



## Secondary 3 Science & Technology

### Cycle 2 (Year 1)

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#### **Resources:**

- Synergy (student textbook) & worksheets
- website: [moodle.loyola.ca](http://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 binder 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](mailto: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 appointments, etc.), he must contact the lab technician, Elie Dagher ([daghere@loyola.ca](mailto: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.).

## Approximate Timeline of Topics

September-January	January-March	March-June
<p><b>Scientific Method</b></p> <ul style="list-style-type: none"> <li>Laboratory report writing</li> <li>Laboratory safety</li> </ul> <p><b>Science Fair</b></p> <ul style="list-style-type: none"> <li>Research and experimental design</li> <li>Initial topic choices &amp; presentations</li> </ul> <p><b>Cells, tissues, organs and DNA</b></p> <ul style="list-style-type: none"> <li>Microscope investigation</li> </ul> <p><b>Nutrition &amp; Digestive Systems</b></p> <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>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>Nutrient identification lab</li> <li>Worm dissection</li> </ul> <p><b>Respiratory System</b></p> <ul style="list-style-type: none"> <li>Respiratory system (nasal cavity, pharynx, trachea, bronchi, lungs)</li> </ul> <p><b>Excretory System</b></p> <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> <p><b>Science Fair</b></p> <ul style="list-style-type: none"> <li>Longer presentations</li> <li>Rough written reports due</li> </ul>	<p><b>Science Fair</b></p> <ul style="list-style-type: none"> <li>Final editing of written reports</li> <li>Submission of final digital posters</li> <li>Final presentations</li> </ul> <p><b>Cardiovascular System</b></p> <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> </ul> <p><b>Nervous System</b></p> <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>Drugs (categories, effects, etc.)</li> <li>Eye dissection</li> </ul>	<p><b>Musculoskeletal Systems</b></p> <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> <p><b>Male &amp; Female Reproductive Systems</b></p> <ul style="list-style-type: none"> <li>Structures &amp; function</li> <li>Procreation</li> <li>Sexually transmitted infections</li> </ul> <p><b>Organization of Matter</b></p> <ul style="list-style-type: none"> <li>Pure substance (compound, element)</li> <li>Homogeneous and heterogeneous mixture</li> </ul> <p><b>Properties of Matter</b></p> <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> <p><b>Changes in Matter</b></p> <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%
Term 2	20%
Term 3	60% (June exam is worth 40% of this term)

**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, lab exam, etc.	<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, Christmas test & June exam, 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 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 20th**. 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 Thursday February 20th** 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).