VP 240: General Physics II

Fall 2017

Instructor: Wenjie Wan, Ph.D.
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Office Hours: by appointment or dropping-by
Classroom: E2-205
Time: Lecture time-Tuesday and Thursday 2:00 – 3:45pm
TA: Yuchan Liu(刘越晗) yuehan.liu@sjtu.edu.cn OH: Wednesday 18:00 - 20:00 @JI Building 228

Weijie Ye(叶蔚杰) yeweijie.owen@gmail.com OH: Monday 20:00 - 22:00 @Yu Liming Center

Yangtao Zhang(章杨涛) huskymax@sjtu.edu.cn OH: Thursday 20:00 - 22:00 @Yu Liming Center

Category Description:

This course covers electricity, magnetism and optics: charge, Coulomb's law, electric fields, Gauss' law, electric potential, capacitors and dielectrics, current and resistance, EMF and circuits, magnetic fields, Biot-Savart law, Amperes law, Faraday's Law of Induction, Electromagnetic Wave, Polarization, Scattering, Reflection, Refraction, Diffraction and Interference.

Prerequisite: *VP 140 or VP 160 (4 credits)*

Course Objectives:

(1) To provide basic knowledge of principles governing the physical universe, and develop an understanding of the scientific method and its application to the advancement of knowledge [1-9].
(2) To develop conceptual and mathematical understanding of physics principles in modeling of real-world problems.
(3) To develop effective problem-solving skills, with emphasis on modeling, estimation, alternative representations, and critical analysis of results.

Textbook:

University Physics with modern physics (13th edition) by Hugh D. Young, Roger A. Freedman, Pearson (2012) ISBN: 13:978-0-321-76218-4

Course Outline: *Tentative and subject to change*

Week	Date	Lecture Topics	Homework
1	Sept 12	Introduction to VP240, EM: electric charge & field (21)	Total 7 sets of HWs , one per every two chapters
	Sept 14	Gauss's Law (22)	
2	Sept 19	Electrical potential (23)	
	Sept 21	Capacitance and Dielectrics (24)	
3	Sept 26	Current ,Resistance and Electromotive force (25)	
	Sept 28	Magnetic Field and Magnetic force (27)	
4		Sources of Magnetic field (28)	
		Electromagnetic Induction (29)	
5	Oct 10	Inductance (30)	
	Oct 12		
6	Oct 17		
	Oct 19		
7	Oct 24		
	Oct 26		
8	Nov 31		
	Nov 2		
9	Nov 7	Mid-term Exam	
	Nov 9	Electromagnetic Wave (32)	
10	Nov 14	Nature of light (33)	
	Nov 16	Geometric Optics (34)	
11	Nov 21	Interference (35)	
	Nov 23	Diffraction (36)	
12	Nov 28		
	Nov 30		
13	Dec 5		
	Dec 7		
14	Dec 12		
	Dec 14	Final Exam	

Homework Problem:

Problems are designed for students to review the course contents before or after the lectures, students are expected to gain the knowledge through lectures & self-studies of course materials to prepare themselves for classes. After class, several challenging problems are assigned to help students review the class &

their extensions.

Mid and Final exam:

The examinations are designed to measure each individual's understanding of the course materials, it composes not only the question directly or indirectly related to the labs, also some designing problems to test students' understanding & ability to use what they learn through the course.

Grading Policy:

Homeworks: 20%
Mid-term: 40%
Final Exam: 40%