PHYS 8950: Current Topics in Physics (Journal Club)

Instructor: Susanne Ullrich, Room 243
Time: Monday, 2:30-4:10 (no break)
Location: Physics Bldg. 204B
Office hours by appointment.

Purpose of the Course:
To discuss exciting recent developments in different areas of physics and astronomy and to develop both presentation and critical thinking/reading skills.

Course Requirements:
Students are required to (1) give one overview talk and one colloquium-style presentation, (2) short talks on specific assigned questions, (3) and also to lead and participate in discussions. The presentations have to be on a topic outside the student’s research area.

Areas of physics that will be covered:
- Atomic, molecular & optical physics
- Biological physics
- Condensed matter physics (solid state)
- Geophysics
- High energy physics (nuclear, particle, plasma)
- Nanotechnology & engineering physics
- Statistical, mathematical & computational physics
- Medical physics
- Astronomy, astrophysics & cosmology
- Soft condensed matter physics
- Environmental physics
- Physics education research

Overview Presentations:
The purpose of the overview presentations is to obtain a general idea of current research activities in a particular area of physics. Overview presentations can either be Powerpoint or chalk talk and count 25% toward your final grade.
To prepare an overview presentation:
1) Identify and explain the subareas of the field
e.g. astronomy: observational astronomy (infrared, radio, optical), theoretical astronomy (models for galaxy formation, cosmic rays, large scale structure of matter,…)
2) Search for news releases to identify hot topics and briefly describe them.
3) The overview presentation should be 20-25min long.

Full Presentations:
The purpose of the full presentations is to discuss one scientific paper in detail. Full presentations must be in Powerpoint. Full presentations are assessed based on presentation quality, understanding of the topic and ability to answer questions and count 50% toward your final grade.
To prepare a full presentation:
1) Select one current research topic e.g. in astronomy: planet hunting
2) Find a paper in a high-profile scientific journal (e.g. Science, Nature, PRL, …) from within the last five years.
3) Prepare a 50-60min colloquium-style talk about the paper. “Colloquium-style” means directed toward a general audience and as such should start with a 20-30min very basic introduction to the material.

**Deadlines:**

- No later than August 25 email the scientific paper that you have selected for your presentation to me (ullrich@physast.uga.edu) for approval. Also include a short outline (bullet points) how you will present the material in your talk.
- No later than the Thursday before your presentation email the finished Powerpoint slides of your talk to me for grading.

A typical class time will consist of one overview and one full presentation followed by questions and discussion. Your presentation will also be analyzed by the entire class with respect to presentation style and scientific contents. The critique is intended to help you improve your presentation skills but will not affect your grade.

**Short Talks on Specific Questions:**
At the beginning and/or end of the semester a few classes are dedicated for discussion of papers selected by the instructor. All students are required to read the paper before class and will be assigned a specific question that they need to address in a short talk (10min). This can be in the form of a Powerpoint presentation or a chalk talk and will count 15% toward your final grade.

**Participation in Discussion:**
You are expected to ask several questions during the discussion following the presentations. Participation in the discussion accounts for 10% of your final grade.

**Grading:**
Attendance is mandatory and will be recorded at each meeting. You will be permitted one absence if either pre-arranged or with an official note (e.g. doctor’s note, advisor’s request). Any additional absences and any unexcused absences will result in a 10% deduction from your final percentage grade. There will be a deduction of 5% from your final percentage grade for every 15min of class time that you miss (e.g. arriving late).
Deadlines will be strictly enforced. Missing a deadline will result in a deduction of 5% per day late from your final percentage grade.

**Grading scheme:** Use of the plus/minus system is a requirement – it is the only grading system approved for the University of Georgia.

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