**Chemistry 20 Syllubus**

**Teacher**: Mr. Bannister

**Email**: bannisterl@fsd38.ab.ca

**Location**: TBA

**COURSE DESCRIPTION**

Chemistry 20 builds on the chemistry from Science 10, continuing the journey of chemistry concluding in Chemistry 30.  Matter, and chemical change are the themes common to all the units of Chemistry 20. An understanding of the nature of matter and an analysis of its changes is essential for understanding what is happening and for predicting what will happen. Control of change is essential for the design of technological systems. The principles of conservation of mass and energy help to predict and explain the changes that occur within a closed system.

**COURSE OBJECTIVES**

* Gain an increased understanding of the nature of chemistry and use the scientific method to answer questions and solve problems.
* Develop awareness of the impact of chemistry and related technologies on society, the economy and upon the local and global environment.
* Develop safe and efficient laboratory skills, and demonstrate the ability to work cooperatively with others.
* Be able to apply the knowledge and skills learned in class to choices and decisions involving science and technology, at home, or in the workplace.
* Students will gain the ability to make informed decisions about further career studies and careers in science.

**LEARNING OUTCOMES**

The Chemistry 20 program is based on the Alberta Program of Studie. The time designated to anyone unit may vary, depending on the number and type of skills and activities to be integrated into that theme. Every attempt will be made to teach concepts in an integrated fashion so that their interrelationship will be understood and applied by students.

**SEQUENCE OF UNITS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Chemical Foundations** | L1 - Science and Technology in Society  L2 - Elements and Ions  L3 - Ionic Compounds  L4 - Molecular Elements and Compounds  L5 - The Particle Model | What is the importance of developing  models, using empirical evidence, and developing theories to explaining and understanding the structure and properties of ionic compounds? |
|  | **M1 Project** |  |  |
|  | **Chemical Compounds** | L1 - Bonding Theory and Lewis Formulas  L2 - Molecular Shapes and VSEPR Theory  L3 - Molecular Polarity  L4 - Intermolecular Forces | How are models, empirical evidence, and theories used to explain and understand the structure and properties of molecular substances |
|  | **M2 Project** |  |  |
|  | **Behaviour of Gases** | L1 - Properties of Gases and Boyle's Law  L2 - Kelvin Temperature and Charles' Law  L3 - Gay-Lussac's Law of Combined Volumes and Avogadro's Theory | What is the relationship among pressure, temperature, volume, and amount of a gas?  How is the behaviour of gases used in various technologies? |
|  | **M3 Project** |  |  |
|  | **Properties of Solutions** | L1 - Classifying Matter and Solutions  L2 - Dissolving Substances  L3 - Solubility  L4 - Concentration  L5 - Concentration in the Lab | What are some of your preconceived notions about solution chemistry?  Have you acquired new knowledge from this module that contradicts your prior beliefs? |
|  | **M4 Project** |  |  |
|  | **Acids and Bases** | L1 - Properties of Acids and Bases  L2 - pH and pOH Calculations  L3 - Strengths of Acids and Bases  L4 - Advanced pH and pOH Calculations  L5 - Indicators | Scientific theories are human inventions used to explain events that occur in nature and predict future results. While learning acid-base chemistry, you will pay more attention to different theories. What are the limitations of the different theories you will use?  How do significant digits communicate the appropriate information about acidic and basic solutions? |
|  | **M5 Project** |  |  |
|  | **Stoichiometry** | L1 - Chemical Equations  L2 - Gravimetric Stoichiometry  L3 - Gas Stoichiometry  L4 - Solution Stoichiometry | How do scientists and engineers use mathematics when analyzing chemical change?  How is a balanced chemical equation used to predict quantities of species involved in a chemical process? |
|  | **M6 Project** |  |  |
|  | **Chemical Anaylsis** | L1 - Limiting Reagents  L2 - Titration Analysis  L3 - Titration Curves and Selecting Indicators | How is stoichiometry used in the design of a chemical system?  How is stoichiometry used in the analysis of a chemical system? |
|  | **M7 Project** |  |  |

|  |  |  |
| --- | --- | --- |
| **TEXTBOOK** | Nelson Chemistry, F. Jenkins at al.  Online Textbook Resources <http://www.nelson.com/ABchem20-30/>  Click on "Student Centre" on the left. Login found below:  nelsonchem\_student  nelsonchem\_onlinelearning | http://www.nelson.com/ABchem20-30/images/bookcover.jpg |

**ASSESSMENTS AND EVALUATIONS**

In each topic, you will be given a project that provides you an opportunity to demonstrate your knowledge and understanding gained during the topic. Each project will have a description outlining what is required, as well as a rubric showing how you will be evaluated once you have submitted the project for grading.  The grading scheme for the course is as follows;

|  |  |
| --- | --- |
| **Course 70%** | Chemical Foundations (10.00%)  Chemical Compounds (10.00%)  Behaviour of Gases (10.00%)  Properties of Solutions (10.00%)  Acids and Bases (10.00%)  Stoichiometry (10.00%)  Chemical Analysis (10.00%) |
| **Final Exam**  **30%** | Final Exam (Part A)  Final Exam (Part B) |

