This course will cover the basic concepts of fluids, wave motion, optics, thermodynamics, along with some selected topics from modern physics. The objective is to learn fundamental physics in these different areas by class learning combined with laboratory work.

Instructor: Dr. Zhigang Chen  
Office: Thornton Hall 526  
Office hours: T, Th: 1-2 PM

Meeting Time and Place:  
P240-1: TuTh 11:00AM - 12:15PM (Th429);  
P240-2: TuTh 2:00PM - 3:15PM (Th429)

Textbook:  
*Physics for Scientists and Engineers* by Serway and Jewett (10th edition)  
with the WebAssign add-on.

Prerequisites:  
Passing PHYS 220 and MATH 227 (or their equivalents at other universities) with grades of at least C (C-minus does not count); Must be taken concurrently with Phys 242. (Completion of the Lab 242 is required for completion of the Lecture 240).

Homework:  
Homework is an important part of learning. Homework problems will be assigned weekly, and will be due each week before the new assignment. In addition to the problems assigned, it is strongly recommended that you do a few more problems for each chapter section covered. There will be help sections intended to provide help in homework problem-solving and to answer related questions.  
Homework will primarily be given in WebAssign, with occasional supplemental assignments on paper. All information about the homework assignments will be posted in iLearn.

Exams:  
There will be two mid-term exams, and a comprehensive final exam. In general, no make-up for the exams and no scores are dropped. Exams will be closed-book, mainly at the level of homework problems. You may use a scientific or a graphic calculator, but not a cell phone calculator. Please remember to bring your SFSU photo ID to all exams. In addition to these exams, quizzes may be given in class without prior notice so class attendance is necessary and highly encouraged.

Grading:  
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Homework</td>
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<tr>
<td>Exam 1</td>
<td>20%</td>
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<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>35%</td>
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Note: To receive a passing grade in this class, you must complete Phys 242, must attempt homework problems in each assignment and attend the three exams. A minimum score of 60% overall is required for a grade of C or better. In-class quizzes and class attendance will add positively for the final grade.
PHYS 240

Class Schedule and Important Dates

Weeks 1-2: Fluids and Fluid Mechanics

(Basic concepts, Pascal's Principle, Archimedes Principle, Fluid dynamics)

Weeks 3-8: Thermodynamics

(Temperature and Zeroth law, The ideal gas law, Internal energy and equipartition, The first law, P-V diagram and thermodynamical processes, Real gas and change of phase, The second law, Carnot engine and third law, Entropy)

First Mid-term Exam* Th, March 19

Weeks 10-14: Waves and Optics

(Waves and wave superposition, Sound and light waves, The Doppler effect; Ray optics - Law of reflection and refraction, Snell’s law, Optical components, Ray diagram; Wave Optics – Interference, Diffraction, Polarization)

Second Mid-term Exam* Th April 30

Weeks 15-16: Introduction to Modern Physics

(Basic concepts, Light and photon, Quantum physics, Special relativity)

Final Exam
P240-1: Tuesday, May 19 10:15am-12:15pm
P240-2: Tuesday, May 19 2:45pm-4:45pm

Other Important Dates:

- Jan 28: First day of this class
- Feb 14: Last Day to Drop/Withdraw Classes without a W grade
- March 23-27: Spring break
- March 31: NO CLASS
- May 14: last day of this class

* Schedule for midterm exams are tentative. Changes if any will be announced in lecture