



Chemistry 30IB SL
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2025-2026 S1

The Chemistry 30IB Course covers the content of both the Alberta Diploma Chemistry Program of Studies and the International Baccalaureate Organization Chemistry Standard Level Program of Studies incorporating the IB Learner Profile, IB Theory of Knowledge and IB Approaches to Learning into lessons.

The Chemistry 30 program consists of four units:

- A. Thermochemical Changes
- B. Electrochemical Changes
- C. Chemical Changes of Organic Compounds
- D. Chemical Equilibrium Focusing on Acid-Base Systems

Students will be encouraged to:

- a) Show interest in science-related questions and issues and confidently pursue personal interests and career possibilities within science-related fields.
- b) Appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds.
- c) Seek and apply evidence when evaluating alternative approaches to investigations, problems and issues.
- d) Work collaboratively in planning and carrying out investigations and in generating and evaluating ideas
- e) Demonstrate sensitivity and responsibility in pursuing a balance between the needs of humans and a sustainable environment
- f) Show concern for safety in planning, carrying out and reviewing activities, referring to the Workplace Hazardous Materials Information System (WHMIS) and consumer product labeling information.

Unit A: Thermochemical Changes

Themes: Energy, Change and Systems

Overview: In this unit, students study energy as it relates to chemical changes and quantifying the energy involved in thermochemical systems and consider the various aspects of energy use on society.

General Outcome: There are two major outcomes in this unit.

Students will:

1. determine and interpret energy changes in chemical reactions
2. explain and communicate energy changes in chemical reactions

Key Concepts:

- | | |
|-------------------------|-------------------------------|
| • enthalpy of formation | • energy diagrams |
| • enthalpy of reaction | • activation energy |
| • ΔH notation | • catalysts |
| • Hess' law | • calorimetry |
| • molar enthalpy | • fuels and energy efficiency |

Unit B: Electrochemical Changes

Themes: Change and Energy

Overview: In this unit, students study electrochemical change and analyze the matter and energy.

General Outcomes: There are two major outcomes in this unit.

1. explain the nature of oxidation-reductions
2. apply the principles of oxidation-reduction to electrochemical cells.

Key Concepts:

- | | |
|-------------------------------------|--------------------------------|
| • oxidation | • spontaneity |
| • reduction | • standard reduction potential |
| • oxidizing agent | • voltaic cell |
| • reducing agent | • electrolytic cell |
| • oxidation-reduction (redox) agent | • electrolysis |
| • oxidation number | • standard cell potential |
| • half-reaction | • Faraday's law |
| • disproportionation | • corrosion |

Unit C: Chemical Changes of Organic Compounds

Themes: Change, Diversity and Energy

Overview: In this introduction to organic chemistry, students learn about common organic compounds and describe their properties and reactions. The significance of organic chemistry, in the context of technological applications and quality of life, is explored.

General Outcomes: There are two major outcomes in this unit.

1. explore organic compounds as a common form of matter
2. describe chemical reactions of organic compounds

Key Concepts:

- organic compounds
- naming organic compounds
- structural formulas
- monomers
- polymers
- aliphatic and aromatic compounds
- saturated/unsaturated hydrocarbons
- functional groups identifying alcohols, carboxylic acids, esters and halogenated hydrocarbons
- esterification
- combustion reactions
- polymerization
- addition, substitution
- elimination

Unit D: Chemical Equilibrium Focusing on Acid-Base Systems

Themes: Change, Systems and Equilibrium

Overview: In this unit, the concept that chemical change eventually attains equilibrium is developed, followed by a focus on the quantitative treatment of reaction systems involving acid-base solutions.

General Outcome: There are two major outcomes in this unit

1. explain that there is balance of opposing reactions in chemical equilibrium systems
2. determine quantitative relationships in simple equilibrium systems

Key Concepts:

- chemical equilibrium systems
- reversibility of reactions
- Le Chatelier's principle
- equilibrium law expressions
- equilibrium constants
- acid-base equilibrium
- Bronsted-Lowry acids and bases
- titration curves
- conjugate pairs of acids and bases
- amphoteric/amphiprotic substances
- buffers
- indicators

MAC's courses use the IB philosophy to encourage the holistic development of all students. The Learner Profile and Approaches to Teaching and Learning are used at all levels so that students develop a better understanding of curriculum objectives. We will focus on the Learner Profile for THINKERS because we use critical and creative thinking skills to take action on complex problems. We will focus on the Approaches to Learning skill THINKING because we emphasize skills such as reflection and critical thinking as well as posing problems, decision making, being reasonable, creativity, risk taking, and others.

