



## D'ARCY MCGEE HIGH SCHOOL

701 du Plateau Blvd.  
Aylmer Qc. J9J 3G2

Telephone: (819) 684-7472  
Facsimile: (819) 684-7521

### Course Selection Guide Cycle Two – Year One

#### Step 1.

Review your course option sheet with your parent(s). Please check to verify that all information is correct. In the event that there is missing information, please pencil it in. **Please note that email will be our primary means of communication with parents for the upcoming school year; keeping this in mind, we ask that you please ensure that you have listed an email address.** In the event that you do not have an email address you will still receive all correspondences from the school.

#### Step 2.

Select the pathway that you wish to follow: General or Applied. Please note that both of these programs allow a student to enter CEGEP; one pathway is not superior to the other. The difference in Year One (grade 9) is the Science program. Please refer to the attached description of the two programs when determining which pathway you prefer.

#### Step 3.

Indicate whether you are in the Regular or the French Immersion stream by selecting the appropriate box. Please note that if you are currently in the Regular stream, this is the stream that you should remain in. If you are currently in French Immersion, you may choose between Regular and Immersion for the upcoming year.

#### Step 4.

Choose your preferred Arts electives by indicating your top two choices as per the instructions on the sheet. It is important to note that in order to obtain a secondary school diploma in Quebec, the student must receive credit for a secondary four Arts elective.

#### Step 5.

Return your completed form to Mr. Singfield's office as per the instructions on the form.

## **Frequently Asked Questions Regarding the Sciences:**

**1. Which science option do I need to graduate?**

You will graduate with either science option; what is important to remember is that you require one of the two as part of the prerequisites for your high school diploma.

**2. Can I get into CEGEP with either science option?**

Yes.

**3. What science option should I take if I want to go into Pure & Applied Sciences in CEGEP?**

Both science options enable a student to pursue his/her studies in the Pure & Applied Science program at the CEGEP level.

**4. Can I switch from Applied Science to General Science when I make my course selection for grade 11?**

As much as possible we hope that students will choose one science pathway for the entire Cycle Two. It is possible however, to switch science pathways when going into grade 10, or grade 11.

## Science and Technology (General Program)

Topics will be studied through a hands-on approach with an emphasis on the scientific principles, laboratories and application of scientific theory to modern issues. Students will develop opinions with respect to the applications and limitations of science. Students will be evaluated on the following three competencies: 1) Seeks answers or solutions to scientific or technological problems; 2) Makes the most of his/her knowledge of science and technology; and 3) Communicates in the languages used in science and technology.

