



Loyola

HIGH SCHOOL

Mr. E. Sorensen, SJ	E-mail	sorensene@loyola.ca	Voice Mail	(514) 486-1101 ext. 647
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Sec. 2 Science & Technology Cycle 1 (Year 2)

Description:

Cycle 1 (year 2) Science and Technology provides students the opportunity to construct a hypothesis, test it by experimentation, identify the different variables, and familiarize themselves with the scientific method. The course develops the student's ability to seek answers to problems, communicate in the language used in science & technology and apply their knowledge. The curriculum integrates concepts by incorporating the perspectives of biology, chemistry, physics, and earth/space science. Proper lab techniques, the use of technology, the collection of data, math applications and graphing techniques are reinforced.

Goals:

- Students will participate in hands-on activities and group-work.
- Students will be able to apply class material to everyday life and better understand scientific phenomena they encounter in the media and in future classes.
- Students will be more inclined to pursue or consider a science or technology-related career.
- Students will begin to develop a topic for their upcoming Science Fair project

Requirements:

Students must be well organized. All students will be expected to produce a formal lab report at least once per term. Homework usually consists of simple worksheets, textbook readings and preparing for quizzes and tests. There is a 10% late penalty for missing work or work not done. Extra help in the form of tutorials and meetings is offered on every Day 4 at 3:15pm (Room TBD) or as required by appointment (sorensene@loyola.ca).

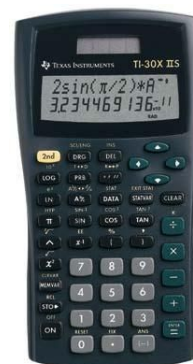
Note that if a student misses a class for whatever reason, it is THEIR responsibility to make-up the missed work. If a student misses a lab then they have 24 hours to contact Mr Dagher (daghere@loyola.ca) to arrange a time to conduct the lab. They must also notify Mr. Sorensen, SJ at least 48 hours in advance if they have prior knowledge of an upcoming absence (for sports or any other activity).

Resources:

- Text: Eureka! Student Textbook B.
- Google Classroom - Sec 2 Science and Technology
- LHS Scientific Laboratory Report Guidelines (available on Classroom)
- iPads (fully charged)

Materials:

- 3 ring binder (1 or 1 1/2 inch) with 5 **dividers**
 - **Single topic binder (not to be shared with other courses)**
- Approx. 20 sheets of Hole-punched Graph Paper (ideally **metric**)
- One package of loose leaf
- Several pens and pencils
- Scientific calculator (same one as math class)
- Short plastic ruler (approximately 15 cm)
- Scissors & a glue stick are optional
- Safety glasses will be provided, but students may purchase their own pair if they wish



Evaluation, Components & Competencies:

Component	Science Competencies	Examples	Weighting
Practical	-Seeks answers or solutions to scientific or technological problems -Communicates in the languages used in science and technology	Labs, lab reports activities, lab exam, etc.	40%
Theory	-Makes the most of his knowledge of science and technology -Communicates in the languages used in science and technology	Tests, quizzes, homework June exam, etc.	60%

Term breakdown

Term 1	20%	Ends Nov. 1 st
Term 2	20%	Ends Feb. 7 th
Term 3	60% (June exam is worth 40% of this term)	Ends June 4 th

For the Term 1 and Term 3 reports, each student will have comments regarding at least two (2) of the following four (4) cross-curricular competencies:

- Exercises critical judgment
- Organizes his work
- Communicates effectively
- Works in a team

Topics to be covered:

Before Christmas	January to Spring Break	Spring Break to May
Scientific Method <ul style="list-style-type: none">● Review of the scientific method● Laboratory report writing (review Scientific Laboratory Report Guidelines document)● Laboratory safety	Forces and Motion (continued)	Cells <ul style="list-style-type: none">● Plants versus animal cells, organelles (similarities and differences)● Reproductive mechanisms in plants● Plant growth project
Engineering <ul style="list-style-type: none">● Specifications● Design plan● Technical drawing● Manufacturing process sheet● Raw material, Material & Equipment● Safety in use of tools	Science Techniques <ul style="list-style-type: none">● Cross-multiplication● Manipulation of variables/parameters (mass, volume, density, for example)● Graphing data	Cell Division <ul style="list-style-type: none">● DNA & Mitosis● Microscope use● Functions of cell division (reproduction, growth, regeneration)● Meiosis and sexual development (meiosis, fertilization)● Genetic diversity
Technological Systems <ul style="list-style-type: none">● System (overall function, inputs, processes, outputs, control)● Components of a system● Basic mechanical functions (links, guiding control)● Energy transformation● Mousetrap car project	Properties of matter <ul style="list-style-type: none">● Characteristic properties● Mass & Volume● Density● Temperature● States of matter● Acidity/alkalinity	Reproduction & Reproductive Systems <ul style="list-style-type: none">● Puberty● Hormone regulation in men● Spermatogenesis● Erection & Ejaculation● Hormone regulation in women● Oogenesis, Ovarian and menstrual cycles
Forces and Motion <ul style="list-style-type: none">● Types of motion● Effects of a force● Simple machines (inclined planes, levers, pulleys)● Work, force, and energy (potential and kinetic)● Mechanisms that transmit motion● Mechanisms that change motion	Organization of matter <ul style="list-style-type: none">● Atoms, Elements● Atomic theory● Periodic Table● Molecules● Element hockey card project	Survival of Species <ul style="list-style-type: none">● Asexual and sexual reproduction● Plants versus animal reproduction● Reproductive mechanisms in animals● Reproductive organs● Gametes● Fertilization and pregnancy● Stages of human development● Contraception and abortion● Sexually transmitted diseases
	Transformation of matter <ul style="list-style-type: none">● Physical change● Chemical change● Conservation of matter● Mixtures & Solutions● Separation of mixture	Science Fair <ul style="list-style-type: none">● Introduction and selection of topic