

Physics 4C Course Outline

The Physics 4C course is a course designed for people pursuing a college program in the sciences. In this technical course, main emphasis will be on problem solving, laboratory skills, and data analysis. For this reason it is essential that students are self reliant in terms of seeking extra help when required, managing their time and reading the textbook for content.

Course Content :

The course consists of 5 units each designed to take about 3 weeks. The remaining week will be used for Final Assessment Tasks which will be spread throughout the semester, following each unit.

Unit Topic	Content	Time Lines	Completion Date	Text
Mechanical Systems	Significant Digits, Graphing and Deriving Equations, Speed, Acceleration, Newton's Laws, Measuring and Analyzing Forces, Simple Machines, Mechanical Advantage and Efficiency	27 classes	March 8	Chapters 1,2
Energy Trans - formations	Work, Energy, Power, Conservation of Energy Problems, Efficiency, Heat, renewable Energy, Using Energy Efficiently	14 classes	April 5	Chapters 3,4
Hydraulic and Pneumatic Systems	Fluids, Pressure, Work and Power in Fluid Systems, Fluid Flow, Streamlining and Bernoulli's Principle	20 classes	May 4	Chapters 5,6
Electricity & Electronics	Electrical Circuits, Resistance, Voltage and Current, Series and Parallel Circuits, Electrical Power and Energy, Semiconductors, diodes and transistors, Capacitors, Analog and digital signals, Integrated circuits	14 classes	May 25	Chapters 7,8
Communications Technology	Vibrations and Waves, Interference in waves, Periodic waves, Resonance, Communications technology, Light and Electromagnetic waves, Reflection and refraction of light waves, Communications systems using waves	10 classes	June 8	Chapters 9,10

Assessment & Evaluation : The physics program features expectations in four general areas.

Knowledge and Understanding : (30 %)The factual content you must retain for success will be evaluated using traditional tests and quizzes.

Thinking and Inquiry : (20 %)The collection of skills you must demonstrate in order to succeed will be evaluated by designing and carrying out laboratory activities and performing research activities.

Application : (18 %) Projects will be assigned and lab activities will be performed in order to evaluate your ability to apply your knowledge and skills to actual problems.

Communication : (32 %) You will be evaluated on the presentation of your assignments, projects and lab reports.

Your mark will be determined by evaluation worth 70 % of your grade for expectations completed during the term. The final 30 % of your evaluation will be based upon a final exam and a culminating task. The exam will be comprised of questions divided among the four expectation areas according to the breakdown provided above. The culminating task will be a project to be completed which will evaluate your skills in each of the four areas

The final breakdown of your evaluation will be approximately :

Unit Tests (5 of them) : 20 %

Quizzes (5 to 10) : 15 %

Lab Reports and Assignments (5 to 10) : 25 %

Projects (3) : 10 %

Final Exam : 30 %

Absents : Students are responsible for making up work missed whether or not absents are verified. If you miss a lab or project day, you will be given the opportunity to complete the assignment and hand it in as an individual later.

Independent Study : Several of the lab activities, reports and one of the projects will require extensive use of graphing programs and simulation programs on our ELSS computers. As computer time at ELSS is rarely available during class periods, students will need to use their after school and lunch periods wisely. Get your student password as soon as possible and see Mr. Shipman about using the science computers after class. The first computer generated graphs are due for grading next week.

Student Requirements :

- ▶ 3 ring binder
- ▶ math drawing set
- ▶ scientific calculator
- ▶ floppy disks for backing up computer work
- ▶ Physics 12: College Preparation text

Suggestions For Success :

- ▶ Complete all homework and check your answers. If you don't understand how the solution works come in for help right away.
- ▶ Correct all tests and re-write the test if your mark is lower than 70%.
- ▶ Read the text book in advance of the scheduled class lecture so that you can ask questions in class.
- ▶ Check out your mark, find answers to tests and assignments, communicate with Mr. Shipman and explore extra science resources on the internet at

<http://teacherweb.com/ON/ElliotlakeSecondarySchool/PeterShipman/>