



**CHEM 175 Chem Essentials for
Civil/Mech
Quarter 2: 2016**

General Information

Instructor: Daniel Dönnecke

Office: Tec 232

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Office Hours: Monday 3:30 – 4:20 pm (Tec 232 or Tec 230)

Feel free to drop by my office any time or arrange a convenient time. I check e-mails regularly and will make every effort to return e-mails as soon as possible, generally within 24 hours.

Text:

Chem 175 Course Package from the book store

Lab:

The lab Manual is in the course pack. **Bring it to each lab.** It contains the procedures for the experiments you are conducting. Come prepared. Having read and understood the lab manual will save you valuable lab time. You also need to bring a pair of **safety glasses** and a **lab coat** (or cover up your skin with long pants and a sweater). **Wear suitable shoes.** Flip flops or other open toed footwear is not permitted. You will not be allowed in the lab without safety glasses.

Timetable

Lectures: Monday, Thursday and Friday from 1:30-2:20 pm in Tech 173

Laboratory: Friday 8:30 - 10:20 am, Tech 230 **alternate weeks**

Evaluation Grading as in Camosun College Calendar

Term Tests (four)	45 % in total (your three best term tests contribute 15 % each)
Lab	17 %
Final Exam	38 %

There are problem sets at the end of each chapter in the course pack to help you prepare for exams. These problem sets are not graded but answer keys are provided at the end of each chapter. You are not expected to work through every single question. Do as many of them as you need to feel comfortable with the topic.

Four 50 min term tests will be written during lecture time of week 3, 6, 8 and 10.

A 3 hour final examination will cover material from week 1 to week 11.

Attendance in the lab is mandatory. If you miss more than two labs unexcused you have failed the lab. You must pass the lab to pass the course. You must also pass the final exam to pass the course. A lab that is missed, an exam that is not written or a lab report that is not handed in, within a week, counts as zero towards your course grade. Exceptions can be made if a valid excuse is produced in writing to the instructor (such as a note from a medical doctor) as soon as possible. It is important to let me know what is happening.

Send me an e-mail if you cannot attend a lab or an exam.

Detailed outline (schedule subject to availability of equipment)

Week	Activity
1	Lab safety EVERYONE ATTENDS
2	<i>Lab 4</i> Heat of Combustion
3	<i>Lab 4</i> Heat of Combustion Term Test 1 (50 min, during lecture time)
4	<i>Lab 3</i> Separating Mixtures
5	<i>Lab 3</i> Separating Mixtures
6	8 February, Family Day, College closed <i>Lab 11</i> The Magnesium and Hydrochloric Acid Reac. Term Test 2 (50 min, during lecture time)
7	19 February, Reading Break , no lab and no lecture on that day.
8	<i>Lab 11</i> The Magnesium and Hydrochloric Acid Reac. Term Test 3 (50 min, during lecture time)
9	<i>Lab 12</i> Neutralization
10	<i>Lab 12</i> Neutralization Term Test 4 (50 min, during lecture time)
11	Review of the course material during lab sections

**Week 12: Final
Examination Period**

Note that the Lab # refers to the number of the lab as in the lab manual: E.g. we will conduct lab 4 prior to lab 3.

Detailed Lecture Outline (approximate):

The International System of Units (SI), SI prefixes, metric conversions, scientific notations, measurements, calculations with measurements, density calculations, energy.

Scientific method, physical and chemical change, elements and compounds, mixtures, metals and non-metals, Daltons atomic theory, atoms and molecules, subatomic particles, nucleus, isotopes, ions, atomic mass.

Chemical formulas and names, composition of a compound, formulas, naming molecular compounds, naming ionic compounds, naming acids.

Calculation bases upon formulas, molecular and formula masses, percent composition, the mole, converting moles to mass and mass to moles.

Stoichiometry, writing balanced reaction equations, interpreting equations, problems based on equations, limiting reactant, percent yield, heat and chemical reactions.

Periodic table, chemical families, electron distribution in atoms, trends in atomic properties, Atomic radius, ionization energy, electron affinity, trends in chemical properties.

Chemical bonding, formation of ionic compounds, formation of molecular compounds, bond polarity, electronegativity, molecular geometry and polarity.

Gases, volume and pressure, units of pressure, volume and temperature, Kelvin scale and absolute temperature, partial pressure, volume and numbers of molecules, gas stoichiometry