



Loyola

HIGH SCHOOL

Ms.Mongeon	E-mail	mongeona@loyola.ca	Office hours	After-school (determined weekly)
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Science & Technology Cycle 1 (Year 2)



Course Outline

Periods per cycle: 6

Description:

Cycle 1 (year 2) Science and Technology provides students with foundational knowledge in concepts of biology, chemistry, physics, and earth/space science. Students will be able to apply the steps of the scientific method, as they continue to develop the ability to seek answers to problems. This course aims to encourage communication in the language used in science & technology and has a greater emphasis on the application of proper lab techniques and reports. The responsible use of technology, the collection of data, math calculations and graphing techniques are also reinforced.

Goals:

- Students will participate in hands-on activities, group work and class discussion.
- 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.

Requirements:

- An organized binder, **not to be shared with other courses.**
- iPad should be charged and ready to use for all classes.
- All students will be expected to produce a formal lab report at least once per term.
- Homework completion (usually short in duration) : worksheets, reading or preparing for quizzes and tests.
- Short quizzes are frequent, and 2-3 large tests per term are to be expected.
- Respect assignment deadlines: grade penalty of 20% per day

Resources:

- Textbook: Eureka! Student Textbook B.
- Moodle course website - notes, worksheets, videos(**Sec.2 Science Ms.Mongeon**)
- Ipad
- Extra help sessions (updated weekly)

Materials:

- 3 Ring binder (1 or 1 1/2 inch) with 4 **dividers**
- Approx. 25 sheets of Hole-punched Graph Paper (**metric**)
- Loose leaf or hilroy notebook
- Several pencils (Pens not necessary)
- Scientific calculator (same one as math class)
- Short plastic ruler (approx. 15cm)

**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	Lab activities, minor assignments or projects, classwork.	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.	60%

Term breakdown

Term 1	20%	Ends Nov.2 nd
Term 2	20% (includes the December exam)	Ends Feb.13 th
Term 3	60% (June exam is worth 40% of this term)	Ends May 30 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

Term 1

Term 2

Term 3

Scientific Method

- Review of the scientific method
- Laboratory report writing (review report Guidelines)
- Laboratory safety

Engineering

- Specifications
- Design plan
- Technical drawing
- Manufacturing process sheet
- Raw material, Material & Equipment
- Safety in use of tools

Technological Systems

- System (overall function, inputs, processes, outputs, control)
- Components of a system
- Basic mechanical functions (links, guiding control)
- Energy transformation
- Pulley and inclined plane lab
- Mousetrap car project

Forces and Motion

- 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

Forces and Motion (con't)

Science Techniques

- Cross-multiplication
- Manipulation of variables/parameters (mass, volume, density, for example)
- Graphing data

Properties of matter

- Non-characteristic properties versus characteristic properties
- Mass & Volume
- Temperature
- States of matter
- Acidity/alkalinity
- Density
- Melting point/boiling point
- Testing acidity and alkalinity lab
- Calculating density lab

Organization of matter

- Atoms, Elements
- Atomic theory
- Atomic models
- Periodic Table
- Molecules and compounds

Transformation of matter

- Physical change
- Chemical change
- Conservation of matter
- Types of mixtures
- Separation of mixtures
- Separating mixtures lab activity

Cells

- Plants versus animal cells, organelles (similarities and differences)
- Reproductive mechanisms in plants

Cell Division

- DNA & Mitosis
- Microscope use
- Functions of cell division (reproduction, growth, regeneration)
- Meiosis and sexual development (meiosis, fertilization)
- Genetic diversity

Reproduction & Reproductive Systems

- Puberty
- Hormone regulation in male/female
- Reproductive organs
- Fertilization and pregnancy
- Stages of human development
- Ovarian and menstrual cycles
- Contraceptive methods
- Sexually transmitted diseases

Survival of Species

- Asexual and sexual reproduction
- Plants versus animal reproduction
- Reproductive mechanisms in animals

Science Fair

- Introduction to topic selection

Please note that some material may overlap into the adjacent term.

Binder organization information

DIVIDERS:

- 1) "Notes": Class notes, handouts
- 2) "Labs" : Labs & activities
- 3) "Q & T" : Quizzes & tests (includes study guide notes)
- 4) "HW": Homework (includes articles, questions, worksheets)