Resources:

- A) Nelson Chemistry Textbook and Laboratory Manual
- B) Teacher Notes
- C) Online resources and supplemental material
- D) Program of Studies: [Link](#)

Evaluation: The mark will be based upon some or all of the following:

- a) chapter tests
- b) quizzes
- c) laboratory work
- d) assignment checks

Mark Distribution and Determination:

A cumulative marking system based on Total Points and Weighted Categories will be used.

For Mr. Cavaliere's Chemistry 30 classes the School Awarded Grade is based on the total raw score points that are determined by the scale factor for each task and placed in the appropriate weighted categories for Final Grade calculation.

Unit A – 20%

Unit B – 30%

Unit C – 20%

Unit D – 30%

Your **School Awarded Grade** will account for 70% of your grade for Chemistry 30. Your **Alberta Diploma exam mark** will account for the other 30%. (Unless otherwise determined by the Government of Alberta)

Grading Criteria and Codes

Criteria Disclaimer

A wide range of assessment information is used in the development of a student's final grade. At Archbishop MacDonald High School, individualized assessments provide specific information regarding student progress and overall performance in class. Student assessment may vary from student to student to adapt for differences in student needs, learning styles, preferences, and paces. It should also be noted that not all assignments are used to determine the final grade, and that scale factors may have been used to determine the weight of individual assignments.

The code NHI may be used to represent coursework that has not been handed in. It is representative of a zero. In addition, the following may appear for a student in PowerSchool instead of, or in addition to, a numeric grade:



Standards



Has Description



Has Comment



Collected



Late



Missing



Exempt from
Final Grade



Absent



Incomplete



Excluded

Unexcused absences and/or lates are unacceptable and may have a negative effect on the grade. Missed coursework is expected to be completed and will be scored as zero until submitted (see disclaimer).

[Student Agenda 2023-2024](#)

Course Materials:

- binder with lined, unlined and graph paper
- calculator (scientific notation)
- pen, pencil, eraser, and ruler

Expectations:

1. Students are expected to be punctual to class and any bathroom activities done before class not during.
2. Regular attendance is important; however, should you be absent please submit a note and obtain an admit slip from Student Services. Otherwise, it will be considered an unexcused absence and could affect your grade.
3. Materials required for class should be brought to all lessons.
4. Notebooks are to be kept up to date and in presentable condition, since they are records required throughout the entire year. Assignment checks for marks will be done periodically at random.
5. It is the student's responsibility to maintain and update any notes or assignments following any absence.
6. Attendance at scheduled examinations is mandatory. In the event of an excused absence the teacher will determine if, and when, the remake test is to be administered.
7. Students on special projects by other teachers must have written permission by the set deadline. Marks may be subtracted for late submission.
8. Assignments such as reports, labs, projects, etc. should be submitted by the set deadline. Marks may be subtracted for late submissions.
9. During classroom exams always bring course materials just in case of early completion.
10. During examinations your answer sheets should be kept in the center of the desk to prevent any sharing of information.
11. Before an examination is distributed your desk should be clear of any unnecessary materials. Test booklets, answers sheets, data booklets, and scrap paper should be handed back. There should be no passing around of any materials or calculators during the examination.

Laboratory Safety Standard

Science at Archbishop MacDonald is a hands-on, skill-based discipline involving activities that may entail risk. Safety in the laboratory takes precedence over all instructional concerns. To ensure your safety and the safety of others, the following laboratory safety standard is always in effect:

1. Conduct must be professional. Counter-sitting, throwing, playing, pranking, and unsanctioned experiments are prohibited.
2. Footwear must completely cover the foot. Sandals, slides, and/or clogs are prohibited.
3. Food and/or drink are prohibited.

There is a **zero-tolerance policy** for violations of the safety standards; failure to comply with these standards will result in immediate exclusion from the lab activity. Additional safety measures that are activity dependent may also be required.

Teacher Contact

- Students should approach the teacher to determine appropriate time to discuss issues.

