

SIMCOE MUSKOKA CATHOLIC



DISTRICT SCHOOL BOARD

SCHOOL: St. Thomas Aquinas Catholic Secondary School		CHAIRPERSON: Ms. Novogradecz	
DEPARTMENT: Science			
COURSE TITLE: Grade 12 Physics		COURSE TYPE: University	
GRADE: 12 COURSE CODE: SPH 4C CREDIT: 1		PREREQUISITE: SNC 2P	
TEACHER(S): Mr Eagan		DATE: September 2012	
COURSE DESCRIPTION			
<p>This course develops students understanding of the basic concepts of physics. Students will explore these concepts as they relate to mechanical, electrical, fluid (hydraulic and pneumatic) and communications systems, as well as to the operation of commonly used tools and equipment. They will develop scientific inquiry skills as they verify accepted laws of physics and solve both assigned problems and those emerging from their investigations. Students will also consider the impact of technological applications of physics on society and the environment.</p>			
How this course supports expectations for the Catholic School Graduate:			
<p>An effective communicator who speaks, writes and listens honestly and sensitively, responding critically in light of gospel values.</p> <p>A reflective, creative and holistic thinker who solves problems and makes responsible decisions with an informed moral conscience for the common good. I wonder if students read this. If you do lets play a joke. Read carefully. First student says 1st element from periodic table: next student says the 3rd one , next student the 5th and so on.. If you put up your hand and say the right one just go outside and let's see who is the last person to catch on . Periodic table is in your agenda. If you get up to read wall it will lose the effect.</p>			

COURSE CONTENT & ASSESSMENT AND EVALUATION STRATEGIES

UNIT TITLE / DESCRIPTION	ASSESSMENT & EVALUATION STRATEGIES
Unit 1: Mechanical Systems (24 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Unit 2: Energy Transformations (22 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Unit 3: Hydraulic and Pneumatic Systems (24 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Unit 4: Electricity and Electronics (15 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Unit 5: Communications Technology (25 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation

Evaluation of Student Achievement

Instruments	Knowledge/ Understanding	Thinking/ Inquiry	Communication	Application
Unit Tests	★ Multiple Choice / Definitions / Unit Analysis	★ Questions / Unit Analysis	★ Explanations of Physical systems	★
Quizzes	★	★		
Labs and Investigations	★	★	★	★
Independent Projects		★	★	★
Oral Presentations			★	★
Research Reports		★	★	★
Exam	★	★	★	★

COURSE GRADE WEIGHTING:

TERM WORK: 70%		FINAL EVALUATION: 30%	
Knowledge/ Understanding	25 %	Final Exam	30 %
Thinking/ Inquiry	25 %		
Communication	10 %		
Application	10 %		

Student Signature: _____

Date: _____

Parent Signature: _____

Date: _____

- Extra help available at <http://resources.elearning.ca> User: smcdsbstudent Password: oerbs
Type in "SPH4C" into search.
- Type into google "zona + physics", pick the science. <http://id.mind.net/~zona/mstm/mstm.html>
- Type into google "physics + classroom." <http://www.glenbrook.k12.il.us/gbssci/Phys/Class/BBoard.html>

Teacher Expectations

1. Assignments and labs will be handed in on time on the due date at the start of the class, or in the morning under my door.
2. You are here to work on physics. If you waste your time - or the classes - it will make new content more difficult. It might hinder your ability to have help after school.
3. It is the students responsibility to seek extra help if needed. I will always help as long as you have attempted to solve the problem on your own. **ALWAYS ASK FOR EXTRA HELP!!**
4. Students will hand in competent assignments and labs as detailed by the teacher. I will give **zero** for any copied labs or assignments to all parties involved.
5. Tests and assignments missed for legitimate reasons will be written/submitted on the next day that the student returns to class.
6. Students will come to class prepared to work with their textbook and a calculator.
7. There will be a project with each unit. **DO WE CHANGE?** Ask at home/friend/teacher for alternative?

Unit 1: Mechanical Systems

In this unit the student will describe and apply concepts related to forces, Newtons laws of motion, static and kinetic friction, simple machines, torques, and mechanical advantage. There will be opportunity to design and carry out experiments to investigate forces, coefficients of friction, and the operation of simple machines. The student will also identify and analyse applications of applied forces, friction, and simple machines in real-world machines and in the human body.

CONSTRUCTION: This activity is intended to construct a simple or compound machine to solve a practical problem, and determine its mechanical advantage (e.g., design and construct a prototype of a machine for lifting a patient from a hospital bed, calculate the mechanical advantage of each of the simple machines used in the device, and explain the operation of each simple machine).

Unit 2: Energy Transformations

In this unit the student will demonstrate an understanding of forms of energy, energy sources, energy transformations, energy losses, and efficiency, and the operation of common energy-transformation devices. There will be opportunity to construct or investigate devices that involve energy sources, energy transformations, and energy losses, and assess their efficiency. The student will also analyse and describe the operation of various technologies based on energy transfers and transformations, and evaluate the potential of energy-transformation technologies that use sources of renewable energy.

CONSTRUCTION: There are different types of potential and motion energy. When energy changes form, no energy is created or destroyed. In this activity, you will collaboratively design and build a device that uses at least four functional energy transformations to complete a task, and explain its operation.

Unit 3: Hydraulic and Pneumatic Systems

In this unit the student will demonstrate an understanding of the scientific principles related to fluid statics and dynamics, and to hydraulic and pneumatic systems. There will be opportunity to design and carry out investigations of fluid statics and dynamics, and of simple hydraulic and pneumatic systems. The student will also analyse and describe the social and economic consequences of the development of technological applications related to the motion and control of fluids.

CONSTRUCTION: There are different types of potential and motion energy. When energy changes form, no energy is created or destroyed. In this activity, you will collaboratively design and build a device that uses at least four functional energy transformations to complete a task, and explain its operation.

Unit 4: Electricity and Electronics

In this unit the student will demonstrate an understanding of common applications of electrical and electronic circuits, and the function and configuration of the components used. There will be opportunity to construct, analyse, and troubleshoot simple electrical circuits by using schematic diagrams and appropriate electrical tools and measuring equipment, and by examining familiar electrical devices. The student will also investigate the development and application of electrical technologies and their impacts.

CONSTRUCTION: In this activity, you will research the performance of one type of phone (standard land phone, cellular phone, office networked phone, VoIP...) since its development.

Unit 5: Communications Technology

In this unit the student will demonstrate an understanding of the scientific principles and technological applications involved in the design, development, and operation of communications systems. There will be opportunity to design and carry out experiments to investigate and illustrate the fundamental operating principles and basic components of communications systems. The student will also identify and describe Canadian contributions to communications technology, and demonstrate awareness of the wide-ranging and ever-growing influence of communications technology on the global community.

CONSTRUCTION: This activity deals with the research of different types of radio broadcasting. What contributions have Canadians made to communications science and technology? What criteria can be used to assess a particular communications system or device? What are the risks and benefits to society and the environment of introducing a particular technology from the communications industry?