



**SOUTH SEATTLE
COLLEGE**

PHYS&116 General Physics III With Lab Face-to-Face Spring 2025

Instructor Alice Enevoldsen (call me Ms. E or Alice) pronouns: she/her

Contact Information

I welcome you to contact me outside of class!



1. Best:

Canvas messaging



2. Second Best:

Discord message



3. Last Choice: e-mail & phone



4. Meeting Times OLY, Zoom, RAH 116

Course Dates & Times (REQUIRED)

4/7/2025 – 6/18/2024

T/Th 6pm-9:20pm - OLY 200, masked

Contact me if you're ill and I will turn on Zoom synchronous class so you can stay home.

Final Exam (REQUIRED):

Wednesday 6/18/2024 6pm-9:20pm - OLY 200

Location

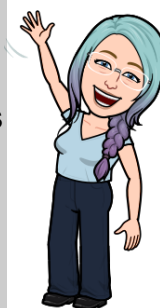
OLY 200, Canvas

Acknowledgement

Please take a moment to think about where you are, with whom you share this space, and who came before us to make our lives and this class possible.

Welcome to General Physics 3!

Physics is an expansive subject that aims to describe and understand the physical world around us, both conceptually and mathematically. The world around us is diverse and elaborate, so the problems physicists work on reflect that complexity, as will the work you as physicists do in this course! No two problems will ever be the same, so rather than memorizing formulas and solutions, we will focus on developing tools and strategies for solving a wide variety of problems (e.g., asking questions, describing observations, and identifying relationships between concepts and interactions). *Prerequisite: MATH 098 with 2.0 and eligible for ENGL&101*



Approach

We are going to approach physics class like learning a new sport, dance, music, or language. There are basic skills to practice and refine. Once those skills are intact (after frequent and repeated work), we will be prepared to ask and answer new and challenging questions! The beauty of physics is that there are always more questions to ask about the world.

I am here as a guide, to offer constructive feedback, and to help address areas of difficulty. But just as



with sports, music, and language, spending time focusing on learning and practice is the key to success. For this reason, we will often work on small activities and problems in class, practicing together.

I recognize this approach may feel strange, or differ from expectations. I ask that you be open to experimenting with us: come to class willing to engage with whatever activities we have that day, and actively seek out joy working together to explore - both in the everyday experience of living your life (charging your phone!) and the extraordinary (the aurora)! In turn, I am open to your feedback.

Textbooks and Equipment

- Scientific Calculator
 - (separate from your phone)
- Canvas Page:
 - Course readings will be posted on Canvas for free.
 - <https://canvas.seattlecolleges.edu/login/saml>
 - **Canvas Help:** [eLearning](#)
- Discord
 - [link on Canvas](#)



- If you prefer a paper textbook, pick one:
 - College Physics, 3rd or 4th edition, by Randall Knight
 - OpenStax College Physics 2e
 - OpenStax University Physics Vol 1



Allergy Alert

I have severe food allergies to nuts, peanuts, balsamic vinegar, and less severe to other foods. Please don't bring those into our classroom. In this class, we do use food and other materials that some students may have allergies to, such as eggs, dairy, and wool. If you have an allergy that may pose a problem, let me know ahead of time so we can make alternate arrangements.

Prayer

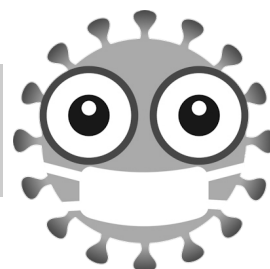
Please come chat with me if you will miss portions of the class period for prayer or reasons of faith. Let's make a plan that works so that you don't fall behind!

Covid Protocols

- Windows and doors will be kept open, please dress accordingly.
- The modality of the course could change mid-quarter if we are directed by Health & Safety.

Mask & Social Distancing Policy

- **Masks will be required in the classroom and in my office at all times.**
- Masks are also mandatory in some settings across our campuses:
 - If you test positive and are returning to campus after isolation.
 - For those who have been exposed to someone with COVID.
 - Clinical and other health-care settings.
- If you do not have a mask or forgot yours, masks are available on campus.



