General Physics II: Overview

Xin Wan (*Zhejiang Univ.*)

Fall 2021

The Series

- General Physics I
  - Newtonian mechanics
  - Theory of relativity
  - Thermal physics
- General Physics II
  - Electricity
  - Magnetism
  - Optics
  - Quantum physics

$$\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0}$$

$$\nabla \cdot \mathbf{B} = 0$$

$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$$

$$\nabla \times \mathbf{B} = \mu_0 \mathbf{J} + \mu_0 \epsilon_0 \frac{\partial \mathbf{E}}{\partial t}$$

$$i\hbar \frac{\partial \psi}{\partial t} = -\frac{\hbar^2}{2m} \nabla^2 \psi + U\psi$$

References

- Halliday, D., Resnick, R., and Walker, J., *Fundamentals of Physics*, 10th ed., Wiley, 2014
  - In fact, any edition is okay. It has long been a popular college textbook and covers the basics we will discuss. But for the honors course, we often go beyond it.
- Feynman, R. P., *The Feynman Lectures on Physics*, 2nd ed., Addison-Wesley, 2005 (https://www.feynmanlectures.caltech.edu)
  - A set of lectures from the legendary physicist Richard Feynman. "Tough, but nourishing and full of flavor."

Additional References

- Berkeley Physics Course
  - Purcell, E. M., *Vol. II: Electricity and Magnetism*, McGraw-Hill, 2014
  - Crawford, F. S., Jr., *Vol. III: Waves*, McGraw-Hill, 2014
  - Wichmann, E. H., *Vol. IV: Quantum Physics*, McGraw-Hill, 2014

"The intention of the writers has been to present elementary physics as far as possible in the way in which it is used by physicists working on the forefront of their field. We have sought to make a course that would vigorously emphasize the foundations of physics."

Grading

- Homework: 30% (to be graded by TAs)
  - Total 8 problem sets. To be published on Wednesday and due normally two weeks later. You can either hand in exercise books in class or submit online (Tronclass).
- Quizzes and Midterm Exam: 30%
  - Midterm: November 10 (tentative)
  - Quizzes are given unannounced
- Final Exam: 40%

Course Organization

Class A (QR code below)
Time: Wed 8:00-9:35/Fri 9:50-11:25
Place: Zijingang Campus, West 1-416

普通物理学 II（H… 内部

该群属于“浙江大学”内部群，仅组织内部成员可以加入，如果组织外部人员收到此分享，需要先申请加入该组织。

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Class B (QR code above)
Time: Wed 9:50-11:25/Fri 8:00-9:35
Place: Zijingang Campus, West 1-416

Tronclass

- Sign in the Learning in ZJU system.
- Join the current course, if you are already enrolled.
- Under Introduction, finish the Questionnaire on General Physics.

- Discussion: We have different tools for communication (Email, DingTalk, TronClass, ...). Which one shall I choose when I have a question?

TronClass vs DingTalk vs Email

- TronClass: Good for digital resources, in-class activities, and extended discussions.
  - Course materials: lecture notes, homework problems, solutions, additional materials
  - Interaction: homework submissions, rollcalls, in-class quizzes, questionnaires
  - Forum: Start or join a thread for serious and thought-provoking discussion

- DingTalk: Good for **real-time off-class activities**.
  - Announcements or polls for the organization of off-class activities
  - Online office hours
  - Online TA sessions (discussing homework solutions)
  - Casual discussions: Use private chats or arrange separate Ding groups (Be kind not to disturb others)

- Email: Good for **private but professional correspondences**, especially for things you want to keep a record.
  - Asking for leave
  - Asking for help on a specific problem
  - Discussing difficulties in learning
  - Late homework submission (in particular, when you just miss the deadline)

Email Rules

- Use your official Zhejiang University email account if possible.
- In the subject line, include "[PHYSICS]" and a title of your message. For example: "[PHYSICS] On Coulomb's Law".
- Include your real name and class index (A or B) in your email message.
- Check Learning at ZJU web pages first to see when assignments are due and whether solutions are available.
- Send questions related to problem sets to TAs for prompt replies.

How to Email Contact a Professor

- Before you write an email in English, you may want to check out
  - https://www.wikihow.com/Email-a-Professor
  - https://sparkmailapp.com/how-to-email-professor-template, or
  - https://propellercollective.org/blog/on-campus/how-to-email-your-professor
- The same rules apply to emails in Chinese as well.

Sample email for not attending class

Dear Professor Wan,

This is Sam Wang from General Physics II, Class A. I am writing to inform you that I will not be able to attend your class on Friday, as I have a doctor appointment at 10 AM. Thank you.

Sincerely,

Sam Wang
General Physics II
Class A

To Be Covered in This Semester

- Weeks 1-4: Electricity (Xin Wan)
  - Electrostatics
  - DC circuits
- Weeks 5-8: Magnetism (Xin Wan)
  - Magnetism
  - AC circuits
  - Electromagnetic waves
- Weeks 9-12: Optics (Lih-King Lim)
  - Geometrical optics
  - Wave optics
- Weeks 13-16: Quantum Physics (Xin Wan)