

Physics 397/398/497/498

Junior/Senior Seminar Requirements

2020-2021

The Junior and Senior Seminars in the Department of Physics serve two main purposes.

1. To give you a chance to learn how to give a physics talk before an audience of your peers and faculty. In addition, for seniors, it gives an opportunity to practice technical writing.
2. To expose you to topics in physics research through talks by professional physicists and senior students and the discussions that follow. As a member of the Physics Department your job is to show up, pay attention and ask questions. Because of the number of students in seminar and travel restrictions for some speakers, some of the external talks will be on Monday afternoons. Please let me know if you have a conflict that prohibits you attending these Monday seminars.

The **expectations of students** in seminar are presented in detail below. However, here I emphasize the main expectations:

- (1) You have to know what you are talking about. It is disappointing for the audience to witness a physics talk given by a person that does not know the physics that is presented during that talk. Your final grade contains the requirement that you need to know the subject you present under the rubric **“Level of understanding”**.
- (2) Once you thoroughly understand the subject, you need to format it in a logical fashion for the audience to get your message. Your talk is 15 of 20 minutes. You can optimally use these minutes only if the talk is well organized. Your final grade contains this requirement under the rubric **“Logical organization of the talk”**
- (3) A good scientific talk must include the above (1) and (2) fundamental requirements. In addition, there are other requirements that add to the quality of a talk. Given that this course is at an introductory level, I will add only one more item, namely that eloquence, engagement and passion for the subject during presentation highly add to the success of your talk. Your final grade contains this requirement under the rubric **“Eloquence, engagement and passion for the subject”**.

Part I. Seniors:

Seniors enrolled in Senior Seminar typically participate in an individual research project supervised by a faculty member. Such research can involve work in one of our laboratories, or a significant library research project on a physics topic of current interest.

See me to **get approval of any project** in advance of your talk. See 'Deadlines' below. You will **not be approved if you have not registered for the course**. Seniors will be required to give one oral presentation in the first semester, as well as one oral presentation and one written paper in the second semester. The requirements for these are outlined below.

A. First-Semester Oral Presentation: The purpose of the first-semester talk is to present to the other students in seminar a brief introduction to the general topic on which your research will be based and present an outline of what you hope to achieve with your research project. In general, this talk should be of a broader scope than the more specific talk given in the spring semester. The broader scope in the fall will serve both to help put your spring presentation in context, and to prevent your spring presentation from being a repeat performance of the fall. Some repetition is inevitable, but minimize it.

Presentations should be 15 minutes long plus five minutes for questions. Use PowerPoint or PDF for talks. See additional presentation requirements below.

B. Second-Semester Oral Presentation: The talk in the second semester should summarize the results of your research project and should be essentially an oral version of your written paper, with two significant differences. First, the level of the talk should be aimed at students rather than faculty. Second, the amount of detail given in the talk will presumably be significantly less than that in the written paper, due to time constraints. Presentations should be 20 minutes in length plus five minutes for questions. Use PowerPoint or PDF formats for talks. See additional requirements below.

C. Additional Presentation Requirements: Each of your talks **must be practiced** in the Speech Center or with a student peer (a University of Richmond physics major) no later than the Monday before your seminar (see below for more details).

You must email the final version of your talk to me by noon of the day of your presentation. Failure to do so may result in you being unable to present your seminar and receiving credit for it.

You are responsible for making your presentation function properly. Use care with animations, transitions between slides, etc. If you plan to use your own computer, then you are responsible for testing your machine more than 1.5 hours before seminar.

D. Written Paper: The final written paper is to be a more or less complete record of the research that you have done. It should include detailed explanations of the work you did, the results obtained, and what they mean. It should be at a level of detail equal to or greater than that in a typical journal article, but with additional introductory material explaining the background and context of the research aimed at a reader who is a physicist in a different subfield. The written paper should be between 15-20 typed pages and include appropriate figures, tables, appendices, and references to published work in the field.

DEADLINES

Friday February 12, 2021 (Phys 497) Email me with the proposed title of your senior seminar project and the name of your faculty supervisor by Friday of the 4th week of the semester. Those taking Phys 497-498 simultaneously must meet with the instructor.

Wednesday January 27, 2021: (Phys 498) A one-page review of your progress to date on your research project and outline of your paper by Wednesday of the 2nd week.

Wednesday February 24, 2021: (Phys 498) The first draft of your paper is due by Wednesday of the 6th week.

Wednesday March 24, 2021: (Phys 498) The final written paper is due by Wednesday of the 10th week.

Part II. Juniors:

Students in Junior Seminar must make two oral presentations over two semesters.