The Living World	The Material World	The Earth and Space	The Technological World
<p><b>CELL DIVISION</b></p> <ul style="list-style-type: none"> <li>– DNA</li> <li>– Mitosis</li> <li>– Functions of cell division (reproduction, growth, regeneration)</li> <li>– Meiosis and sexual development (meiosis, fertilization)</li> <li>– Genetic diversity</li> </ul> <p><b>TISSUES, ORGANS AND SYSTEMS</b></p> <ul style="list-style-type: none"> <li>– Tissues</li> <li>– Organs</li> <li>– Systems</li> </ul> <p><b>SYSTEMS</b></p> <p><b>NUTRITION</b></p> <p><b>DIGESTIVE SYSTEM</b></p> <ul style="list-style-type: none"> <li>– Types of foods (water, proteins, 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 (mechanical, chemical)</li> <li>– Digestive glands (salivary glands, gastric glands, pancreas, liver, intestinal glands)</li> </ul> <p><b>CIRCULATORY AND RESPIRATORY SYSTEMS</b></p> <ul style="list-style-type: none"> <li>– Respiratory system (nasal cavity, pharynx, trachea, bronchi, lungs)</li> <li>– Functions of blood constituents (plasma, formed elements)</li> <li>– Compatibility of blood types</li> <li>– Circulatory system (types of blood vessels) <ul style="list-style-type: none"> <li>– Lymphatic system (lymph, antibodies)</li> </ul> </li> </ul> <p><b>EXCRETORY SYSTEM</b></p> <ul style="list-style-type: none"> <li>– Urinary system (kidneys, ureters, bladder, urethra)</li> <li>– Components of urine (water, mineral salts, urea)</li> </ul>	<p><b>PROPERTIES OF MATTER</b></p> <ul style="list-style-type: none"> <li>– Characteristic physical properties <ul style="list-style-type: none"> <li>• Melting point</li> <li>• Boiling point</li> <li>• Density</li> <li>• Solubility</li> </ul> </li> <li>– Characteristic chemical properties <ul style="list-style-type: none"> <li>• Reaction to indicators</li> </ul> </li> <li>– Properties of solutions <ul style="list-style-type: none"> <li>• Concentration</li> <li>• Solute</li> <li>• Solvent</li> </ul> </li> </ul> <p><b>CHANGES IN MATTER</b></p> <ul style="list-style-type: none"> <li>– Physical changes <ul style="list-style-type: none"> <li>• Dissolution</li> <li>• Dilution</li> <li>• Phase changes</li> </ul> </li> <li>– Chemical changes <ul style="list-style-type: none"> <li>• Decomposition and synthesis</li> <li>• Oxidation</li> <li>• Precipitation</li> </ul> </li> <li>– Forms of energy (chemical, thermal, mechanical, radiation)</li> <li>– Particle model</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 mixtures</li> </ul> <p><b>FLUIDS</b></p> <ul style="list-style-type: none"> <li>– Compressible and incompressible fluids</li> <li>– Pressure <ul style="list-style-type: none"> <li>– Relationship between pressure and volume</li> </ul> </li> </ul> <p><b>WAVES</b></p> <ul style="list-style-type: none"> <li>– Frequency</li> <li>– Wavelength</li> <li>– Amplitude</li> <li>– Decibel scale</li> <li>– Electromagnetic spectrum</li> <li>– Deviation of light waves</li> <li>– Focal point of a lens</li> </ul>	<p><b>THE EARTH</b></p> <ul style="list-style-type: none"> <li>– Geological time scale</li> <li>– Major stages in the history of life on Earth</li> <li>– Extinctions</li> <li>– Fossils</li> <li>– Stratigraphic layers</li> </ul> <p><b>SPACE</b></p> <ul style="list-style-type: none"> <li>– Scale of the universe</li> <li>– Astronomical unit</li> <li>– Light year</li> <li>– Location of the Earth in the universe</li> <li>– Conditions conducive to the development of life</li> </ul>	<p><b>GRAPHICAL LANGUAGE</b></p> <ul style="list-style-type: none"> <li>– Geometric lines</li> <li>– Forms of representation (sketch, perspective drawing, oblique projection)</li> <li>– Basic lines</li> <li>– Scales</li> <li>– Orthogonal projections (multiview, isometric)</li> <li>– Sections</li> <li>– Dimensioning</li> <li>– Standards and representations (diagrams and symbols)</li> </ul> <p><b>MECHANICAL ENGINEERING</b></p> <ul style="list-style-type: none"> <li>– Linking of mechanical parts</li> <li>– Typical functions</li> <li>– Function, components and use of motion transmission systems (friction gears, pulleys and belt, gear assembly, sprocket wheels and chain, wheel and worm gear)</li> <li>– Function, components and use of motion transformation systems (screw gear system, cams, connecting rods, cranks, slides, rotating slider crank mechanisms, rack-and-pinion drive)</li> </ul> <p><b>MATERIALS</b></p> <ul style="list-style-type: none"> <li>– Constraints (tension, compression, torsion)</li> <li>– Mechanical properties</li> <li>– Types and properties <ul style="list-style-type: none"> <li>• Ferrous alloys</li> <li>• Nonferrous metals and alloys</li> <li>• Wood and modified wood</li> </ul> </li> </ul> <p><b>BIOTECHNOLOGY</b></p> <ul style="list-style-type: none"> <li>– Processes <ul style="list-style-type: none"> <li>• Pasteurization</li> <li>• Manufacture of vaccines</li> <li>• Assisted reproduction</li> <li>• Cell cultures</li> <li>• Genetic transformation (GMOs)</li> </ul> </li> </ul>