Wellness & Missing Class:

If you are not feeling well and are experiencing symptoms of Covid-19, **please stay home** and contact me for assignments and materials you may have missed.



Personal health information does not need to be reported to your instructor

Accessibility

I am committed to creating a course that is inclusive in its design. If you encounter barriers, please let me know immediately so we can determine what design adjustment can be made. I am always excited to consider creative solutions that do not compromise the intent of the activity.



If you are a student with a disability, or think you may have a disability, you are also welcome to initiate this conversation with [SSC's Access Services](https://southseattle.edu/access-services). If you have already been approved for accommodations through them, **please meet with me during the first week so we can develop an implementation plan together**. <https://southseattle.edu/access-services>

Course Policies

Participation

All of us in the class, you, me, your peers, share a responsibility to create an environment in which we can all learn from each other. We will employ a variety of instructional techniques and tools designed specifically for teaching physics. These techniques have been tested by physics education researchers and have been shown to improve students' conceptual and quantitative understanding of physics. These techniques rely heavily on active learning, which generally involves students participating and engaging with the material by discussing and working with their peers.



Attendance & Homework

Your participation, your voice and your attendance matter. You belong here. **Attend every class** (Zoom when symptomatic) on time.

If you cannot attend a class (including for reasons of faith), let's chat!

If circumstances mean you **miss more than 3 classes, you may be overextended**. I ask that you come see me to discuss options and make a plan.

To learn physics effectively, you will also have to engage outside of class.

Reviewing the notes each day, regular conceptual questions, and homework help you do this. Be prepared to spend at least two hours outside of class working on physics for every hour you spend in class: **at least 14 hours per week(!) on physics outside of class**.

Communication

Civil Discourse

Let's make this a brave space where we are committed to respecting the intelligence and humanity we each bring to our interactions. Conflict and discomfort are learning opportunities so long as that mutual respect exists.



Hateful and demeaning speech will not be tolerated.

Languages

Hablo un poquito de español, y puedo leerlo con asistencia de traducción. Escribo esto sin asistencia del web, porque ahora tu conoces mis limites. Si te quieres escribir sus papeles por astronomía en español, sí te puedes, pero también dame alguna traducción en inglés.

我學中文, but only first-year basics. I will need a full translation if you want to 中文寫.

My response time

I welcome & encourage you to contact me outside of class hours! I will respond to Canvas, Discord, and text messages within two school days, often same-day, and grade on-time assignments within two school weeks. We can also schedule time to meet.



Comments on Canvas

I have a difficult time tracking all comments made replying to assignments in Canvas. Once you have received feedback on Canvas, please directly message me through Canvas rather than reply to the assignment. This will ensure I don't miss your questions! Often the whole class will benefit from your question, in which case please post it on Discord!

Campus Technology Failure

In case of campus internet failure or Canvas website downtime, I will delay due dates/



Personal Technology Issues

In case of personal technology failures, do your best on paper, and turn it in as soon as possible.

- **Problem connecting to Canvas:**

- Check the Canvas status page: <http://status.instructure.com/>
- Monitor the email address you provided to SSC Registration.

- **Problem due to the way I've created an assignment:**

- Message me on Canvas or Discord as soon as possible.

Closure/Quarantine

In the event of inclement weather closures or Covid-19 quarantines, we may continue instruction as needed online. The Zoom link will be posted on the homepage of Canvas if this occurs. Prepare ahead of time using the Zoom tutorials & Set up for students:

<https://sites.google.com/southseattle.edu/zoom-students>

Workflow of an Average Week

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 5		Topics: Phase Constant Oscillator		Topics: Period of an Oscillator Beat Frequency	
	DUE: CQ 4.2		DUE: Homework 4	DUE: Quiz 2 CQ 5.1	DUE: Project Part 3
	Monday	Tuesday	Wednesday	Thursday	Friday
Week 6		Topics: Resonance Damped Oscillators Travelling Waves		Topics: Sound & Light Waves	
	DUE: CQ 5.2		DUE: Homework 5	DUE: CQ 6.1	

Late Work

I have set due dates for assignments to create a consistent weekly workload for both of us and to support your learning. (Date matters, time does not for initial deadlines: 3:00 am on April 5 counts as meeting a due date at 11:59 pm on April 4.)