**REQUIRED MATERIALS**

* A binder, in order and up-to-date, complete with both lined and blank paper
* 2+ writing utensils, incase you lose the first one
* Calculator (e.g. TI-84 or better is recommended, or equivalent)
* Geometry Set (containing ruler, protractor, compass,etc.)
* Coloured Pencils

**BEHAVIORAL EXPECTATIONS**

* I expect that you will attend class every day, prepared to work, with a writing utensil, an organized binder, and any other supplies or textbooks that are being used for the unit being studied.
* I expect that cell phones will be turned off before you enter the classroom; phones that are being used during class or that ring, chime, vibrate, etc. will be confiscated until the end of the lesson. Repeat offenders will receive further disciplinary action at the teacher/administrator level.
* I expect that any food or drink consumed in class is healthy and does not disturb others (smell, noises,or messes). The moment eating/drinking becomes detrimental to learning is the moment it becomes unacceptable.
* I expect that you will treat your teacher and fellow classmates with respect. Everyone has a right to be heard and to learn in a secure environment.
* I expect that you will treat the property of the school and the property of others in a proper manner.
* I expect you to always do your best. This means that you will participate in all activities involved in this class, including listening and viewing activities, and you must hand assignments in, on time and complete. I expect you to do well—and I know that you will.

**ATTENDANCE**

* Attendance is taken daily and SynerVoice—an interactive communication tool that delivers daily attendance and occasional school-wide messages to parents—is in operation at FCHS/AHSFA.
* IT IS THE STUDENT'S RESPONSIBILITY TO DETERMINE WHETHER ANY EVALUATIVE ACTIVITY HAS BEEN MISSED
* If a student is excusably absent from class on days during which an assignment, quiz, examination or other evaluation activity occurs, the student shall be given the opportunity to make up the missed work through either the original or replacement work if the following conditions are met:
  + If a student is absent, a parent must call the school to indicate the reason for the absence.
  + In the case of a missed test, the student must provide a note from home explaining the absence and a plan should be put into place to ensure the learning objectives are met.
  + An alternative learning session may be required in order to make up any missed work.

**LATES**

* I expect that you will arrive to class on time (after the bell the door is closed and locked).
* If you are late for any reason, you will be marked late in Maplewood and disciplined according to school policy.
* Students will be responsible for material and information missed as a result of tardiness.

**DISCIPLINE CYCLE**

* If a student disrupts learning in the classroom or fails to adhere to school and/or classroom policies, s/he will be verbally warned.
* If the behavior continues s/he will be asked to stay after class or return for an informal break/lunch/after school detention to discuss his/her behavior.
* If the behavior continues, then parents/guardians will be contacted and a formal, after school detention will be arranged.
* If the student continues to disrupt learning in the classroom, or fails to attend detention, parents and administration will be contacted to discuss further disciplinary action.

**ACADEMIC EXPECTATIONS**

**EARNED ZERO POLICY**

* Students who demonstrate our core values of Courage, Commitment, and Integrity recognize that even though they may not be present at school on the day an assignment is due, the assignment is still expected and typically turn in their work prior to the absence, send day-of via e-mail, or drop off through a friend / parent. Regardless, if absent on the Due Date, the assignment is due the day you return to school.
* If absent when the assignment is given, you are still responsible for the Due Date—unless away for an extended time, then an extension may be given.
* A note about the terminology of Due Dates and Deadlines:
  + Due Date—refers to the day the assignment is due.
  + Cut-off Date / Deadline—refers to the final date the assignment will be accepted.  For this diploma course, the Cut-off date is near / before the Diploma date.   Please refer to the course calendar for all important dates.
* The following assignment policy will apply to the class:
  + Assignments submitted on or before the Due Date—will be marked in as timely a fashion as possible (typically 2 weeks or less, depending on the size / type of assignment). These assignments will be given a rubric, and formative feedback.
  + Assignments submitted after Cut-off Date—will be awarded a zero. By this point most students have received their work back and thus the opportunity for Academic Dishonesty is greater. Assignment / curricular objectives may be demonstrated using an alternative assignment.

**EXTENSIONS**

* Extensions on assignments will only be considered if a student makes arrangements at least one (1) day prior to the due date. An accompanying signature/note from a parent indicating the circumstances of the extension would be required.

**ACADEMIC DISHONESTY (CHEATING)**

* Providing or using unauthorized assistance, such as:
  + Copying another’s work (including plagiarism)
  + Telling others what is on a test
  + Presenting another’s ideas as your own
  + Taking notes/aids into a test situation
* Will result in the student(s) receiving a zero (0) without further re-attempt; and be referred to administration.

**MAPLEWOOD & MOODLE**

* Maplewood provides information about your grades and attendance. It can be accessed by following the links on the school’s webpage (<http://fchs.fsd38.ab.ca/>).  Please contact either your Leadership teacher or the main office (403-938-6116) for help with accessing these services.
* Assignments can be found on-line on Moodle by following the links on the school’s webpage; or via <http://thehub.fsd38.ab.ca>.  Student username and password will be required to access the entire course.