<p>– Maintaining a balanced metabolism (kidneys, lungs, sweat glands)</p> <p><b>RELATIONSHIPS</b></p> <p><b>NERVOUS AND MUSCULOSKELETAL SYSTEMS</b></p> <p>– Central nervous system (brain, spinal cord)</p> <p>– Peripheral nervous system (nerves)</p> <ul style="list-style-type: none"> <li>• Neuron (synapse, axon, dendrites)</li> <li>• Neural inflow (voluntary act, reflex arc)</li> </ul> <p>– Sensory receptors (eye, ear, skin, tongue, nose)</p> <p>– Musculoskeletal system (bones, joints, muscles)</p> <ul style="list-style-type: none"> <li>• Function of bones, joints and muscles</li> <li>• Types of muscles</li> <li>• Types of joint movements</li> </ul> <p><b>REPRODUCTION</b></p> <p><b>REPRODUCTIVE SYSTEM</b></p> <p>– Puberty (male and female)</p> <p>– Hormone regulation in men</p> <ul style="list-style-type: none"> <li>• Spermatogenesis</li> <li>• Erection</li> <li>• Ejaculation</li> </ul> <p>– Hormone regulation in women</p> <ul style="list-style-type: none"> <li>• Oogenesis</li> <li>• Ovarian cycle</li> <li>• Menstrual cycle</li> </ul>			
---	--	--	--

# Applied Science & Technology

Topics will be studied through a hands-on approach with an emphasis on their application to technology. Students will explore technological systems by deconstructing and analyzing the components. Students will be evaluated on the following competencies: 1) Seeks answers or solutions to scientific or technological problems; 2) Makes the most of his/her knowledge of science and technology; and 3) Communicates in the languages used in science and technology.