You have up to six Late Passes during the quarter. To use a Late Pass, you must:

Contact me before the assignment is due via Canvas message to let me know.

Complete the assignment within 48 hours of the original due date.

Work submitted within 48 hours of the original due date *without* using a Late Pass will be given *half of the credit* earned on the assignment. (With a Late Pass is full credit).

Work submitted more than two days after the original due date, Late Pass or not, will not be accepted. Occasionally, there may be exceptions, but you **must** communicate with the instructor as soon as issues arise!

Final deadline for all work, including revisions:
June 18th, 2024

Revision

You will have the opportunity to redo two previous quizzes during the quarter. **We will keep the higher score.**



Quiz redo opportunities:

- Quiz 1 or Quiz 2 mid-quarter,
- Quiz 3 or Quiz 4 during the finals time.

Do The Work

Copying solutions online may help you receive credit for the homework, but it is guaranteed to set you up for failure on the quizzes, which are a requirement to pass this course. We have designed the homework to support your learning, and part of that learning is being challenged and struggling through new problem-solving. Use your peers, instructors, and tutoring resources prior to any internet or AI use.

Plagiarism

Plagiarism, or academic dishonesty, is presenting someone else's work as your own. It includes:



Failing to cite sources of ideas.



Failing to cite sources of specific language and/or passages.



Submitting work done by a computer or "A.I."



Failing to cite sources of paraphrased material.



Submitting someone else's work as your own



Submitting your own work that has been heavily edited/rewritten by another

Consult with me, because I automatically score plagiarized work as 0 points without the possibility of make-up. I am further required to file an incident report with the Dean.

References

Some of the wording on this syllabus is from:

- Center for Urban Education's Syllabus Review Guide: <http://cue-equitytools.usc.edu/>
- Sample Syllabus Accessibility Statement: <https://www.bates.edu/accessible-education/faculty/sample-syllabus-statement/>
- Turnitin The Plagiarism Spectrum ©2016 <https://www.turnitin.com/static/plagiarism-spectrum/>
- Dr. Libby Schoene and Dr. Abigail Daane, Physics; Dr. Jes Pikul, Chemistry; and Albert Peacock, Engineering, South Seattle College

Learning Outcomes

- **Computation** – Use arithmetic and other basic mathematical operations as required by program of study. Apply quantitative skills for academic and career purposes.
- **Critical Thinking and Problem Solving** – Think critically in evaluating information, solving problems, and making decisions.
- **Technology** – Select and use appropriate technological tools for academic and career tasks.

Grading

Grade Breakdown

Submissions:

10% Active Engagement (AE) (Canvas & in class)
10% Conceptual Questions (CQ) (Canvas)
15% Homework (HW) (Canvas)
25% Project/Lab Work (PR/Lab) (Canvas)
40% Quizzes (8% each) (in class)

Where:

Skill:

Conceptual, Prob. Solving, Teamwork & Labs
Conceptual Understanding
Problem Solving, Communication
Project & Lab Work
Conceptual, Prob. Solving, Teamwork

Note: In order to pass this class with a 2.0 or greater, **your total quiz % at the end of the quarter must be $\geq 70\%$** (the average of your 5 quizzes, after redos), regardless of your final grade in the class.

If you do not pass the quizzes with a 70% or greater average but your final grade in the class is higher than 70%, you will receive a 1.9 for the course.

Non-GPA Grading

If you wish to receive a No Credit (NC) for the class, you must inform me in writing before the day of the final examination/last day of class. The District policy states that only a student in good standing (attending and passing the class) may request an NC symbol from the instructor, and it is granted at the instructor's discretion.

End-of-quarter Grading Scale

GPA	4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.6	1.3	1.0	0.0
Percentage	$\geq 93\%$	90%	86%	83%	79%	75%	70%	65%	60%	54%	$< 54\%$

Percentages in between those shown above will be scaled accordingly.

