

Chemistry 40S Course Outline

Course Description:

Chemistry 40S provides students with the opportunity to apply the knowledge, skills and attitudes developed in Chemistry 30S to a more thorough and mathematical study of chemical reactions and processes. Chemistry 40S will focus on qualitative and quantitative analysis of atomic structure, reaction rates, reaction equilibria, acids and bases, solubility and electrochemistry.

Course Requirements: In order to be successful in Chemistry 40S it is important that students have completed Chemistry 30S. Since Chemistry is by nature quite mathematical, it is important that students have a credit in Applied or Pre-Calculus Mathematics 30S. Students will also need their own calculators.

General Learning Outcomes: The Chemistry 40S Curriculum has numerous general outcomes. They can be summarized as follows:

- A. Understanding the Nature of Science and Technology
- B. Identify factors that affect health in relation to Science, Technology, Society and the Environment
- C. Demonstrate scientific and technological skills and attitudes
- D. Understand essential science knowledge
- E. Recognize unifying concepts of science

For a complete list and description please see:

http://www.edu.gov.mb.ca/k12/cur/science/found/gr12_chem/section1.pdf

Resources: Students will not be receiving a signed out textbook for this course. The textbook that we will be using for a few classes Chemistry: Matter and Change published by Glencoe. If students feel like they would like to sign out a textbook to do extra work throughout the course, they may do so. There are multiple websites that can also help student understanding of chemistry such as:

<https://phet.colorado.edu/en/simulations/category/chemistry>

<https://www.khanacademy.org/science/chemistry>

http://misterguch.brinkster.net/practice_calculationsworksheets.html

<http://www.chem.purdue.edu/gchelp/>

<http://www.edu.gov.mb.ca/k12/dl/downloads/>

40S Chemistry Unit Descriptions:**1) Atomic Structure**

This unit will expand on the basics of atomic structure introduced in grade 10 science and Chemistry 30S. The focus of this unit will be on describing energy levels of electrons in atoms. Describing the electron structure of atoms will allow for further discussions on periodic trends among atoms as well as bonding relationships.

2) Aqueous Solutions

Students will describe what happens when substances are dissolved into water and with the subsequent reactions that occur once in solution. The most challenging topic that arises is balancing redox reactions.

3) Kinetics

This unit is about reaction rate. It covers collision theory which qualitatively describes reaction rates and then it goes on to mathematically calculate reaction rates. This chapter is foundational for the rest of the course.

4) Chemical Equilibria

Students will qualitatively and quantitatively look at equilibrium reactions.

5) Acids and Bases

This chapter begins with 3 different definitions of acids and bases. It then moves on to look at chemical indicators and to quantitatively analyze neutralization reactions and understand the pH scale.

6) Electrochemistry

This chapter looks at an application of redox reactions – the battery. Students will study how electricity can be generated using chemical reactions

For a complete list and description of all of the outcomes that will be covered please see the provincial curricular document:

http://www.edu.gov.mb.ca/k12/cur/science/found/gr12_chem/full_doc.pdf

Course Evaluation Structure:

Students will be assessed the following ways

- 1) Regular Assignments – Assignments are always due at the beginning of a class. Any assignment handed in after the class starts is late. One of your assignments is going to be a short (2-5 minute) class presentation based off of a book called The Disappearing Spoon. Value: 20% of term mark
- 2) Labs – A student's lab mark comes from the completion of the lab, the lab report, and any other observations made of the student while they are doing the lab. Students will always be completing their own lab reports. Reports are to be formal and to be completed in full sentences with good grammar. Value: 20% of term mark
- 3) Tests – Value: 60% of term mark
- 4) Final exam
The final mark will be 75% term marks and 25% final exam.

Student Responsibilities and Expectations:

Students are expected to follow the policies and expectations as laid out in the student handbook.

Below are a few highlights but please refer to the handbook for a complete list.

- 1) Students are expected to be on time. If you are late, please enter quietly and respectfully.
- 2) No food or drink is allowed in class. There are 3 exceptions: 1) water is permitted when there are no lab supplies in the room 2) if food is brought for the purpose of community and sharing

with the entire class 3) if food was brought for the purpose of sharing before class and it isn't finished yet.

- 3) All assignments are to be completed on time. This means they are to be handed in at the beginning of the class. If an assignment is late the expectation is that the student will be going to the homework room during lunch times to complete the assignment. As well, 5% of the value of the assignment will be deducted per day up to a maximum of 25%.
- 4) Only one person will be allowed out of class at a time with given permission. This is a privilege and can be taken away if abused. Breaks should be used to get necessary supplies and to use the washroom.
- 5) Cell phones are not to be a distraction in class. They may not be used as a calculator. If you bring a phone to class the ringer must be off (not even on vibrate). The phone must sit on your table in front of ALL of your other supplies. It may not be in a pocket, purse, or anywhere else. You may not send any messages in class. If there is a time where the no one is addressing the class (teacher, student, video, announcement, etc.) students will be permitted to check their phone and briefly read a message, but sending of messages is not allowed. If a student has a cell phone, they will not be allowed to leave during class time with their phone (this includes getting a drink or going to the washroom – phones stay on the table in front of **ALL** of your other supplies). If you can't leave your phone behind you don't need to go to the washroom. If a student abuses the privilege of having their phone with them in class they will be required to leave the phone on the front table for future classes.
- 6) Students are expected to follow all safety rules. This includes no throwing things. If a student breaks any safety rules during a lab they may be removed from that lab, receive a 0% on that lab and possibly be banned from all future labs.
- 7) Please do not miss any tests or labs. If a student misses a test the test will be written on the first day back at school. If a student misses a test or a lab without a valid reason like illness or an appointment, they may receive a mark of 0% with no chance of redeeming that mark. Note: work does not count as a valid reason.
- 8) Cheating will result in 0% for all involved parties.
- 9) If you are absent from class it is your responsibility to find out what you missed. Please get any notes that you missed. After you have the notes you may come and ask for help on understanding them.
- 10) No hats or headwear is allowed during class time.

Extra Help:

I am very willing to offer extra help if it is needed. I am usually available for extra help before school or at 12:10 most days. Please let me know and I will try to make sure I don't book myself with other things during those times.

Contact:

Please feel free to contact me at:

(204) 434-6415 or

chthiessen@hsd.ca