

Course: Physics 3000 & 3000H Sections 1, 2, taught together with PHYS 8750-2

Title: Introduction to Research

Credits: 2 credit hours

Instructor: Dr. Jens Oberheide, Dept. of Physics and Astronomy
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Dr. Oberheide will grade the undergraduate students, Dr. Sanabria will grade the graduate students.

Class Time: Wednesdays @ 12:20-1:10 pm: **Room 101 Kinard**
Students should give the instructor/speaker 15 minutes before dismissing.

Colloquium Time: Typically Thursdays @ 4-5 pm, **Room G001** (or TBA) Kinard
Refreshments served either before or after colloquium

Course Description: *Introduction to Research*

Acquaints students with current research in in the Department of Physics and Astronomy. Seminars are provided where research activities in various areas of Physics and Astronomy are summarized. Various faculty members will be recruited to give a brief (≈ 30 minutes) overview of their research and opportunities for student projects within their research group. This course should provide a basis to enable the students to choose a suitable topic for a senior thesis project. Schedule of talks will be provided through the class webpage on Canvas. Students will also attend the departmental colloquium and turn in a colloquium questionnaire.

Prerequisites: (Level: Sophomore/Junior standing for Majors in Physics & Astronomy)

Textbooks: Required (None)

Grading Policy: (Phys. 3000, 3000H: Undergraduate Students)

90 - 100: A
80 - 89: B
70 - 79: C
60 - 69: D
0 - 59: F

50%: Presentation Summaries

20%: Notebook

30%: Class and Colloquium Attendance (15% each)

Class Attendance:

Each student in Physics 3000/3000H is expected to attend class and colloquium. It is essential that the students attend the class presentations in order to be able to provide a presentation summary (write-up) as described below. If you do not attend the class presentation, **a write-up will not be accepted.** Unless under very special circumstances, for which the instructors should be notified in advance. There will be **N number of in-class presentation** dates scheduled. We will use the **top N-1** of these in determining your attendance grade, i.e., we will drop the lowest grade (or an absence for example). The same will be applied to colloquium attendance.

Colloquium Attendance and Questionnaire:

Each student who is signed up for the Phys. 3000 & 3000H is required to attend the departmental colloquium. There will be **N number of colloquium presentations** dates scheduled. We will use the **top N-1** of these in determining your attendance grade, i.e., we will drop the lowest grade (or an absence for example). You will fill out a short questionnaire during the colloquium. **The form must be handed in before departing the colloquium room.** This is how we count your attendance. You only get full attendance credit if all questions on the form have been answered. Each colloquium speaker will be asked to provide an overview/summary paper. The paper, if provided, will be posted on Canvas the day before the colloquium. **Students are encouraged to read the paper before the colloquium.** Reading the paper, however, is not mandatory and does not impact your grade.

Presentation Summaries & Attendance: (for 3000 & 3000H)

In-class presentations are provided where research activities in various areas of Physics and Astronomy are summarized. Various faculty members will be recruited to give a brief (≈ 30 minutes) overview of their research and opportunities for student projects within their research group. The specific grading procedure that will be used will be discussed in class on our first day of class. In the event of an emergency, the student should make direct contact with the course instructor, preferably before a class or presentation takes place. Students should speak with their course instructors regarding any scheduled absence as soon as possible and develop a plan for any make-up work. Students will turn in (during class) a write-up (summary of presentation) one week after the presentation took place. The following expectations and requirements apply for the presentations and presentation summaries:

Write-up Expectations & Requirements:

- (1.) The students will participate in the presentations and overviews of the respective research areas. Students are encouraged to interact and ask questions of the faculty members presenting.
- (2.) The students will provide a summary research report of the presentation. The report will be a minimum of 1.5 - 2 typed pages, 12 pt font size, no more than 1.5 line spacing. The two pages are without figures (if you choose to include some). Figures are not a requirement. Specific instructions for the write-up will be posted on Canvas. They are to be followed even if not explicitly stated in the syllabus.

The report will be due the following class period after the lecture.

This will include a:

- (a) Title,
- (b) Faculty Presenter,
- (c) Student's Name
- (d) Synopsis of Presentation (2-3 sentences),
- (e) Three (3) key points of the presentation, as a bulleted list (one line per bullet)

- (f) A summary of 1-1.5 pages of what you learned from the presentation, including the experimental or theoretical techniques involved, and some of the important results presented.

Notebooks

A research diary (called notebook) is an essential tool for record keeping for any scientist. Students will keep a notebook for the research presentations (not for the colloquium). Specific notebook instructions are provided as a separate document on Canvas and are to be followed. Dr. Oberheide will collect all notebooks along with the last write-up, and grade them. Students are encouraged to talk to Dr. Oberheide early in the semester if they are unsure if they do the notebook keeping in the required way.

Phys. 3000H Honor's Credit:

For those receiving Honor's Credit we require you to pick one of the presentation topics and go and talk to and interview the specific faculty member about their research. You will then comprise a **5-6 page paper** on this topic from further reading including a **minimum of 5 references** that is a short review on the topic and research that was presented. The references are to be included in the report. Figures may also be used in the write-up (please reference these). Dr. Oberheide should be notified as soon as possible to the title and abstract of the topic each Honor's student has chosen. **These papers will be due by Friday November 9, 2018**, via email to Dr. Oberheide at joberhe@g.clemson.edu.

Academic Integrity Statement:

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

Accessibility Statement:

Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing studentaccess@lists.clemson.edu, or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: <http://www.clemson.edu/campus-life/campus-services/sds/>.

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