Presentations 1 & 2: *You will select a topic of your choice with advice from the faculty.*

- *The presentation contains two parts. Part 1 is 5 minutes, whereas Part 2 is 10 minutes. Your talk is then followed by 5 minutes of questions.*
- **Part 1** covers a modern topic. For this topic you need to understand the topic from a broad perspective. This part is meant to inform the audience about recent research papers.
- **Part 2** covers a quantitative physics subject that is connected to the modern topic from Part 1 with a calculation requiring basic physics understanding. This part needs to be thoroughly understood in depth.
- Each of your talks must be **practiced** at the Speech Center or with a student peer (a University of Richmond Physics major) no later than the Monday before your seminar (see below for more details).
- Understanding these topics may be difficult, and some assistance from the instructor or other faculty in preparing the talk may be required.
- You should meet with the instructor at least a week in advance to assess your topic.

Part III. Advance Preparation for All Speakers:

Especially for beginning speakers, it is an excellent idea to practice your talk (several times) before delivering the finished seminar. Completing your talk late leads to predictable results and is not acceptable.

- It is required for junior and senior seminar that each student **practice** their talk at the Speech Center, or with a student peer (a University of Richmond Physics major) no later than the Monday afternoon before their seminar.

- A **report** on the practice talk will be forwarded to me by the Speech Center or by the student observer.
- You must **make your own appointment** with the speech center well in advance of your talk. Appointments can be made from the web by visiting <http://speech.richmond.edu/>
- Final versions of talks must be emailed to me at least **one hour** before seminar begins.

Part IV. Attendance for All Students:

One of the main requirements for seminar is to show up and participate. If you have a good reason that you cannot attend, email me about it in advance. Unexcused absences will have a significant impact on your final seminar grade. If you attend all the meetings you receive all of the credit for that part of the course (see below for more details). You will lose half of the attendance credit for the first unexcused absence, the remaining half for the second unexcused absence, and additional unexcused absences could lead to failing the course. An excused absence is given by the instructor for sufficient reason provided there is adequate warning in a timely fashion.

Part V. Grading:

The final grade for junior and senior seminars will be based on your work in both the fall and spring semesters (397 & 398 and 497 & 498) and will be determined based on the following criteria. Note the importance of practicing your talk.

Junior Seminar

Speech Center Practice: 10%

Regular Attendance: 20%

Talk 1: 30%

which splits as follows:

Level of understanding = 15%

Logical organization of the talk = 10%

Eloquence, engagement and passion for the subject = 5%

Talk 2: 40%

which splits as follows:

Level of understanding = 20%

Logical organization of the talk = 10%

Eloquence, engagement and passion for the subject = 10%

Total: 100%

Senior Seminar

Speech Center Practice: 10%

Regular Attendance: 20%

Talk 1: 20%

which splits as follows:

Logical organization of the talk = 15%

Eloquence, engagement and passion for the subject = 5%

Talk 2: 20%

which splits as follows:

Logical organization of the talk = 15%

Eloquence, engagement and passion for the subject = 5%

Final Paper 30%

Total: 100%

Part VI. Faculty Collaboration:

The Physics Department's Seminars are a Department-wide enterprise that involves all of our majors, faculty, and staff. The coordinator for seminar is Jerry Gilfoyle.

Part VII. Fall 2020 Schedule:

Date		Speaker/Activity
August	26	Organizational meeting
September	2	Faculty Talks
	9	Junior:Shelton, Welsh
	16	Junior:Barney; Senior: Rehan
	23	Junior:Cohen; Junior: Didier
	30	Junior: Sterling; Senior: Jang
October	7	Junior:Thapa; Senior: Cox
	14	Senior: McAtee
	21	Junior:McAtee; Senior: Calderon
	28	Junior:Tarry; Senior: Balducci
November	4	Junior:Coughlan, Armistead; Senior: Didier
	11	Senior: Rimi, Thapa; Junior: Murray
	18	Seminar Dinner

Part VIII. Spring 2021 Tentative Schedule:

Date		Speaker/Activity
January	20	Organizational meeting
	27	Junior: Murray; Senior: Thapa
February	3	Junior: Armistead; Senior: Hu
	10	Junior: Tarry; Senior: Heyrich
	17	Junior: Kreider; Senior: Rimi
	24	Junior: Sterling; Senior: Balducci
March	3	Junior: Cohen; Senior: Calderon
	10	Senior: Didier, McAtee
	17	Junior: Barney; Senior: Cox
	24	Junior: Welsh; Senior: Jang
	31	Junior: Shelton; Senior: Hu
April	7	Junior: Aluri; Senior: Coughlan
	14	Junior: Mutchnick, Ferree
	21	Senior: Painter