



# Loyola

## HIGH SCHOOL

### Secondary 3 Science & Technology

#### Cycle 2 (Year 1)

Ms.Mongeon	<b>E-mail</b>	mongeona@loyola.ca	<b>Office hours</b>	After-school (determined weekly)
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#### **Description and Expectations:**

This course is designed to provide the student with an overview in biology, namely the processes and interconnections of various organ systems. Students will develop a more in depth understanding of the importance of healthy habits in maintaining the optimal functioning of the body.

Students will be expected to participate in class discussions, read scientific articles, conduct research and present findings and projects to their classmates. In addition, laboratory activities will be conducted, such as the dissection of a cow's eye.

Homework is usually assigned every couple of lessons (reading, questions, or minor assignments), with some class time allotted to begin the required task. Short quizzes are frequent and reflect the content taught in the previous classes or assigned articles. Review of daily concepts is essential to understanding and retaining the information covered.

Failure to complete homework will result in an after-school teacher jug. Assignments and lab reports submitted late will receive a penalty of 20% per day.

If a student is absent from a laboratory activity, he is responsible for contacting and making scheduling arrangements with the lab technician, Mr.Dagher ([daghre@loyola.ca](mailto:daghre@loyola.ca)), within 24 hours of the absence.

#### **Resources:**

- Synergy textbook
- iPad & Google Drive, Docs, Sheets and Slides apps
- moodle.loyola.ca website- notes, assignments, videos etc.
  - **(Sec 3 Ms.Mongeon)**
- Extra help sessions (updated weekly)

#### **Requirements:**

- One three ring binder (1 inch or 1 ½ inches) & dividers
  - Notebook or loose leaf
  - A calculator, ruler and several pencils
- iPads are required for every lesson.**

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

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

**Term breakdown**

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

**Evaluation, Components & Competencies:**

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

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 project.

- Students may choose to work alone or in pairs (choosing a partner within the class is strongly encouraged)
- The top groups from each class will present their projects and be judged at the annual Science Fair on **February 22nd**.
- 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 for the 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).

