

What your student will study in Chemistry 30

What the course covers

Chemistry 30 requires more than content knowledge. The course builds habits of mind alongside technical material. These habits include curiosity about science careers and questions, respect for different perspectives and cultural contributions to science, careful evidence-based reasoning, teamwork in lab investigations, responsibility toward energy use and the environment, and safe laboratory practice guided by the Workplace Hazardous Materials Information System (WHMIS). These habits develop throughout the course rather than in a single unit. [See the curriculum: 1, 2, 3, 4, 5, 6, 7.](#)

The first major unit, Unit A: Thermochemical Changes (themes: Energy, Change and Systems), looks at the energy involved in chemical reactions and how society uses it. Your student will study calorimetry as a key concept in thermochemical changes. They will learn about fuels and energy efficiency in the context of chemical energy. They will work with the concepts of enthalpy and molar enthalpy, the terms chemists use for the heat absorbed or released by a reaction. This unit takes roughly a fifth of the course. [See the curriculum: 1, 2, 3, 4, 5.](#)

Within that unit, students learn to write balanced chemical equations that include energy terms. They use ΔH for enthalpy change. They predict enthalpy changes from standard enthalpies of formation. They apply Hess's law, a method for calculating the energy change of an overall reaction by combining the energy changes of simpler reactions. Calorimetry, the technique of measuring heat flow experimentally, is a key laboratory skill. Students use calorimetry data to calculate enthalpy changes directly. The unit also connects this chemistry to biology and environmental science. Students classify photosynthesis, cellular respiration and hydrocarbon combustion as endothermic or exothermic. They trace the reactants and products in each process. [See the curriculum: 1, 2, 3, 4, 5, 6, 7.](#)

The course links this content to real-world decisions about energy technology. Students provide examples of personal reliance on the chemical potential energy of matter, such as the use of fossil fuels. They compare fuel choices across communities and historical periods. They identify and explain the selection of different fuels used by communities in urban, rural and remote areas. A significant piece of this unit involves identifying ways to use energy more efficiently and comparing fuel selection across different communities. Students provide examples of personal reliance on the chemical potential energy of matter, such as the use of fossil fuels. Students provide examples of personal reliance on the chemical potential energy of matter, such as the use of fossil fuels. Students engage with technology as a tool to provide solutions to practical problems related to energy use. Students identify ways to use energy more efficiently. Students identify and explain the selection of different fuels used by communities in urban, rural and remote areas [See the curriculum: 1, 2, 3, 4, 5, 6.](#)

The second general outcome in this unit is to explain and communicate energy changes in chemical reactions. Students define activation energy as the energy barrier a reaction must overcome. They explain energy changes in terms of bonds breaking and forming. They read and label full energy diagrams showing reactants, products, enthalpy change and activation energy. They also learn how catalysts speed up reactions by providing an alternate pathway without changing the overall energy involved. Enzymes are a biological example. [See the curriculum: 1, 2, 3, 4, 5.](#)

This section of the unit explains how catalysts, such as catalytic converters on automobiles, reduce air pollution resulting from the burning of fuels. Students explain how catalytic converters reduce vehicle pollution. They explain how catalysts reduce air pollution resulting from the burning of fuels. They explain how catalysts, such as catalytic converters on automobiles, reduce air pollution resulting from the burning of fuels. Practical work includes understanding how catalysts, such as catalytic converters on automobiles, affect reactions. Students draw and interpret enthalpy diagrams. They calculate and explain the gap between the theoretical and actual efficiency of a thermal energy system. In some classrooms, students design and test a heating device and calculate its efficiency. Throughout the unit,

students develop positive attitudes that support the responsible acquisition and application of knowledge related to science and technology [See the curriculum: 1, 2, 3, 4, 5, 6, 7.](#)

Beyond this energy unit, Chemistry 30 continues into further units. These units include titration analysis for determining solution concentration and the construction and testing of voltaic (galvanic) cells, based on the laboratory resources associated with the course. Assignment booklets exist for three further units of the course. This indicates that acid-base chemistry, electrochemistry and additional topics follow the energy unit described above. [See the source: 1, 2, 3, 4, 5.](#)

How the course is assessed

Within each unit, expect a mix of assignment booklets, lab reports and unit tests. Teachers use answer keys and scoring guides to mark student work consistently. Laboratory investigations, such as calorimetry experiments and enthalpy calculations, are typically assessed on technique and on the calculations and conclusions drawn from the data. Technique includes safe handling, accurate measurement, proper use of SI units and significant digits. Chemistry 30 concludes with a provincial diploma examination that counts toward the final course mark alongside the school-awarded portion built from unit tests, labs and assignments throughout the year. [See the curriculum: 1, 2, 3, 4, 5, 6.](#)

How to support study at home

Set a regular homework and review time each week. Chemistry 30 builds one unit on the next. Ask your student to walk you through a Hess's law calculation, step by step, using scrap paper at the kitchen table. Students explain and use Hess' law to calculate energy changes for a net reaction from a series of reactions [See the curriculum.](#)

Bring the chemistry into the kitchen. Boiling water for pasta or noting how a stove burner heats a pot are everyday examples of heat transfer. You can ask your student to explain the idea behind $Q = mc\Delta T$ using what is happening on the stove. [See the curriculum.](#)

Ask your student to sketch and label an energy diagram for a reaction they are currently studying. The diagram should show reactants, products, enthalpy change and activation energy. Being able to draw and explain this diagram from memory is a good sign they understand the concept, not just the vocabulary. [See the curriculum.](#)

Talk through the safety rules your student is expected to follow in the lab. Reference WHMIS symbols if any household cleaning products display them. This reinforces habits around safe handling and disposal that the course expects in every investigation. [See the curriculum: 1, 2.](#)

Ask your student about the fuel-comparison or catalyst investigations they design in class. Ask what variables they had to control. Talking through the design of an experiment, not just its results, builds the reasoning skills the course is trying to develop. [See the curriculum: 1, 2.](#)

If your student is struggling with unit conversions, graphing or solving equations, these skills are related to Unit A and are helpful, though the program of studies does not treat the related mathematics outcomes as prerequisites; encourage your student to talk to the teacher early if these skills feel shaky. It is better to ask for help rather than waiting until a unit test. [See the curriculum.](#)

Note: 76 learning outcome blocks were left out to fit the 6000-token curriculum budget for this kind of material. Use "Split into parts" to generate one document per organizing idea.