ICT Outcomes: (the following are common to all Chemistry 20/30 and 20IB/30IB)

C1. Students will access, use and communicate information from a variety of technologies.

- 4.1 plan and perform complex searches, using more than one electronic source
- 4.2 select information from appropriate sources, including primary and secondary sources
- 4.4 communicate in a persuasive and engaging manner, through appropriate forms, such as speeches, letters, reports and multimedia presentations, applying information technologies for context, audience and purpose that extend and communicate understanding of complex issues.

C2. Students will seek alternative viewpoints, using information technologies.

- 4.1 consult a wide variety of sources that reflect varied viewpoints on particular topics

C3. Students will critically assess information accessed through the use of a variety of technologies.

- 4.2 demonstrate discriminatory selection of electronically accessed information that is relevant to a particular topic (specific to 20IB & 30IB)

C6. Students will use technology to investigate and/or solve problems.

- 4.1 investigate and solve problems of prediction, calculation and inference
- 4.2 investigate and solve problems of organization and manipulation of information
- 4.3 manipulate data by using charting and graphing technologies in order to test inferences and probabilities
- 4.4 generate new understandings of problematic situations by using some form of technology to facilitate the process

C7. Students will use electronic research techniques to construct personal knowledge and meaning.

- 4.1 use appropriate strategies to locate information to meet personal needs
- 4.2 analyze and synthesize information to determine patterns and links among ideas
- 4.3 use appropriate presentation software to demonstrate personal understandings

F1. Students will demonstrate an understanding of the nature of technology.

- 4.2 solve mathematical and scientific problems by selecting appropriate technology to perform calculations and experiments.

F2. Students will understand the role of technology as it applies to self, work and society.

- 4.1 use technology outside formal classroom settings
- 4.2 analyze how technological innovations and creativity affect the economy
- 4.3 demonstrate an understanding of new and emerging communication systems
- 4.4 evaluate possible potential for emerging technologies

F3. Students will demonstrate a moral and ethical approach to the use of technology.

- 4.1 demonstrate an understanding of how changes in technology can benefit or harm society
- 4.2 evaluate the influence and results of digital manipulation on our perceptions (20IB & 30IB)
- 4.3 respect, ownership and integrity of information

P1. Students will compose, revise and edit text.

4.1 continue to demonstrate the outcomes achieved in prior grades and course subjects

P2. Students will organize and manipulate data.

4.1 manipulate and present data through the selection of appropriate tools, such as scientific instrumentation, calculators, databases and/ or spreadsheets.

P3. Students will communicate through multimedia.

4.1 select and use, independently, multimedia capabilities for presentations

4.2 support communication with appropriate images, sounds and music

4.3 apply general principles of graphic layout and design to a document in process

P4. Students will integrate various applications

4.1 integrate a variety of visual and audio information into a document to create a message targeted for a specific audience.

4.2 apply principles of graphic design to enhance meaning and audience appeal

4.3 use integrated software to reproduce work that incorporates data, graphics and text.

P6. Students will use communication technology to interact with others.

4.1 use the appropriate technologies to communicate effectively with a targeted audience.

Archbishop MacDonald High School Academic Honesty and Academic Integrity Code of Conduct

Academic Honesty is a reflective practice; whereby students connect their understanding of academically honest practices into the demonstration of those practices in their work.

Students must read, understand and act in accordance with the [Academic Honesty Policy](#) of Archbishop MacDonald High School, which will be posted on the website and embedded in the course outlines.

It is the student's responsibility to ensure that all work submitted is authentic in all respects.

Work submitted is inclusive of written, oral, creative or other forms of assessment for a course.

A student must be aware of and purposefully ensure that they are demonstrating appropriate academic behaviours as it relates to:

Plagiarism	This is defined as the representation of the ideas or work of another person as the [student's] own
Collusion	This is defined as supporting malpractice by allowing another student to submit work completed by you; or submitting another [student's] work as your own.
Misconduct	This is defined as the use of unauthorized communication of any form during an assessment.
Duplication of Work	This is defined as the presentation of the same work for different assessment components.
Inappropriate Communication of Information	This is defined as the communication of assessment information to [students] who have yet to complete a similar assessment; or requesting others [students] to divulge information about an upcoming assessment that may provide the [student] with an unfair advantage.

Consequences

Students are expected to value the attitudes and skills of being a principled communicator in all learning and assessment. Consequences for those who compromise the academic honesty and integrity policy to gain an advantage are listed below.

