

IONA PREP

COURSE SYLLABUS

CONCEPTUAL PHYSICS - PHYSICS 3 ***2011-2012***

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EXTRA HELP SCHEDULE: 3-4 PM BY APT.

Course description: In this Conceptual Physics class, we will investigate the physical laws of nature. The focus will be on developing an understanding of the qualitative aspects of physics, with a limited focus on the computational skills. Throughout this course, emphasis will be placed on observation, interpretation, reasoning, and a conceptual understanding of physics. The objectives of this course are aligned with the New York State Physical Settings / Physics Core Curriculum

LEARNING GOALS

After a successful completion of this course, a student will be able to:

- Understand how to successfully complete a laboratory investigation
- Analyze experimental data, noting trends and comparing with expected results
- Understand the general nature of science and identify a good hypothesis
- Understand how motion is relative, describe different types of motion (1-d, 2-d, free-fall, etc)
- Explain how graphs can be used to interpret motion
- Distinguish between vector quantities and scalar quantities
- Describe horizontal and vertical components of projectile motion
- State and apply Newton's Laws of Motion
- Understand and describe the role friction plays in the interaction of materials
- State and apply the law of conservation of momentum
- Describe work, power, energy and efficiency
- Understand how objects behave when their motion is in a circular path
- Describe and model gravitational interactions
- Describe and model waves
- Understand the properties of sound and factors which effect its velocity
- Describe characteristics of light and light interactions
- Understand the concept of electric charges and the flow of electricity
- Understand simple electric circuits and the relationship of voltage, current, resistance and power
- Describe magnetic and electromagnetic interactions, and forces associated with them

- Describe the quantum nature of the atom
- Predict and give examples of radioactive decay
- Understand mass-energy equivalence
- Predict behavior of objects moving at relativistic speeds

TEXTS & MATERIALS

Required Text

Hewitt, Paul G., Conceptual Physics, Prentice Hall, 2002

Materials

- Laptop Computer w/ internet access
- Binder for returned and current paperwork
- Scientific calculator
- Pencils and black Pens

QUARTER 1

Reading assignments will come from the text and selected sources. Your text should be left at home, other readings will be provided.

Text or Article.....	Pages to be Read
Chapter 1 - About Science	1-7
Chapter 2 - Linear Motion	10 - 24
Chapter 4 - Newton's 1st Law - Inertia	43 - 55
Chapter 5 - Newton's 2nd Law - Force and Acceleration	59 - 70
Chapter 6 - Newton's 3rd Law - Action / Reaction	74 - 82
Chapter 7 - Momentum	86 - 99

QUARTER 2

Text or Article.....	Pages to be Read
Chapter 8 - Energy	103 - 118
Chapter 9 - Circular Motion	123 - 132
Chapter 12 - Universal Gravitation	168 - 179
Chapter 3 - Projectile Motion	28 - 39

QUARTER 3

Text or Article.....	Pages to be Read
Chapter 15 – Special Relativity	212-229
Chapter 25 - Waves	372 - 386

Chapter 26 - Sound	390 - 400
Chapter 27 - Light	404 - 420

QUARTER 4

Text or Article.....	Pages to be Read
Chapter 32 - Electrostatics	500 - 513
Chapter 34 - Electric Current	531 - 544
Chapter 35 - Electric Circuits	548 - 558
Chapter 38,39,40 - Atom, Quanta and Radiation	parts of 596-642

ASSESSMENT

Students at Iona Prep are to be prepared for class each and every day. Formative assessment takes place and may include a quiz, a “Do Now” activity, or the collection and correction of homework. In addition, each marking period includes summative assessment which may include unit tests, projects, presentations, or longer writing projects. During each quarter the following summative assessments are planned:

# of	Assessment.....	% of the Quarter Grade
3	<i>Tests</i>	50%
10-15	<i>Quizzes and Homework</i>	30%
1-2	<i>Labs / Projects (Paper, Presentation, etc.)</i>	20%
		100%

CHEATING ON EXAMS AND PLAGIARISM

Plagiarism is the “use or close imitation of the language and thoughts of another author and the representation of them as one’s own original work.” Don’t do it. Work deemed as plagiarism will receive zero credit. See student handbook for full details on plagiarism.

RUBRIC

Generally, assignments (homework, labs and projects) are graded with three factors: completeness, accuracy, and neatness. An assignment may have a specific, individualized rubric.

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4
Completeness	Most tasks were not completed	Less than 50% of lab tasks / write up completed	Most of tasks completed	All tasks completed, no omissions

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4
Accuracy	Presents illogical explanation of findings	Presents an illogical explanation for findings and addresses few questions	Presents a logical explanation for findings and accurately addresses some questions	Presents a logical explanation for findings and accurately addresses most questions
Neatness	Illegible writing, loose items	Legible writing / typed, many typos	Legible writing / typed, few typos, charts and pictures provided	Extreme care taken. All elements correctly placed and well thought out

ATTENDANCE AND LATE WORK

In order to be successful in this class regular attendance is mandatory. Missing class time makes it much more difficult for the student to keep up with the material. It is the responsibility and expectation of the student to check edline for assignments and to complete assignments on time. No credit will be allowed for late assignments. In the case of an absence, work is due the day the student returns to school.