**Grade 12 Chemistry (CH40S) Course Description**

The Grade 12 Chemistry course builds upon chemistry topics taught through grades 9 and 10 science as well as grade 11 chemistry. Many of the skills that you have already learned (including balancing equations and using stoichiometry to relate volume, mass, and mole measurements) will be used as you solve problems and learn new skills along the way.

This course helps you develop the skills, ideas, and confidence you will need to continue your studies at the post-secondary level.

**Course Modules:**

Below is a breakdown of the course modules and topics:

* **Module 1 (Aqueous Reaction):**
  + Solubility & precipitation
  + Neutralization reactions & calculations
  + Oxidation-reduction (redox) reactions & balancing redox reactions
* **Module 2 (Atomic Structure):**
  + Quantum model of the atom
  + Electron arrangements & configurations
  + Periodic trends in atomic radius, ionization energy & electronegativity.
* **Module 3 (Kinetics):**
  + Factors affecting reaction rates
  + Average & instantaneous rates
  + Potential energy diagrams
  + Reaction mechanisms
  + Rate laws
* **Module 4 (Chemical Equilibrium):**
  + Equilibrium law & Keq calculations
  + LeChatelier’s Principle
  + Solubility equilibrium
  + Solubility product (Ksp) calculations
* **Module 5 (Acid-Base Equilibrium)**
  + Definitions of acids & bases (Arrhenius, Brønsted-Lowry, Lewis)
  + Concentration, ion product of water, pH/pOH calculations
  + Acid-Base equilibrium (Ka/Kb) calculations.
  + Titrations & titration curves.
* **Module 6 (Electrochemistry)**
  + Spontaneity of reactions & reduction potentials
  + Electrochemical (voltaic) cells
  + Electrolytic Cells
  + Faraday’s Law
  + Applications of electrochemistry (electroplating, corrosion)

**Evaluation:**

Each learning module is assessed by approximately 5 assignments and a test. Final grades are broken down as follows:

* Assignments – 40%
* Tests – 50%
* Final Exam – 10%

**Class Schedule:**

Due dates for assignments and tests are pre-scheduled to help students stay on track with the timing of the course. To stay on pace with the course, students can expect to spend about 1 hour each day working through the course content, assignments and tests.

Each Module consists of multiple lessons that cover the content of the course. Lessons consist of content information and explanations, video lessons & tutorials, learning activities and practice exercises.

As students work through the course, they are encouraged to email their teacher if they have questions about any of the content or practice questions.

**Required Materials**

Students will need the following:

* Computer with working camera/microphone
* Scientific Calculator
* Pen/Pencil
* Eraser
* Paper
* Graphing software (Microsoft Excel, Vernier Graphical Analysis)