Spring 2019 **Syllabus**
PHYS 309: Undergraduate Seminar

Tuesdays 2-3:20 pm in Small Hall room 122 or 233

Undergraduate prerequisites: None.

Instructor

Prof. Seth Aubin
Office: room 255, Small Hall, tel: 1-3545
Lab: room 069, new wing of Small Hall, tel: 1-3532
e-mail: saaubi@wm.edu
web: http://www.physics.wm.edu/~saubin/index.html

Office hours: Open office hours and Thursdays 4-5pm.

Course Objectives

The purpose of this course is to expose students to research in the Physics Department while developing their science presentation skills. The course will feature:

- Seminar-style talks by physics professors.
- Short talks (10-15 minutes) by students.
- Discussions of physics research topics and journal articles.
- In-depth exposure to research in Physics Department.
- Assistance in identifying a senior thesis topic.
- Searching the scientific literature.

Course Materials

There is no textbook. The instructor will provide documents.

Evaluations

You will be evaluated on your in-class participation and short talk presentation. Your final grade will be determined according to the following grading weight distribution:

In-class participation: 50%
Short talk: 50%

Participation: In-class participation is required, and includes asking questions during a talk and discussions on assigned science articles. Attendance is also included in this assessment.

Short talk: You will give a short talk (10-15 minutes) on a topic of current interest in physics research. A short written abstract abstract will summarize the content of your talk.

Important academic deadlines

Add/drop deadline: Monday, January 28, 2019
Withdraw deadline: Friday, March 15, 2019

Weekly Schedule (tentative)

Week 1: 1/22 – room 233 Intro to Undergraduate Seminar

Week 2: 1/29 – room 233 Talk 1: Seth Aubin
Title: Ultra-Cold Matter Technology: Physics and Applications.

Week 3: 2/5 – room 122 Talk 2: David Armstrong
Topic: The Qweak parity violation experiment.

Week 4: 2/12 – room 122 Talk 3: Jeff Nelson
Topic: How to detect a particle?

Week 5: 2/19 – room 122 Talk 4: Bill Cooke
Topics: Thin film batteries and the Williamsburg Landing project.

Week 6: 2/26 – room 122 Talk 5: Irina Novikova
Title: Quantum enhancement of optical sensors with hot atoms.

---------- Spring Break ----------

Week 7: 3/12 – room 122 Talk 6: Chris Carone
Title: Quantum Gravity.

Week 8: 3/19 – room 122 Talk 7: Mumtaz Qazilbash
Title: Infrared Spectroscopy of Collective Quantum Phenomena.

Week 9: 3/26 – room 122 Talk 8: Jo Dudek
Topic: Nuclear theory and Lattice QCD.

Week 10: 4/2 – room 122 Talk 9: Tricia Vahle
Topic: Accelerator Neutrino Physics.

Week 11: 4/9 – room 122 Talk 10: Eugeniy Mikhailov
Topic: Improving laser-based detectors.

Week 12: 4/16 Student Talks, week 1

Week 13: 4/23 Student Talks, week 2