THREE RIVERS COMMUNITY COLLEGE
SYLLABUS
PHY110, Introductory Physics

Instructor: Tina E. Morin
Classroom: B208 Lab: B208
Class Time: **Th.** 5:30 p.m. – 8:15 p.m.
Lab Time: **Th.** 8:16 p.m. – 9:56 p.m.
Office: B208 (Lab prep room) Email: tmorin@qvcc.commnet.edu
Office Hours: Tuesday, 12:30 p.m. – 1:30 p.m., Thursday, 3:00 p.m. – 4:00 p.m. and TBD

Prerequisites: MATH K095 (Elementary Algebra Foundations)
Co-requisites: MATH 137 (Intermediate Algebra)

Course Description: This is a semester exploration of the basic principles of classical physics!

Physics is the fundamental experimental science. It attempts to describe the fundamental nature of the universe and how it works, always striving for the simplest explanations to many different behaviors. Physics explains why the sky is blue, and why rainbows have colors. It explains what keeps a satellite in orbit, why steel ships float, and what atoms and nuclei are made of. The goal of physics is to explain as many things as possible using as few laws as possible, revealing nature's underlying simplicity and beauty.

Theory and experiment both play essential roles in the development of physics. Experiment discloses the facts of nature; theory makes sense out of them. Theory suggests further experiments as tests of the laws of physics. Thankfully, there are very few laws of physics, and they can be expressed using mathematics, which has been called the language of physics.

In your study of physics this semester, you will learn some of the basic truths about nature. You will learn how these discoveries were made, how they affected the scientific community, and what impact they had on society as a whole. Through the use of the scientific method, you will examine the behavior of the physical world, and reveal your findings in the language of mathematics. As well as continue to develop critical thinking and problem solving skills, you will strengthen communication skills through written and oral presentations of concepts in physics.

It is my sincere hope that you will find physics an exciting and enjoyable experience, and that you will profit from this experience. Welcome to the exciting world of physics!

> *The scientist does not study nature because it is useful; he studies it because he delights in it, and he delights in it because it is beautiful. If nature were not beautiful, it would not be worth knowing, and if nature were not worth knowing, life would not be worth living.*
>
> HENRI POINCARE

Required Textbook:

Applied Physics, Ewen, Schurter, and Gundersen, Pearson Education, Inc., Tenth Edition, 2012

Required Materials:

In order for you to gain the greatest benefit possible from each class, you should have the following materials with you for every class:

textbook
Scientific calculator or TI-83, 84 graphing calculator
Note-taking materials

Your Classroom Experience:

My expectation for your participation in the classroom should be the same expectation that you have for your involvement in the classroom. Attendance and participation in classroom activities are extremely important and you should be prepared to come to every class meeting (on time!) to be totally involved in discussions, experimentation, and formulation and display of results of the day's work. **PHYSICS IS NOT A SPECTATOR SPORT!** Cooperative work allows you to share valuable information with one another, and dialogue will help you to understand the concepts more fully. Individual participation and teacher-oriented lecture are also valuable learning tools, and you can expect that many methods of learning will be used in this course.

You are responsible for all information and instructions discussed in class whether or not you were present. If you have an unavoidable absence, please get the notes from a classmate, check Blackboard for homework and instructions, do your reading and see me/ email me if you have any questions.

Your Laboratory Experience:

We have a devoted lab time each week and attendance is required. I place a great deal of emphasis on experimental physics, and I feel that it is important for you to gather and analyze data using many different formats. In this way, you can come to your own understanding of the natural world. Lab work will use a variety of different methods. Some methods are considered to be "old school" because they don't use technology. I feel that these are extremely valuable because of the accuracy factor. As scientists in a laboratory setting, we sometimes need to deal with the inaccuracy of measuring devices. Other methods of lab exploration will involve using probes with microprocessors. We will also make use of on-line simulated labs that will involve a myriad of applications to "real science." This is some of the "new school" stuff. Our lab work will become an important part of your understanding, and the experiments that you perform will require a lab report (sometimes formal) that will be turned in for a grade. More on this process will follow below.