The Technological World	The Living World	The Material World
<p><b>GRAPHICAL LANGUAGE</b></p> <ul style="list-style-type: none"> <li>– Geometric lines</li> <li>– Forms of representation (sketch, perspective drawing, oblique projection)</li> <li>– Basic lines</li> <li>– Scales</li> <li>– Orthogonal projections (multiview, isometric)</li> <li>– Axonometric projection: exploded view (reading)</li> <li>– Sections</li> <li>– Dimensioning and tolerances</li> <li>– Standards and representations (diagrams and symbols)</li> </ul> <p><b>MECHANICAL ENGINEERING</b></p> <ul style="list-style-type: none"> <li>– Linking of mechanical parts</li> <li>– Typical functions</li> <li>– Function, components and use of motion transmission systems (friction gears, pulleys and belt, gear assembly, sprocket wheels and chain, wheel and worm gear)</li> <li>– Speed changes</li> <li>– Function, components and use of motion transformation systems (screw gear system, cams, connecting rods, cranks, slides, rotating slider crank mechanisms, rack-and-pinion drive)</li> </ul> <p><b>ELECTRICAL ENGINEERING</b></p> <ul style="list-style-type: none"> <li>– Power supply</li> <li>– Conduction, insulation and protection</li> <li>– Typical controls (lever, push button, flip-flop, magnetic controller)</li> </ul> <p><b>MATERIALS</b></p> <ul style="list-style-type: none"> <li>– Constraints (tension, compression, torsion)</li> <li>– Mechanical properties</li> <li>– Types and properties               <ul style="list-style-type: none"> <li>• Ferrous alloys</li> <li>• Nonferrous metals and alloys</li> <li>• Plastics (thermoplastics)</li> <li>• Wood and modified wood                   <ul style="list-style-type: none"> <li>– Cells (cell components, cell membrane, nucleus, chromosomes, genes)</li> </ul> </li> </ul> </li> </ul>	<p><b>SYSTEMS</b></p> <p><b>NUTRITION</b></p> <p><b>DIGESTIVE SYSTEM</b></p> <ul style="list-style-type: none"> <li>– Types of foods (water, proteins, 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 (mechanical, chemical)</li> <li>– Digestive glands (salivary glands, gastric glands, pancreas, liver, intestinal glands)</li> </ul> <p><b>CIRCULATORY AND RESPIRATORY SYSTEMS</b></p> <ul style="list-style-type: none"> <li>– Respiratory system (nasal cavity, pharynx, trachea, bronchi, lungs)</li> <li>– Functions of blood constituents (plasma, formed elements)</li> <li>– Compatibility of blood types</li> <li>– Circulatory system (types of blood vessels)</li> <li>– Lymphatic system (lymph, antibodies)</li> </ul> <p><b>EXCRETORY SYSTEM</b></p> <ul style="list-style-type: none"> <li>– Urinary system (kidneys, ureters, bladder, urethra)</li> <li>– Components of urine (water, mineral salts, urea)</li> <li>– Maintaining a balanced metabolism (kidneys, lungs, sweat glands)</li> </ul> <p><b>RELATIONSHIPS</b></p> <p><b>NERVOUS AND MUSCULOSKELETAL SYSTEMS</b></p> <ul style="list-style-type: none"> <li>– Central nervous system (brain, spinal cord)</li> <li>– Peripheral nervous system (nerves)               <ul style="list-style-type: none"> <li>• Neuron (synapse, axon, dendrite)</li> <li>• Neural inflow (voluntary act, reflex arc)</li> </ul> </li> <li>– Sensory receptors (eye, ear, skin, tongue, nose)</li> <li>– Musculoskeletal system (bones, joints, muscles)               <ul style="list-style-type: none"> <li>• Function of bones, joints and muscles</li> <li>• Types of muscles</li> <li>• Types of joint movement</li> </ul> </li> </ul>	<p><b>PROPERTIES OF MATTER</b></p> <ul style="list-style-type: none"> <li>– Characteristic physical properties               <ul style="list-style-type: none"> <li>• Melting point</li> <li>• Boiling point</li> <li>• Density</li> </ul> </li> <li>– Characteristic chemical properties               <ul style="list-style-type: none"> <li>• Reaction to indicators</li> </ul> </li> <li>– Properties of solutions</li> </ul> <p><b>CHANGES IN MATTER</b></p> <ul style="list-style-type: none"> <li>– Physical changes</li> <li>– Chemical changes</li> <li>– Forms of energy</li> <li>– Particle model</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 mixtures</li> </ul> <p><b>FLUIDS</b></p> <ul style="list-style-type: none"> <li>– Compressible and incompressible fluids</li> <li>– Pressure</li> <li>– Relationship between pressure and volume</li> </ul> <p><b>WAVES</b></p> <ul style="list-style-type: none"> <li>– Frequency</li> <li>– Wavelength</li> <li>– Amplitude</li> <li>– Decibel scale</li> <li>– Electromagnetic spectrum</li> <li>– Deviation of light waves</li> <li>– Focal point of a lens</li> </ul>

<p><b>MANUFACTURING</b></p> <ul style="list-style-type: none"> <li>- Shaping</li> <li>• Machines and tools</li> <li>- Manufacturing</li> <li>• Roughing and finishing</li> <li>• Characteristics of laying out</li> <li>- Measurements</li> <li>• Direct measurement (ruler)</li> </ul> <p><b>BIOTECHNOLOGY</b></p> <ul style="list-style-type: none"> <li>- Processes</li> <li>• Pasteurization</li> <li>• Manufacture of vaccines</li> <li>• Artificial insemination</li> <li>• Cell culture</li> </ul>	<ul style="list-style-type: none"> <li>- Reproduction</li> <li>- Reproductive system</li> <li>- Cell division</li> <li>• Mitosis</li> <li>• Meiosis</li> <li>• Genetic diversity</li> <li>- Hormone regulation as it relates to human reproduction</li> <li>- Puberty (male and female)</li> <li>- Hormone regulation in men</li> <li>• Spermatogenesis</li> <li>• Erection</li> <li>• Ejaculation</li> <li>- Hormone regulation in women</li> <li>• Oogenesis</li> <li>• Ovarian cycle</li> <li>• Menstrual cycle</li> </ul>	
---	---	--