

## Colonel by Secondary School

**Course Outline: Grade 11 Chemistry, International Baccalaureate, IB (I), HL**

**Course Code:** SCH3UE (IB I)

**Course Text:** Chemistry Today I, Whitman, Nalepa, and Zinck  
Petrucci and Harwood “General Chemistry”

<b>Evaluation:</b> Knowledge/Understanding	= 25%
Thinking/Inquiry	= 20%
Communication	= 10%
Making Connections	= 15%
Summative	= 30%

### **Overview:**

The objectives for the Higher Level Chemistry is based on the International Baccalaureate Chemistry Prospectus (February 2001). To meet these objectives, specific material is covered in each of the two years. In covering the IB objectives, the Ontario Curriculum is also covered in depth.

Chemistry is the central science. Chemical principles underpin the physical environment in which we live, and all biological systems. As such the subject of chemistry has two main roles in the curriculum. It is a subject worthy of study in its own right as a preparation for employment or further study. Chemistry is also a prerequisite for many other courses in higher education, such as medicine, and biological and environmental sciences.

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. The chemistry programme aims to balance the needs of an examination syllabus on one hand with the freedom of teachers to devise courses that meet the needs of their students on the other. The programme reflects, through the variety of options available, the need to ensure that the qualification will meet the needs of students who wish to enter higher education in the sciences and those for whom this will be their final formal study of science.

This is a two-year program designed for students who plan to write the Higher IB Chemistry Examination. Students are awarded the SCH3UE credit upon successful completion of the SCH3UE (IB, Higher, Year I) course requirements. Students are awarded the SCH4UE credit upon successful completion of the SCH4UE (IB, Higher, Year II) course requirements.

Students attain the Higher level Chemistry qualification upon successful completion of IB external evaluations and practical work as 24 % of the total mark, with the IB external evaluation making up the remaining 76 %.

Higher Level Chemistry consists of 240 hours, of which at least 60 h is practical work consisting of Internal Assessment.

**IB HL Chemistry Syllabus:**

<b>IB Topic number</b>	<b>Title</b>	<b>N° of Hrs: Core (80hrs)</b>	<b>N° of Hrs: HL (55hrs)</b>
Core, HL	Quantitative Chemistry & States of Matter	12.5	3
2 12	Structure	4	4
3 13	Periodicity	6	–
4 14	Bonding	12.5	5
5 15	Energetics	8	8
6 16	Kinetics	5	6
7 17	Equilibrium	5	4
8 18	Acids and Bases	6	10
9 19	Oxidation and Reduction	7	5
10 20	Organic Chemistry	12	10
11	Measurement & Data Processing	2	–
<b>IB HL Options (Grade 12)</b>			
A	Modern Analytical Chemistry	<b>44 Hours</b>	
B	Human Biochemistry		
C	Chemistry in Industry and Technology		
D	Medicines and Drugs		
E	Environmental Chemistry		
F	Food Chemistry		
G	Further Organic Chemistry		

In grade 12, students will complete a Group 4 Project – an independent research project involving 10 - 15 hours of lab work.

## Lab Reports and IB Internal Assessment

All IB students must submit a portfolio of the lab reports as part of the assessment for their final IB chemistry grade.

This portfolio is worth 24% of the total grade. Thus, it is very important that the portfolio is up to date and well organized. The assessment criteria are as follows:

Criterion	# of Assessments	# of Possible Marks	Aspects
Design (D)	X 2	12	<ul style="list-style-type: none"><li>Defining the problem and selecting variables</li><li>Controlling variables</li><li>Developing a method for collection of data</li></ul>
Data Collection and Processing (DCP)	X 2	12	<ul style="list-style-type: none"><li>Recording raw data</li><li>Processing raw data</li><li>Presenting processed data</li></ul>
Conclusion and Evaluation (CE)	X 2	12	<ul style="list-style-type: none"><li>Concluding</li><li>Evaluating procedure(s)</li><li>Improving the investigation</li></ul>
Manipulative Skills (MS)	X 1	6	<ul style="list-style-type: none"><li>Following instructions</li><li>Carrying out techniques</li><li>Working safely</li></ul>
Personal Skills (PS) (Group 4 Project)	X 1	6	<ul style="list-style-type: none"><li>Self motivation and perseverance</li><li>Working within a team</li><li>Self reflection</li></ul>

For each criterion, a level of 0 - 2 is awarded, based on the IBO's own rubrics and "achievement level matrices" (these will be provided to students separately).

The first three criteria – Design (D), data collection (DCP) and conclusion and evaluation (CE) – are each assessed twice.

Manipulative skills (MS) are assessed summatively over the whole course and the assessment is based on a wide range of manipulative skills.

Personal skills (PS) will be assessed only once during the group 4 project. The final IB grade for the lab portfolio is based on the two best performances achieved for each criterion during the course.

The maximum mark for each criterion is 6 (respectively three completes). This makes a total mark out of 48. The marks for each of the criteria are added together to determine the final mark out of 48 for the IA component.

This is then scaled at IBCA to give a total out of 24%.

Note: Not all lab reports will be assessed for all IB criteria.

## IB External Examination Format

Component	Format	Duration (hrs)	Weighting (%)
Paper 1	40 multiple choice questions about Topics 1-20	1	20%
Paper 2	Section A: Data-based question and several short answer questions about Topics 1-20  Section B: Two (from four) extended answer questions about Topic 1-20	2.25	36%
Paper 3	Several short answer questions and one extended answer question about each of the Options A → G	1.25	20%