are obviously wrong. *Remove ‘obviously’ – adds nothing to the statement,*

except a subjective opinion (obvious to whom?).

- 7) I believe strongly that lectures are unnecessary. *Remove 'strongly' – adds little ("Methinks the lady doth protest too much"- W. Shakespeare).*
- 8) The research is largely incomplete. *Remove 'largely' – either it is or it isn't complete. You can't be somewhat pregnant! Never use largely, mainly, partially, fairly, etc.*
- 9) These magnetic fields are actually quite common. *Remove 'actually' and 'quite' – always! See 7 above.*

References:

Tony Key, Course Overview for PHY1600H, 2014.

Strunk and White, *The Elements of Style*. Longman 1999.

Michael Alley, *The Craft of Scientific Writing*. Springer 1995

**Classroom Teaching Behaviours Showing
Significant Correlation with Student
Ratings of Teacher (from Murray)**

Affect	Speech
concerned nervous expressive excited enthusiastic agreeable sad	speaks slowly speaks with excellent clarity pauses frequently in mid sentence speaks expressively speaks softly voice fades periodically speaks in monotone
Organisation	Disclosure
gives preliminary overview of lecture covers very little material in class puts outline of lecture on blackboard provides detailed outline of course as a whole	provides sample exam question
Mannerisms	Explanation
moves back and forth in front of class gestures with hands and arms rocks or sways on heels maintains eye contact with students exhibits distracting mannerisms shows facial gestures or expressions walks up aisles beside students	repeats difficult ideas several times stresses most important points dwells on obvious points reads lecture from prepared notes suggests practical applications of concepts relates subject matter to student interests or activities gives concrete examples of abstract principles uses graphs or diagrams gives several examples of each concept presents challenging, thought-provoking ideas uses variety of different media or formats shows strong interest in subject
Rapport	Interaction
knows individual students by name friendly, easy to talk to sensitive to students' needs available for consultation outside of class concerned that students understand	asks questions of students encourages class discussion praises students for good ideas solicits questions and comments from students fails to take initiative in classroom interactions
Interest	
tells jokes or anecdotes states own viewpoint on controversial issues	