

# Physics 399: Senior Seminar

## Gustavus Adolphus College      Fall 2021

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Book: Course Pack for PHY-399 Physics Senior Seminar, written by JP, Dennis Henry, and others, and other materials as provided on moodle/course website.

**Homework help, Q&A, and more:** (a.k.a. Office hours) Monday 9-10am, Wednesday 1:30pm-2:30pm, Friday 1:30-2:30 by appointment and any other time my door is open. **Drop by to talk!**

### Course Description and Objectives

*This course provides a review of principal topics from across the core areas of physics it also prepares students for academic and non-academic life after college. Students will prepare solutions to problems from the Graduate Record Examination in physics, learn to read and review journal articles on current physics research topics, write and revise pieces (e.g., Nobel Conference, resume), and present on various topics.*

Seminars are gatherings to exchange ideas. In this course we hope to present a 'holistic culmination' of your physics education at GAC. This is to be through review of previous material, preparation for post GAC physics, and a preview of material and communication you will encounter in your future studies/career. We will discuss what comes after graduation, including graduate school and industry jobs.

In addition to reviewing physics topics, we will be making new connections across your previous coursework through a broad look at this material. We will examine major historical milestones through the Nobel Prizes, current philosophical and ethical questions, and modern research. Current research will be developed in a 'journal club' style format, where we will read and discuss articles in class. Written and presentation homework components will allow groups of students to explore a topic of their choosing further.

### Course Policy and Evaluation

**1. Class Meetings:** The class will meet 10:30-11:20 TTh. Students will be expected to have completed assignments (problems, readings, writing, etc.) **before** coming to class.

**2. Attendance:** Regular and on-time attendance at all class meetings is expected and this information will be collected by your instructor. Students will be held responsible for informing themselves of all announcements and assignments made in the classroom, and by e-mail messages. Students must advise the instructor in writing during the first week of class of any scheduled or anticipated athletic, music, or other college activities that will require their absence during the semester. Such written notice does not imply a waiver of attendance requirements. Any class missed without a valid reason and prior notification will result in zero credit for that day.

As part of this course, you will be required to attend two SPS talks in addition to Nobel conference.

Attendance will be taken at outside talks and reported to the instructor. Failure to attend these events will result in a 10% penalty to your grade.

**3. Coursework:** GRE preparation questions will be assigned in class. You must come prepared to discuss/present your solutions and methods to the class. You must be prepared to explain your solution and approach, whether it was correct or not. These problems will be evaluated on a 5-point scale as discussed below. Reading, writing and presentation homework will be assigned in class.

You are encouraged to discuss assignments with your classmates, instructor, and other physics professors, but all work must follow academic honesty guidelines including those on proper citation, plagiarism and copying. (No internet *solutions* are allowed, but the internet may be occasionally used to define a term or provide history on a person or topic.)

**4. Practice GRE Exam:** There will be one 85-minute GRE practice half-exam administered at the beginning of the semester. You must take the GRE practice exam to complete the course with a passing grade. Exams will be graded, and the scores reported to each student. Only class averages and score ranges will be shared with the class. Students may reveal their scores with their advisor or others, at their option. The exam score will play no role in calculating final grades.

**5. Evaluation:** The course grade will mainly be based on an average of **daily** evaluations of **preparation, participation, and performance** on a 5-point scale. The low score for a single class or assignment will be dropped from the final grade calculation. Assignments may be scaled depending on the amount of work required. Final course grades will be assigned using the following as a guide:

94-100 A	82-86 B	70-74 C
90-94 A-	78-82 B-	66-70 C-
86-90 B+	74-78 C+	0-66 F

Assignment of the final letter grades will also take into account other factors including the instructor's subjective evaluation of the student's attendance, initiative, evidence of improvement, and the quality of independent work.

**6. The 5-point scale example scores:**

- 0 points: No attendance.
- 2 points: Maximum that can be earned without participation in class
- 5 points: The assignment was completed before class. Answers / topics were presented or discussed clearly (and correctly for problems). There is evidence of additional participation through questions and discussion with others.

**7. To do well in this course:** See the 5-point scale above and **PARTICIPATE!** The most common grade surprise in this course is for those students who think showing up on time will give them a 5. Sitting quietly through a discussion earns at most a 2. Also, there is an assignment due (either in preparation or to be turned in) almost every day. If you complete the assignments on time and participate, earning a good grade is rather straightforward.

**8. Incompletes:** An incomplete will only be given if, after the last day to withdraw has passed, unforeseen circumstances beyond the student's control (usually restricted to illness or emergency) preclude completion of the remaining work for the course by the end of the semester. Note that poor planning or having a lot of work to complete at the end of the term are not considered circumstances beyond a student's control. (College policy)

**9. Requesting Accomodations:** Gustavus Adolphus College is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability of any nature) and, as a result, need reasonable academic accommodation to participate in class, take tests or

benefit from the College's services, then you should speak with the Accessibility Resources staff, for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Accessibility Resources in the Academic Support Center as early as possible.

**10. Academic Honesty:** You will abide by the academic honesty policy printed in the Academic Bulletin and abide by decisions of the joint student/faculty Honor Board. The use of internet solutions or answer books (including parts of problems) or parasitizing (including copying) other students for any assignment, quiz, or exam, unless specifically stated otherwise, is not allowed, and will result in a zero for the entire assignment, quiz, or exam and reporting to the dean of students as a minimum penalty. It is your responsibility, as a student, to ask questions if you are not sure about what constitutes academic honesty in any other aspect of this course. Severe (even on the first incidence) or repeat offenders risk a grade of failing for the entire course at the instructor's discretion.

**11. Recording:** Students must request written permission from the instructor to record (audio or video) any component of this class (including in-person or online). Any recording that includes other students will require that the class be notified by the instructor or that those present give consent. By coming to, and remaining in class, it is assumed you give your consent to be recorded.

**12. Posting of course videos and materials:** Recordings and videos of the class, as well as those produced as part of class instruction (including excerpts, clips, etc.) and materials (including assignments, solutions, graded materials, etc), are not to be reproduced or posted in any format or on any platform or distributed in any way without the written consent of the instructor.

**13. Copyright:** Some class materials may be copyrighted. Access to these materials is restricted to students registered for the class. These materials may not be reproduced, shared, or distributed by students. If a tutor needs access to these materials in order to provide you with academic support, please ask your instructor for assistance.

## **COVID Information:**

All classrooms will follow the most up-to-date COVID policy of the college with regard to masking, social distance, food and beverage in the classroom, and sanitizing of technology and spaces. **Individual faculty members may ask for additional COVID precautions at their discretion.**

It is the policy of Gustavus Adolphus College that all students must abide by rules and standards designed to protect the community. Refusal to comply with any COVID related rules will be handled through the student disciplinary sanction process and will be reported to the Office of Student Life.

- Upon the first and second offense of a failure to abide by COVID rules, I will ask you to leave, and you will not be invited back on that day. You will receive a score of zero for any daily class activity including possible penalty in the final grade.
- Upon the third offense, I will ask you to leave, and you will fail the class.

## **Masking**

When required by Gustavus or government mandate, correctly positioned face masks (covering both your nose and your mouth) must be worn and will be enforced as described above. **When not required by Gustavus or government mandate, it is the expectation in this classroom that masks will still be worn during high local levels of transmission.**

## **Food and Beverages**

No food will be permitted in classrooms unless there is a medical accommodation. Beverages will be permitted in classrooms, but students may only remove face coverings briefly during the time when they are actually drinking, if necessary. **Overuse of the drinking privilege may be considered a violation of the masking policy.**