



Secondary 3 Science & Technology

Cycle 2 (Year 1)

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Resources:

- Synergy (student textbook)
- iPad & Google Drive, Docs, Sheets and Slides apps
- website: moodle.loyola.ca “**Sec. 3 Science Mr. Elie**” guest password “**science**”

Requirements:

- One three ring single subject binder (1 inch or 1 ½ inches) & 5 dividers
- Hilroy notebooks (1 or 2 should do) (~90 pages each)
- One duo-tang for lab reports
- A calculator, ruler and several pencils

The above equipment plus the student’s textbook and iPad are required for every lesson.

Description:

This course is designed to provide the student with an overall picture of the harmonious functioning of the human body. It stresses the acquisition of attitudes aimed at respect for, and, maintenance of health. The course covers several themes: nutrition, organs and systems, as well as reproduction.

Students will be expected to participate in class discussions, conduct research and present findings as well as projects to their classmates (cooperative learning). In addition, some laboratory experiments will be conducted, such as a nutrition analysis, the dissection of a cow’s eye, a worm, etc.

In order to incorporate technology in the classroom, PowerPoint presentations, as well as online resources including certain iPad apps will be used whenever possible.

Homework is usually assigned every couple of lessons (usually worksheets). Small quizzes are frequent and reflect the content taught or assigned for reading in the previous class. Review and practice of daily work is essential to understanding and retaining the information taught. Homework submitted late will result in a penalty of 20%, and if not submitted by the following class then a grade of 0 will be assigned.

Extra help in the form of tutorials and meetings is offered as required by appointment (eliem@loyola.ca) and are usually held at lunch or after school.

If a student is absent from a lab activity (or knows he will be absent due to an activity, medical appointment, etc.), he must contact the lab technician, Elie Dagher (daghere@loyola.ca) ahead of time or within 24 hours of the lab in the case of an unexpected absence to make the appropriate plans to complete the lab (before or after classes, ped days, during lunch, etc.).

Topics: Science & Technology: Secondary 3 (Cycle Two Year One)

Term 1	Term 2	Term 3
Scientific Method <ul style="list-style-type: none"> Laboratory report writing Laboratory safety 	Science Fair <ul style="list-style-type: none"> Results, analysis and presentation 	Musculoskeletal Systems <ul style="list-style-type: none"> Musculoskeletal system (bones, joints, muscles) Function of bones, joints and muscles Types of muscles Types of joint movement
Science Fair <ul style="list-style-type: none"> Research and experimental design 	Cardiovascular System <ul style="list-style-type: none"> Functions of blood constituents (plasma, formed elements) Compatibility of blood types Circulatory system (structures and functions, types of blood vessels, etc.) Lymphatic system (lymph, antibodies) 	Male & Female Reproductive Systems <ul style="list-style-type: none"> Structures & function Procreation Sexually transmitted infections
Cells, tissues, organs and DNA <ul style="list-style-type: none"> Microscope investigation 	Excretory System <ul style="list-style-type: none"> Urinary system (kidneys, bladder, urethra) Components of urine (water, salts, urea) Maintaining a balanced metabolism (kidneys, lungs, sweat glands) 	Organization of Matter <ul style="list-style-type: none"> Pure substance (compound, element) Homogeneous and heterogeneous mixture
Nutrition & Digestive Systems <ul style="list-style-type: none"> Types of food (water, protein, carbohydrates, fats, vitamins, minerals) Energy value of different foods Digestive tract (mouth, esophagus, stomach, small intestine, large intestine, anus) Transformation of food (mech/chemical) Digestive glands (salivary glands, gastric glands, pancreas, liver, intestinal glands) Nutrient identification lab Worm dissection 	Nervous System <ul style="list-style-type: none"> Central nervous system (brain, spinal cord) Peripheral nervous system (nerves) Neuron (synapse, axon, dendrites) Neural inflow (voluntary act, reflex act) Sensory receptors (eye, ear, skin, tongue, nose) Drugs (categories, effects, etc.) Eye dissection 	Properties of Matter <ul style="list-style-type: none"> Characteristic physical properties (melting point, boiling point, density, solubility) Characteristic chemical properties (reaction to indicators) Concentration Solute Solvent
Respiratory System <ul style="list-style-type: none"> Respiratory system (nasal cavity, pharynx, trachea, bronchi, lungs) 		Changes in Matter <ul style="list-style-type: none"> Physical changes (dissolution, dilution, phase changes) Chemical changes (synthesis and decomposition, oxidation, precipitation) Forms of energy (chemical, thermal, mechanical) Particle model

Term breakdown

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

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, Christmas & June exams, etc.	60%

For the Term 1 and Term 3 reports, each student will also 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

Science Fair

Each student in Secondary 3 Science is required to complete an experimental science project.