Homework: Homework will be assigned on a weekly basis, and selected assignments will be passed in for a grade. You'll be told in advance which assignments these are.

Lab Work: As mentioned previously, lab work is very important in physics class. Experiments will always require a summary of the work done. Sometimes these summaries will be brief reports and other summaries will require a formal, written report. We will discuss these formal reports in detail before the first is submitted. A separate lab grading rubric will be distributed and discussed. Whatever type of report is required, it will be due at the beginning of the next lab meeting.

Quizzes: You should be prepared for a quiz each class period. These quizzes will be short quizzes given at the beginning of each class and may involve material from the previous class period or material from the reading for that day. There will be no makeup quizzes. The lowest quiz grade will be dropped.

Tests: Test sequences are indicated on your schedule. Makeup tests will not be given unless prior arrangements have been made.

Evaluation and Grading: The final grade will be determined by the following weighting:

Tests (3 tests)	50%
Assignments/Quiz/ Class participation	25%
Lab Reports/Participation	25%

The final course grade will be determined by the following scale:

A:	93 – 100	C+:	77 – 79	D-:	60 – 62
A-:	90 – 92	C:	73 – 36	F:	Below 60
B+:	87 – 89	C-:	70 – 72		
B:	83 – 86	D+:	67 – 69		
B-:	80 – 82	D:	63 – 66		

Academic Dishonesty: Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to succeed in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all time with honor.

I expect that you will do all your own work in this course. Dishonesty on an exam, quiz, homework, or lab report will undermine the validity of your learning experience. I encourage you to read the school's academic honesty policy and to discuss with me any questions that you may have regarding the policy.

Accommodations For Students with Learning Needs: Students with learning differences who need academic accommodations should discuss options with me as soon as possible. You will need to provide documentation of your difference to the Director of Learning Services in the Learning and Student Development Office.

Online Learning Portfolio: All students are required to maintain an online learning portfolio in Digication that uses the college template. Through the use of this tool, students will have the opportunity to monitor their own growth in college-wide learning. The student will keep his/her learning portfolio and may continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select and review random works to improve the college experience for all. Student work reviewed for assessment purposes will not include names and all student work will remain private and anonymous for college improvement purposes. Students will have the ability to integrate learning from the classroom, college, and life in general, which will provide additional learning opportunities. If desired, students will have the option to create multiple portfolios.

SCHEDULE OF TOPICS, CORRESPONDING CHAPTERS, AND NUMBER OF CLASS PERIODS

TOPICS	# OF CLASSES	CHAPTERS
INTRODUCTION		
1. Measurement, and units	2.3	0, 1, 2, 3
CLASSICAL MECHANICS		
2. Newton's Laws of Motion	2	4 – 8, 11
3. Momentum		
4. Mechanical Energy		
EXAM 1 WEEK 6		
ELECTRICITY AND MAGNETISM		
5. Charge/Coulomb's Law	2.3	17 & 18
6. Ohm's Law and DC Circuits		
7. Magnetic fields and forces		
8. Motors, Generators, Transformers		
HEAT		
9. Thermal energy, heat capacity, heat transfer	2	14
EXAM 2 WEEK 11		
OPTICS		
10. Vibrations/waves	2.3	16, 20, 21
11. Wave properties		
12. Reflection/refraction		
13. Lenses		
MODERN PHYSICS		
14. Quantum physics	2	23
15. Atomic physics		
16. Nuclear physics		
EXAM 3 WEEK 16		

This is a tentative list of topics and schedule that is subject to manipulation depending on time constraints and interest.

Some helpful hints from me to you!

- Prepare for class; read material in the text before the lecture. Then read the material again after class discussions of the topics.
- Use all your resources
- Don't miss class; get notes from someone if you have an unavoidable absence
- Study
- Review and practice as necessary
- Participate in class. Bring your calculator everyday
- Practice, practice, practice!
- Let me know how you're doing and NEVER hesitate to ask for help, RIGHT AWAY!

And you must remember one, very important thing:

PHYSICS IS PHUN!