Note: If you pass the class with a 70% or greater but your average for the quizzes is less than 70%, you will receive a 1.9 for the course.

Types of Assignments

- **ACTIVE ENGAGEMENT & REFLECTION (AE)**

Since the active learning techniques used in this class require peer interaction to be successful, active engagement and reflection will count towards your grade. For this reason, you will be working in groups, participating in activities, discussing ideas, problem solving with your peers, and generally actively participating in class. **Each assignment/activity builds on the previous one, designed to maximize your learning experience.** Working on a team is a skill used on a daily basis in nearly all careers. Learning to work effectively in groups is a critical skill needed for success in your future career.



This grade will be comprised of:

- Participation in small-group activities (be in class!)
- Participation in large-group discussion (special emphasis will be given to occasions when students respond directly to the ideas of fellow students)
- Group whiteboards and whiteboard presentations
- Reflections of discussions in class (turned in)
- Submission of activities completed in class (turned in)

To make up missed AE points due to unavoidable absence: **talk with me first**, and then complete and submit the work within one week of the absence.

- **CONCEPTUAL QUESTIONS (CQs)**

CQs are designed to get you practicing with the concepts and reading the book **after** class. We will use class time to introduce and investigate new concepts and phenomena, while the CQ will reinforce the concepts introduced in class and elucidate more subtle points. The CQs will consist of several conceptual questions practicing with concepts developed in class, as well as questions relating the in-class material to the book's content. These are questions that will support your comprehension and reasoning.



This grade will be comprised of:

- Administered on Canvas.
- Generally due on **Thursday** (covering Tuesday's class) and **Monday** (covering Thursday's class) **evenings at 11:59 pm**
- Each CQ assignment will only have **a total of four tries**. This is to ensure that you work through each attempt carefully for understanding - not simple completion.
- We will **drop the two lowest scores** for the CQ assignments at the end of the quarter.

We encourage you to work with (NOT share answers with) others before making your submissions. We see these assignments as the best way for you to receive immediate feedback about your understanding.

- **HOMEWORK (HW)**

The homework will consist mainly of computational problems that you need to solve on paper, clearly labeling each problem number. Many solutions can be easily found online. The objective of this assignment is to *LEARN* - not to just finish and record answers. We expect you to write up your answers to each problem, showing all work. We encourage you to *work with each other* and follow the problem solving strategy we will use for practice problems in class. This will ensure you are prepared for quizzes, where we expect you to show all of your work and reasoning to receive full credit.



This grade will be comprised of:

- Assigned, submitted (as a single pdf) and graded through Canvas.
- Generally due once a week on **Wednesday nights at 11:59 pm**
- Sixteen points each week will be awarded for completing the assignment. Completion means that we will give you credit for completing and showing work for all the required problems (even if the answer is not correct).
- We will also assign a few problems that will be graded for accuracy according to some or all of the seven criteria from our [problem solving rubric](#).
- We will **drop your lowest homework score** at the end of the quarter.

Solutions will be submitted as a single PDF each week. [Here are](#) resources on combining your written solutions into a single pdf. No camera or scanner? Let's talk!

- **PROJECT/LAB WORK (PR)**

The lab work in this course plays an integral role in helping you develop a conceptual and quantitative understanding of physics. Rather than scheduling the labs and lab activities at regular intervals, we will complete them as needed to complement the material we are studying. This makes it especially important to attend class regularly.



The ability to communicate what you learned in writing is extremely important, since many jobs will have some component involving written communication. In fact, surveys of engineers and computer scientists in the private sector show that more than 75% of respondents use technical writing skills on a *daily* basis in their job. (AIP Statistical Research Center, www.aip.org/statistics)

You will have the opportunity to design and conduct an experiment and model and summarize your results in the form of a project. More details will be provided when the project is assigned.

This grade will be comprised of:

- Details on the Project where you design a lab experiment will be provided later. Technical Writing skills will be important.
- You will practice writing about labs and lab activities that we work on in class. We will discuss more detailed information about the format, content and grading of the lab work at a later time.

- **QUIZZES (QZs)**

The five quizzes will consist of questions, both conceptual and quantitative, that are similar to the in-class work, Conceptual Questions (CQ), and Homework Problems (HW).