The administration [Grade Coordinator] in conjunction with the teacher, from whose class the offence occurred, has the authority to impose one or more of the following consequences.

- A comment referring to the student's lack of academic honesty will be reported on the student's records.
 - A zero will be awarded for that particular assignment/exam.
- All extracurricular involvement may be suspended until the protocol reaches its logical conclusion.
- Students reported and recorded with an incident of academic misconduct will be monitored during the school year.
 - In addition to the above sanctions, the administration [grade coordinator], has the authority to impose one or more of the following:
 - Suspension
 - Expulsion

A8.1 Academic honesty A8.1.1 Policy

It is an IB requirement that every IB World School that offers the Diploma Programme has a policy to promote academic honesty. This policy must be shared with candidates before they begin the Diploma Programme and be followed by reminders throughout the two years of the programme. The way in which this policy is shared with candidates and teachers is left to the discretion of the head of school, or his or her nominee.

IB teachers are best placed to verify that candidates' work complies with the IB's expectations concerning academic honesty. Therefore, teachers must use appropriate means to ensure that candidates' work is, to the best of their knowledge, the authentic work of the candidates. Schools are responsible for checking all candidates' work prior to submission to the IB for assessment or moderation.

Further information can be found in the IB publication *Academic honesty in the IB educational context*.

A8.1.2 What constitutes academic misconduct?

Cases of alleged academic misconduct (previously referred to as malpractice) investigated by the IB typically include the following situations. Coordinators should take notice of these common breaches to the regulations when administering the Diploma Programme and developing the school's academic honesty policy.

Lack of referencing

Diploma Programme candidates submit work for assessment in a variety of media that may include audio-visual material, text, graphs, images and/or data published in print or electronic sources. If a candidate uses the work or ideas of another person, the candidate must acknowledge the source using a standard style of referencing in a consistent manner. A candidate's failure to acknowledge a source will be investigated by the IB as a potential breach of IB regulations that may result in a penalty imposed by the final award committee.

The IB does not prescribe which style(s) of referencing or in-text citation should be used by candidates; this is left to the discretion of appropriate faculty/staff in the school. Regardless of the reference style adopted by the school for a given subject, it is expected that the minimum information given includes: name of author, date of publication, title of source and page numbers as applicable.

Candidates are not expected to show expertise in referencing, but are expected to demonstrate that all sources have been acknowledged using a standard style consistently so that credit is given to all sources used (audio-visual material, text, graphs, images and/or data published in print or in electronic sources), including sources that have been paraphrased or summarized. When writing text a candidate must clearly distinguish between his or her words and those of others by the use of quotation marks (or other method like indentation) followed by an appropriate in-text citation accompanied by an entry in the bibliography.

Too much assistance and collusion

Although group working is a key element in components of certain subjects, coordinators are reminded that candidates are expected to present assessments in their own words and acknowledge the words or ideas of others where collaboration has occurred.

It is recommended that coordinators warn candidates against using the growing number of websites and organizations that claim to offer "help" with IB assessment tasks. None of these are endorsed by the IB and some are virtually indistinguishable from sites on the internet that offer custom-made assignments, usually for a fee, for candidates' use. Some sources of support may be acting in good faith, but nevertheless are offering a level of support and guidance that may not be permitted by the IB.

The level and kind of guidance permitted by the IB for any subject is outlined in the appropriate IB guide. If a coordinator is in any doubt as to what is permitted, contact IB Answers for advice.

Other forms of academic misconduct

Academic misconduct most commonly involves collusion or plagiarism and constitutes a breach of regulations. However, there are other ways in which a candidate may be in breach of regulations. For example, if he or she:

- duplicates work to meet the requirements of more than one assessment component
- fabricates data for an assignment
- takes unauthorized material into an examination room
- disrupts an examination by an act of misconduct, such as distracting another candidate or creating a disturbance
- exchanges, supports, or attempts to support the passing on of information that is or could be related to the examination
- fails to comply with the instructions of the invigilator or other member of the school's staff responsible for the conduct of the examination
- impersonates another candidate
- steals examination papers
- discloses or discusses the content of an examination paper with a person outside the immediate school community within 24 hours after the examination.

From ibo.org, Handbook of Procedures, Section A8, Academic Honesty