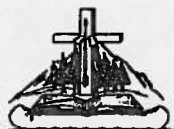


SIMCOE MUSKOKA CATHOLIC



DISTRICT SCHOOL BOARD

SCHOOL: St. Thomas Aquinas Catholic Secondary School

DEPARTMENT: Science

CHAIRPERSON: Ms. Novogradec

COURSE TITLE: Grade 12 Physics

GRADE: 12 **COURSE CODE:** SPA 4U **CREDIT:** 1

COURSE TYPE: University

PREREQUISITE: SPA 3U

TEACHER(S): Mr Eagan

DATE: September 2012

COURSE DESCRIPTION

PHYSICS, GRADE 12, UNIVERSITY PREPARATION - *SPH 4U*

This course enables students to deepen their understanding of the concepts and theories of physics. Students will explore further the laws of dynamics and energy transformations, and will investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They will further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students will also consider the impact on society and the environment of technological applications of physics.

How this course supports expectations for the Catholic School Graduate:

An effective communicator who speaks, writes and listens honestly and sensitively, responding critically in light of gospel values.

A reflective, creative and holistic thinker who solves problems and makes responsible decisions with an informed moral conscience for the common good.

A self-directed, responsible, life-long learner who develops and demonstrates his/her God-given potential.

A collaborative contributor who finds meaning, dignity and vocation in work which respects the rights of all and contributes to the common good.

Overall Curriculum Expectations:

Throughout this course, students will:

- * demonstrate an understanding of safety practices by selecting, operating, and storing equipment appropriately, and by acting in accordance with the Workplace Hazardous Materials Information System (WHMIS) legislation in selecting and applying appropriate techniques for handling, storing, and disposing of laboratory materials (e.g., wear appropriate protective clothing when handling radioactive substances);
- * select appropriate instruments and use them effectively and accurately in collecting observations and data (e.g., select appropriate instruments, such as stopwatches, photogates, and/or data loggers, when preparing an investigation concerning the law of conservation of energy);
- * demonstrate the skills required to design and carry out experiments related to the topics under study, controlling major variables and adapting or extending procedures where required (e.g., design an experiment to determine the relationship between the force applied to a spring and the extension produced); * locate, select, analyse, and integrate information on topics under study, working independently and as part of a team, and using appropriate library and electronic research tools, including Internet sites;
- * compile, organize, and interpret data, using appropriate formats and treatments, including tables, flow charts, graphs, and diagrams (e.g., analyse the forces acting on an object, using free-body diagrams);
- * use appropriate scientific models (theories, laws, explanatory devices) to explain and predict the behaviour of natural phenomena;
- * analyse and synthesize information for the purpose of identifying problems for inquiry, and solve the problems using a variety of problem-solving skills;
- * select and use appropriate SI units, and apply unit analysis techniques when solving problems;
- * select and use appropriate numeric, symbolic, graphical, and linguistic modes of representation (e.g., algebraic equations, vector diagrams, ray diagrams, graphs, graphing programs, spreadsheets) to communicate scientific ideas, plans, and experimental results;
- * communicate the procedures and results of investigations and research for specific purposes using data tables, laboratory reports, and research papers, and account for discrepancies between theoretical and experimental values with reference to experimental uncertainty;
- * express the result of any calculation involving experimental data to the appropriate number of decimal places or significant figures;
- * identify and describe science- and technology-based careers related to the subject area under study (e.g., mechanical engineer, civil engineer, medical doctor, astronomer, air-traffic controller, nuclear physicist).

COURSE CONTENT & ASSESSMENT AND EVALUATION STRATEGIES

UNIT TITLE / DESCRIPTION	ASSESSMENT & EVALUATION STRATEGIES
Forces and Motion: Dynamics (24 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Energy and Momentum (22 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Electric, Gravitational, and Magnetic Fields (24 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
The Wave Nature of Light (15 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation
Matter-Energy Interface (25 hours)	tests, quiz, homework, labs, oral presentations, research reports, performance task, observations and skill checklists, self and peer evaluation

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. They will be harder!!!
6. Students will come to class prepared to work with their textbook and a calculator.
7. If you need to contact me, do not phone. EMAIL - teagan@smcdsb.on.ca
I suggest you put other students contact information below.

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	30 %	Final Exam	30 %
Thinking/ Inquiry	25 %	Probably	(5 % - Review 25 % - Exam)
Communication	5 %		
Application	10 %		

Student Signature: _____

Date: _____

Parent Signature: _____

Date: _____