This grade will be comprised of:

- Five 65-minute in-class quizzes (see course schedule)
- See the course schedule for tentative dates. Quiz 5 is during finals.
- Quizzes will have two stages: a 40-minute individual portion and a 25-minute group portion. You will hand in your individual work, then work on the same problems in groups. You must come to a consensus on the answers and hand in one copy.
- The individual portion will be weighted 75% and the group portion will be weighted 25%. **If your group's score is less than your individual score, your individual score will be your final score.**
- For each quiz, you are welcome to bring one sheet of notes, front and back, that is written in your own handwriting and not copied from anyone else or typed.

○ *Note: The average of your five quizzes after redos must be $\geq 70\%$ to pass this class with a 2.0, regardless of your final percentage in the class.*

Solving problems in groups more closely resembles how we problem-solve in the real world, and this format is more consistent with this class's philosophy that student collaboration is essential for the learning process. You will get immediate feedback on your work and an opportunity to learn and improve upon it.

In the event that you miss a quiz, contact me by Canvas message **no later than the end of the day of the quiz**. We will work together to devise a solution.

Tips for Success from past classmates!

- ☐ Complete the CQs right after class.
- ☐ Come to class prepared to engage with the material and other students. Do not focus on the answers, but rather the process of coming to a conclusion through discussions with fellow classmates. (Research has shown that peer interaction is one of the most powerful tools for learning physics.)
- ☐ Start homework assignments early to give yourself time to think, (possibly) struggle with some problems, and seek help before the due date.
- ☐ Work with other students on the assignments. Again, working with other people is invaluable for helping you learn physics. With that said, it is still important that you can solve problems independently to ensure success on the quizzes.
- ☐ Do ALL the homework assignments.
- ☐ Before quizzes, redo all the practice homework problems and CQs, review lab materials, in-class activities, and clicker questions. Ask yourself if you really understand why you answered questions a certain way. Again, focus on the process, not the answers.

Getting Support - Ensuring your success!

If you are struggling with the class in any way, there are several sources of help available to you:

The most important thing is to seek help as soon as you can! The concepts in physics build on each other, so asking for help and/or clarification as soon as you can will support your learning the whole quarter. Our most successful students are usually the ones who ask lots of questions! No one knows everything, and the sooner you ask, the sooner you can continue learning!

- Come to the open study sessions or schedule a time we can meet. You can also just drop by and see if any of the Physics faculty are in the classroom (myself, Dr. Schoene, or Dr. Daane). We are always willing to help if we are not teaching or in a meeting!
- Visit the [Math and Science Tutoring \(MAST\) Center](#). This center provides a friendly place to study and do homework where assistance is offered for free for anyone having difficulty or just looking for further support in math or science. They offer online and in-person tutoring.
- Try seeking support from fellow classmates. We encourage you to work with your peers! Discord is available as a way to connect!
- Check on Canvas for more Student Resources!

Things That Matter, But I Suspect You Will Not Read

Diversity and Inclusion

This matters to me a lot. The goal in this class is to build a community in which we all learn from one another and are able to **experience a variety of perspectives**. Such learning happens in an environment in which we respect each other as learners and approach all texts and ideas with an attitude of active engagement, honesty, and skeptical inquiry. Integrating a diverse set of experiences is important for a more comprehensive understanding of science and math, and we will discuss issues of diversity in this class.

If we could take ourselves, humans, out of the act of studying - science, technology, engineering, and math (STEM) would be objective. **However, much of STEM is subjective and is historically built on a small subset of privileged voices.** In this class, we will make an effort to use examples from a diverse group of scientists and/or mathematicians, but limits still exist on this diversity. I acknowledge that there will be both overt and covert biases in the material due to the lens with which it was written, even though the material is primarily of a scientific nature.

- If your performance in the class is being impacted by your experiences/identities, please don't hesitate to come and talk with me. I want to be a resource for you. If you prefer to speak with someone outside of the course, your counselors (<http://southseattle.edu/counseling>) or our Center for Equity, Inclusion and Diversity are excellent resources.
- I, like many people, am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it. Anonymous feedback is always an option.