- Students may choose to work alone or in pairs, but are strongly recommended to stay within their own class.
- The top groups from each class will present their projects and be judged at the annual Science Fair on **February 22nd**. It is possible that some groups will be selected to further represent Loyola at higher level fairs, including the regional, provincial, or possibly national science fairs.
- Please note that all students must make themselves available for the **afternoon and evening of Friday February 22nd** in the event that they are selected to represent their class at the Science Fair.
- Further details can be found on the **Science Fair Moodle site**.
- All of the assessments for Science Fair will contribute towards the student's Practical Science grades in each of the reporting periods (term 1, 2 and 3 reports).

SCIENCE FAIR (IMPORTANT DATES)

1. Brainstorm ideas	Cycles 1 & 2	- Choose an EXPERIMENTAL topic (see Synergy textbook p.476 for a review of the experimental method) - Create a Google Drive folder and name it Science Fair. Share it with your partner (if applicable) and your teacher. Use this folder to collect all of your work throughout the project (research notes, data and observations, work logs, etc.) - Complete a Cover Page for your written report (see Moodle) - Once you have a solid topic idea, <u>contact the Sec. 4 honours student</u> assigned to you to receive constructive feedback
2. Mentorship with Sec. 4 honours student	Due Sept. 26th	
3. Topic choice & presentation	Presentations begin Sept. 26th	- <u>Present your topic choice</u> and outline the question, hypothesis, variables, and procedure - <u>Submit 1 page Project Summary Form</u> (see Moodle) Once a final topic has been chosen you may <u>not</u> change topics without permission
4. Introduction & Research assignment & Works cited	Cycle #3 Due Oct. 11th	- <u>Research</u> in a library (Loyola, Concordia, your local library) and use online databases in order <u>to find sources of information</u> (books, magazine articles, credible websites, etc.) relevant to your topic (ideally 2 per category) - Complete the Research Assignment Form (see Moodle) and submit it. <u>Attach printed/photocopied documents</u> showing your comments, highlighting, etc. that reflect the importance of the source to your project. - <u>Compile properly cited sources</u> to complete the Works Cited section of your Written Report (see Moodle for MLA review) - Use the information gathered to <u>complete the Introduction</u> section of your written report
5. Preliminary presentations & Materials & Procedure Sections	Cycle #4 Due Oct. 25th	- Complete the Materials and Procedure sections of your written report - <u>Present to the class or show your filmed presentation:</u> - Approximately 5 minutes - Include a summary of your topic, question, hypothesis, etc.; discuss your progress and outline specific goals with accompanying due dates (see rubric on Moodle for further instructions and evaluation criteria) - Optional: bring in equipment, models, pictures, etc. - Filmed presentations should be done at school, in proper dress, in front of a projector screen or television
6. Digital Poster Submission	Cycle #5 Due Nov. 7th	- <u>Submit a single PowerPoint slide</u> that outlines the colour, layout, basic content, pictures and diagrams that you will include on your poster board. You MUST use the template on Moodle. See Moodle for evaluation criteria.
7. Results	End of November	EXPERIMENTS SHOULD BE COMPLETED BEFORE THE END OF NOVEMBER - Complete the Results section of your written report and add any data tables, pictures, etc.
8. Rough draft of written report	Cycles 6 & 7 Due Dec. 5th	- Complete the Analysis and Conclusion sections of your written report. - <u>Review all sections of your Written Report</u> completed so far (check spelling, grammar, ensure proper formatting, etc.) <u>and submit them.</u>
Establishing the order of presentations	Before December Exams	A presentation date in January will be assigned to each project. Students who are unprepared or absent without cause on their assigned day will incur a 20% penalty per day.
9. Submission of written report (final copy) & Final presentations	Final Presentations Completed by Jan. 30th	- <u>Review your project's Cover Page</u> (see Moodle) and <u>attach it to your written report.</u> - <u>Present your completed project to the class:</u> - Include your PowerPoint poster as well as models, pictures, etc. - Make sure to rehearse adequately, use cue cards, and come prepared to answer questions about your project - Following your presentation, <u>submit the final copy of your Written Report:</u> - Maximum 5 pages of double-spaced writing (not including graphs, pictures, cover page, Works Cited, etc.) See Moodle for evaluation criteria. - <u>Submit the final version of your digital poster (Ppt file).</u> See Moodle for evaluation criteria.
10. Final decision on entry into the Science Fair	Feb. 8th	Top projects per class (~ 30 in the grade) as chosen by teachers and peer review will be required to present in the Bishops' Atrium on the day of the Science Fair. Chosen students/groups will have to do some minor work to prepare for the Fair. All students must reserve the day of the fair (~1pm until ~8pm) as attendance is MANDATORY for chosen groups.
11. Science Fair	Friday February 22nd 2019	<u>Selected students will present their projects</u> (in person, not filmed) in the atrium <u>all afternoon and evening.</u> Project judging is followed by an awards ceremony. Best projects may be selected to represent Loyola at future Science Fairs. All project materials (posters, props, etc.) must be removed at the end of the evening