Center for Talent DEVELOPMENT®
NORTHWESTERN UNIVERSITY

SUMMER PROGRAM 2009

School of Education and Social Policy
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Summer Office: June 15 – August 12, 2009 · 847.467.2990

Equinox Program

Advanced Placement Physics B (AP Designation Pending)

Course Description

Advanced Placement Physics B offers an analytical and systematic approach to the main principles of physics and covers topics such as waves, optics, Newtonian mechanics, atomic and nuclear physics, electricity, magnetism, and thermal physics. Laboratory sessions help hone students' ability to analyze a problem or a phenomenon verbally, mathematically and graphically, and develop students' conceptual understanding and problem-solving ability using algebra and trigonometry. This course prepares students for the AP Physics B exam.

Outcomes

Upon successful completion of this course, students will be able to:

- Understand major concepts of physics in the areas of Newtonian Mechanics, Fluid Mechanics and Thermal Physics, Electricity and Magnetism, Waves and Optics, and Atomic and Nuclear Physics
- Solve problems in the aforementioned areas, showing mastery of problem-solving techniques
- Apply knowledge of aforementioned areas to challenging AP level problems

Resources and Materials

Text:
Giancoli, D *Principles of Physics*, 6/E 2006.
Textbook Website:
http://wps.prenhall.com/esm_giancoli_physicsppa_6
Student will provide:
Graphing calculator, notebook.

Student Evaluation and Grading Policies

CTD Grading Scale

A+	100-97%	A	96-93%	A-	92-90%
B+	89-87%	B	86-83%	B-	82-80%
C+	79-77%	C	76-73%	C-	72-70%
D+	69-67%	D	66-63%	D-	62-60%
F	below 60%				

Final Grade Breakdown

35%: Daily Quizzes: Mastery of the previous days' material and labs will be assessed in the form of a daily quiz, which may include representative AP questions.

10%: Presentation: Students will be given the opportunity to research and present information on a topic in physics of particular interest to them.

25%: Homework & Lab Reports: Physics problems of varying degrees of difficulty will be graded for completeness and correctness to ensure continual mastery of physics concepts. Laboratory assignments will also be assessed.

30%: Final Exam: Students will prove their mastery of the course by taking a full-length AP Physics B Exam.

Schedule

Date	Topics	Readings	Daily Assignments	Instructional Practices/Differentiation
7/20	1D and 2D motion, projectiles	Ch. 2 & 3	Ch. 2: 8, 19, 32, 39, 44, 57 Ch. 3: 7, 19, 20, 35, 52, 67	Flexible Grouping & Tiered Assignments
7/21	Newton's Laws of motion	Ch. 4; 9.1-9.3	Ch. 4: 5, 32, 33, 34, 45, 58, 76, 87 Ch. 9: 11, 16, 21, 29, 59	Flexible Grouping & Tiered Assignments
7/22	Work, energy, and power	Ch. 6	Ch. 6: 3, 9, 12, 27, 40, 43, 45, 55, 66, 76, 82	Flexible Grouping & Tiered Assignments
7/23	Systems of particles, linear momentum	Ch. 7	Ch. 7: 4, 17, 20, 23, 39, 37, 40, 42, 44, 50, 78	Flexible Grouping & Tiered Assignments
7/24	Circular motion, rotation, gravitation	Ch. 5; 8.1, 8.4; 9.2, 9.3	Ch. 5: 7, 19, 23, 36, 53, 55, 60, 73, 75, 81 Ch. 8: 24, 41	Flexible Grouping & Tiered Assignments
7/27	Fluid mechanics, temperature, heat,	Ch. 10; 13.1 – 13.8	Ch. 10: 5, 11, 27, 45, 70, 79 Ch. 13: 15, 18, 22, 28	Flexible Grouping & Tiered Assignments
7/28	Kinetic theory and thermodynamics	14.1 – 14.3; 15.1 – 15.9	Ch. 14: 3 Ch. 15: 5, 10, 13, 22, 28, 41, 44, 55, 56	Flexible Grouping & Tiered Assignments
7/29	Electrostatics, conductors, capacitors	Ch. 16; 17.1 – 17.5	Ch. 16: 6, 12, 32, 38, 54, 58, 67 Ch. 17: 9, 24, 27, 56, 63	Flexible Grouping & Tiered Assignments

7/30	Electric circuits	18.1 – 18.6, 19.1 – 19.7	Ch. 18: 9, 16, 56, 63 Ch. 19: 18, 20, 27, 38, 44, 67, 75	Flexible Grouping & Tiered Assignments
8/1	Magnetic fields, electromagnetism	20.1 – 20.6; 21.1 – 21.5	Ch. 20: 19, 36, 38, 41, 67, 77 Ch. 21: 11, 12, 15, 17, 72	Flexible Grouping & Tiered Assignments
8/4	Wave motion, Oscillations, and sound	Ch. 11; 12.1, 12.2, 12.7, 12.8	Ch. 11: 16, 20, 25, 41, 77 Ch. 12: 6, 12, 47, 85	Flexible Grouping & Tiered Assignments
8/5	Physical optics & research for presentation	23.1 – 23.9	Ch. 23: 3, 13, 25, 32, 35, 41, 47, 79	Flexible Grouping, Tiered Assignments, and Individualized Instruction
8/6	Geometrical optics & research	24.1 – 24.5	Ch. 24: 2, 15, 23, 30, 47, 66, 67	Flexible Grouping, Tiered Assignments, and Individualized Instruction
8/7	Nuclear and Modern Physics	Ch. 27; Ch. 30	Ch. 27: 3, 17, 28, 35, 62 Ch. 30: 22, 26, 35, 55, 66	Flexible Grouping & Tiered Assignments
8/8	Final Exam & Presentations			