College Policies

South Seattle College has college-wide policies, including Title IX, religious observances, official wording for our non-discrimination statement, student conduct code, and academic misconduct. Please read these in the [Student Handbook](#) on the South webpage. This is also where you will find the most up-to-date process for filing a grievance against me or other employees of the college.

Course Calendar (First Draft)

This calendar is flexible, and will change a little bit throughout the quarter.

Open Study Session Hours (open time in the classroom/other space to come and work on whatever you want individually or with your peers):

- Tu, Th 4:30-5:30pm in OLY200 (Ms. E)
- Dr. Schoene and Dr. Daane also have office hours in MAST that you can take advantage of.

Week 1:

Topics

- ☐ Introduction
- ☐ Ray Model of Light
- ☐ Shadow Formation
- ☐ Reflection

Events

- ☐ CQ 1.1
- ☐ Surveys

Week 2:

Topics

- ☐ Refraction, Lenses
- ☐ Total Internal Reflection
- ☐ Image Formation with Lenses

Events

- ☐ *April 12 - last day to withdraw 50% refund*
- ☐ Project Part 1 Due
- ☐ Homework 1 Due
- ☐ CQ 1.2 and 2.1

Week 3:

Topics

- ☐ Thin Lens Equation
- ☐ Geometric Optics
- ☐ Vision Corrections

Events

- ☐ Project Part 2 Due
- ☐ Homework 2 Due
- ☐ CQ 2.1 and 3.1
- ☐ **April. 18 Quiz 1 (Weeks 1 & 2)**

Week 4:

Topics

- ☐ Describing Oscillators Mathematically

Events

- ☐ Homework 3 Due
- ☐ CQ 3.2 and 4.1

Week 5:

Topics

- ☐ Phase Constant
- ☐ Period of an Oscillator
- ☐ Beat Frequency

Events

- ☐ Project Part 3 Due
- ☐ Homework 4 Due
- ☐ CQ 4.2 and 5.1
- ☐ **May 2 - Quiz 2 (Weeks 3 & 4)**

Week 6:

Topics

- ☐ Resonance
- ☐ Damped Oscillators
- ☐ Traveling Waves

Events

- ☐ *May 9 - Faculty PD Day*
- ☐ Homework 5 Due
- ☐ CQ 5.2 and 6.1

Week 7:

Topics

- ☐ Sound & Light Waves
- ☐ One-Dimensional Interference

Events

- ☐ Project Part 4A Due
- ☐ Homework 6 Due
- ☐ CQ 7.1
- ☐ **May 16 - Quiz 1/2 Redo**

Week 8:

Topics

- ☐ Standing Waves

Events

- ☐ *May 24 - last day to withdraw*
- ☐ Project Part 4B (two dates) Due
- ☐ Homework 7 Due
- ☐ CQ 7.2 and 8.1
- ☐ **May 23 - Quiz 3 (Weeks 5 & 6)**

Week 9:

Topics

- ☐ Subjectivity & Objectivity
- ☐ Two-Dimensional Interference

Events

- ☐ *May 27 - holiday*
- ☐ Project Part 4C Due
- ☐ Project Part 5 Due
- ☐ Homework 8 Due
- ☐ CQ 8.2 and 9.1

Week 10:

Topics

- ☐ Double Slit Experiment
- ☐ Diffraction Gratings

Events

- ☐ *June 4 - South Seattle Showcase!! (midday)*
- ☐ Homework 9 Due
- ☐ CQ 9.2 and 10.1
- ☐ **June 6 - Quiz 4 (Weeks 7, 8, 9)**

Week 11:

Topics

- ☐ Wave Optics
- ☐ E&M Waves
- ☐ Modern Physics

Events

- ☐ Homework 10 Due
- ☐ CQ 10.2 and 11.1
- ☐ Homework 11 Due
- ☐ June 11 - Last Day except the final
- ☐ **June 13 - Quiz 5 (Weeks 10, 11)**
- ☐ **June 13 - Quiz 3/4 Redo**
- ☐ *June 13 - everything locked*