## PHYS 6649-01 - GRADUATE SEMINAR

(This course runs concurrently with PHYS 5599-04)

## Syllabus

Meeting Times: Fridays 1:30 PM to 3:30 PM

Meeting Place: Physical Science Building 126

Professor: Dr. Philip L. Cole Office: PS 117D Tel: 282-5799

(email: colephil@isu.edu)

Office Hours: By arrangement. I have an open-door policy.

Topics: Your Research. (You must have an advisor).

Course Text: None

Grading: (25%) Attendance and Participation

(15%) Journal Club(15%) 30-minute talk

(20%) 10-minute talk (Final Exam)

(25%) 4-page paper

## Objectives

The goal of this course is to provide you an opportunity to hone your public speaking skills and improve your scientific writing. Your ability as a scientist – rightly or wrongly – is often judged on how articulate you are when presenting a paper and how well the paper reads. You need to be clear and organized and know what you're talking about. Avoid fuzzy thinking at all costs for it annoys. If you cannot express your ideas so that someone else can understand them, then those ideas might as well not exist. You have to get the word out and you can only get the word out if you explain things clearly. It is my experience that clear writing = clear thinking and strong writing reflects a strong mind.

We are living in a competitive world with limited resources for the sciences. If you wish to obtain funding or secure beamtime at a lab, you must write a good proposal. For example, only one in four NSF proposals is usually funded. And for some broad programs, the likelihood of success is 5%. You must convince the reviewers and the panel that your work merits the risk of funding.

Often proposals are rejected for the following reasons:

- rotten English and lousy style. First rule: do not annoy the reviewer with style English bad, structurally formativerously ungramtikel, or to much badd spellin;
- lack of clear organization or jumbled focus. Tell a story and make it have a beginning, middle, and end. Use action verbs to make the story interesting. For instance, do not bore the reader with the excessive use of the passive voice or the verb to be. Use jargon judiciously and sparingly, and eschew obfuscation;
- not adhering to the call for proposals or a scattered focus. Answer the questions posed in the call for proposals;
- not identifying the target audience correctly;
- technicalities such as margin width, font size, page limit, deadlines, etc.; and
- uninteresting science and/or a bad review. This can often stem from pure bad luck.

In this course, you will review, discuss, and explain a journal paper to the class (i.e. "journal club"), present a 30-minute talk to the class, write a 4-page paper, and finally give a 10-minute talk to the faculty and students of the ISU Physics Dept.

Attendance Participation and Attendance is worth a full quarter (25%) of your grade. If you are to miss a class due to an emergency, you will need to inform the professor as soon as possible before the class. Each unexcused absence will lower your grade by 5% on the total grade (up to a total of 25%). You are expected to be on time. Coming in late is disruptive and discourteous. You are further expected to behave professionally by being attentive and respectful to the speaker. If possible we will try to accommodate your schedule by rescheduling the class to a more convenient time for all – the professor travels, too, and sympathizes with tight travel schedules. If your schedule, however, cannot allow for full attendance for several consecutive classes then you really should take the course another semester.

Journal Club You will read at least one paper in your area of research and lead the class in a 50-minute discussion of the paper. The number of papers will depend on the size of the class. For each journal club session, you will need to select a peer-reviewed paper published in a leading journal or conference proceedings. Each additional session will require a different paper. You may only use "chalk and talk" to present and to answer any questions during this 50-minute discussion. You will need to send a pdf of the paper to the professor by the Friday evening the week before you give your presentation, so that he can post the paper on the PHYS 6649-01 Moodle webpage. All students are required to read the paper in advance of the journal club presentation and to ask questions during the presentation. The instructor will call on the quiet ones to ask questions, so be prepared. The quality of the questions will go towards your class-participation grade.

Formal Talks All talks will be presented electronically in either ppt or pdf format. The content and focus of your talk must be on your research project at ISU. (This means you must already have an advisor). You will give two formal talks during the semester:

- one 30-minute in-class presentation, and
- a 10-minute talk, which will be your final exam. This talk will be given during the week of April 28, 2013 to the faculty and students of the ISU Physics Dept. You will have 10 minutes for the talk with a 3-minute Q/A session. The professor will chair the exam as if it were a parallel session at an American Physical Society conference.

**Paper** The 4-page paper must adhere to the AIP Conference Proceedings - 8.5 x 11 single-column format. No exceptions. See: http://proceedings.aip.org/proceedings/8x11s.jsp.

The paper is due 1:00 pm April 19, 2013. You are strongly encouraged to work with the ISU Writing Center (<a href="http://www.isu.edu/ctl/writing/">http://www.isu.edu/ctl/writing/</a>). The instructor will not help you draft or write the paper before this due date so it will be up to you to find outside readers such as the faculty and staff at the ISU Writing Center, your advisor, or fellow students. Late papers will not be accepted. You will be graded on the following:

- scientific content and focus (50%);
- English (grammar, style, spelling, etc.) (50%); and
- references. Papers with improper referencing or lack of referencing will receive a failing grade.

Papers that do not adhere to the AIP conference format will not be accepted. The content of your paper must be on your research project at ISU and you must be the first author. If you have taken this course before, you must write a new paper on another perspective of your work; it cannot be the same paper you turned in for an earlier iteration of this course. You should make sure your advisor finds your paper acceptable to be submitted to a conference proceedings. And you are to target your paper to the participants of this conference.