## Science Fair Prerequisites / Due Dates

<p>1. <b>Brainstorm ideas</b></p> <p>2. <b>Mentorship with Sec. 4 honours student</b></p>	<p style="text-align: center;"><b>Cycles 1 &amp; 2</b></p> <p style="text-align: center;"><b>Due: Sept. 26<sup>th</sup></b></p>	<ol style="list-style-type: none"> <li>1) <b>Create a Google Drive folder</b> and name it Science Fair. Share it with your partner (if applicable). Use this folder to collect all of your work throughout the project (research notes, data and observations, work logs, etc.)</li> <li>2) <b>Choose an EXPERIMENTAL topic</b> (txtbk p.476)</li> <li>3) Approve topic with teacher.</li> <li>4) <b>Sign up and contact Sec. 4 honours student</b> to receive constructive feedback on ideas.</li> <li>5) Complete a Cover Page for your written report (see Moodle)</li> </ol>
<p>3. <b>Topic choice &amp; presentation</b></p>	<p style="text-align: center;"><b>Presentations begin</b></p> <p style="text-align: center;"><b>Due: Sept. 26<sup>th</sup></b></p>	<ol style="list-style-type: none"> <li>1) <b>Present your topic choice</b> and outline the question, hypothesis, variables, and procedure</li> <li>2) <b>Submit 1 page Project Summary Form</b> (see Moodle)</li> </ol> <p>Once a final topic has been chosen you may not change topics without permission.</p>
<p>4. <b>Introduction &amp; Research assignment &amp; Works cited</b></p>	<p style="text-align: center;"><b>Cycle 3</b></p> <p style="text-align: center;"><b>Due: Oct. 11<sup>th</sup></b></p>	<ol style="list-style-type: none"> <li>1) <b>Submit the Research Assignment Form</b> (see Moodle). <ul style="list-style-type: none"> <li>- Research in a library (Loyola, Concordia, etc.) and use online databases (books, magazine articles, credible websites- <b>ideally 2 per category</b>)</li> <li>- <b>Attach printed/photocopied documents</b> showing your comments, highlighting, etc. that reflect the importance of the source to your project.</li> </ul> </li> <li>2) Compile sources to complete the <b>Works Cited section</b> of your Written Report (see Moodle for MLA review)</li> <li>3) Complete the <b>Introduction</b> of your Written Report</li> </ol>
<p>5. <b>Preliminary presentations &amp; Materials &amp; Procedure Sections</b></p>	<p style="text-align: center;"><b>Cycle 4</b></p> <p style="text-align: center;"><b>Due: Oct. 25<sup>th</sup></b></p>	<ol style="list-style-type: none"> <li>1) <b>Complete the Materials and Procedure sections</b> of your written report</li> <li>2) <b>Present to the class:</b> Approx. 5 minutes <ul style="list-style-type: none"> <li>- Include a summary of your topic, question, hypothesis, etc.:discuss progress and outline specific goals with due dates (see rubric on Moodle)</li> <li>- Include visual -draft of digital poster (<b>MUST BE FROM TEMPLATE</b>)</li> </ul> </li> <li>3) <b>Submit draft Introduction, materials and procedure</b></li> </ol>
<p>6. <b>Digital Poster Submission</b></p>	<p style="text-align: center;"><b>Cycle 5</b></p> <p style="text-align: center;"><b>Due: Nov. 7<sup>th</sup></b></p>	<ol style="list-style-type: none"> <li>1) <b>Submit draft of digital poster (SINGLE powerpoint slide)</b> with desired layout, basic content, pictures and diagrams you want to include</li> </ol> <p><b>See Moodle for evaluation criteria.</b></p>
<p>7. <b>Results</b></p>	<p style="text-align: center;"><b>End of November</b></p>	<p><b>EXPERIMENTS SHOULD BE COMPLETED BY THE END OF NOVEMBER</b></p> <ol style="list-style-type: none"> <li>1) <b>Complete the results</b> section of your written report and add any data tables, pictures, etc.</li> </ol>

8. Rough draft of written report	Cycles 6 & 7 Due: Dec. 5 <sup>th</sup>	<p>1) <b>Complete Analysis</b> and <b>Conclusion</b> sections of your Written Report.</p> <p>2) Review <b>Written Report</b> (check spelling, grammar, ensure proper formatting, etc.) and submit draft.</p>
Establishing presentation dates	Before December vacation	January presentation dates will be assigned.
9. Submission of written report (final copy) & Final presentations	Final Presentations Completed by Jan. 30th	<p>1) <b>Present your completed project to the class:</b></p> <ul style="list-style-type: none"> <li>- Include your final digital poster as well as models</li> <li>- Ensure adequate rehearsal, use cue cards, and come prepared to answer questions about your project</li> </ul> <p><b>**Students who are unprepared or absent without cause on their assigned day will incur a 20% penalty/day.</b></p> <p>2) <b>Following presentation:</b></p> <ul style="list-style-type: none"> <li>-Review Cover Page (see Moodle) and attach to Written Report.</li> <li>-<b>Submit the final Written Report:</b> Max. 5 pages of double-spaced writing (not including graphs, pictures, cover page, Works Cited) **See Moodle for evaluation criteria.</li> <li>- <b>Submit the final version of your digital poster</b> (Ppt file). **See Moodle for evaluation criteria.</li> </ul>
10. Final decision on entry into the Science Fair	Feb. 8th	<p>The top projects of the grade (approx. 30 ) are selected and announced.</p> <p>All students must reserve Friday February 22nd from 1- 8pm, as attendance is <b>MANDATORY</b> for chosen groups.</p>
11. Science Fair	Friday February 22 <sup>nd</sup>	Selected students will present their projects in the atrium all afternoon and evening, to a minimum of 3 judges. Project judging is followed by an awards ceremony.