**Physical Science 20 Course Outline**

**Course Description**

This course combines chemistry and physics in an integrated manner to investigate concepts related to the foundations of chemistry (including the mole and quantitative analysis of molecules and chemical reactions), heating and cooling, and the characteristics and properties of waves.

**Core “Units” and Related Outcome**

The plan is for each outcome to be covered in eight to ten classes. This will allow us to get through all the content in the course. This ***will require*** you to do some homework and/or to see me at lunch or after school when you require additional help.

**Career Exploration**

PS20- CE1 – Explore physical science related career paths in Saskatchewan, Canada and the world.

**Student-Directed Study**

PS20-SDS1 – Create and carry out a plan to explore one or more topics of personal interest relevant to Physical Science 20 in depth.

**Foundations of Chemistry**

PS20- FC1 – Predict products of the five basic types of chemical reactions and evaluate the impact of these reactions on society and the environment.

PS20- FC2 – Construct and understanding of the mole as a unit for measuring the amount of substance.

PS20- FC3 – Use stoichiometry to determine the relative amounts of substances consumed and produced in a chemical reaction.

**Heat**

PS20- HT1 – Analyze, qualitatively and quantitatively, the effect of heat on matter during temperature changes and changes of state using the kinetic molecular theory.

PS20- HT2 – Determine experimentally the quantities of heat involved in chemical reactions.

**Properties of Waves**

PS20- PW1 – Investigate the properties and characteristics of one-, two- and three-dimensional waves (eg. mechanical, sound and light) in at least three different media (eg. springs, ropes, air and water).

PS20- PW2 – Examine, using physical materials, ray diagrams and mathematical equations, how waves reflect from a variety of barriers.

PS20- PW3 – Analyze, using physical materials, ray diagrams and mathematical equations, how wave refract at boundaries between different media.

**Evaluation**

***Final Exam 25 %***

***Term work 75%***

 Outcome Exams 50 %

 Summative Assignments (One Review per Outcome) 50 %

 Formative Assignments and Quizzes 0 %

In each term, a variety of content will be covered. Each outcome will be followed by an exam. To expand on your knowledge, the following will be implemented: additional problems, labs and/or essays and projects. These will be formative assignments but ***they are still expected to be completed and most will be expected to be handed in.***

**Expectations and Important Information**

1. Give attention and respect in class.

2. Do not allow yourself to be distracted by electronic devices.

a. **No cell phones. (Cell phones ARE to go in the basket when you enter the room.)**

b. No other electronic devices unless permission is granted **that day** by the teacher.

3. Be in the classroom with all materials needed for the class before the bell.

4. If you are late, quietly join the class.

 a. If the door is closed, knock and wait for the door to be answered.

 b. Quickly catch up on what is happening.

5. Be responsible.

 a. You are responsible for any and all assignments when absent. If absent, you are required to find out what was missed.

 b. If you know you will be missing prior to the date, feel free to ask, at an appropriate time, what we will be doing. I will do my best to provide you with materials and instruction so you will not fall behind.

6. It is your responsibility to **ask questions immediately** when you do not fully understand the concepts being taught. Reviewing is a skill you should be developing on your own. If you need help on how to study please come to see me.

7. Assignments

 a) If assignments are not complete on the date that they are due, they MUST be handed in on that date nonetheless. There are then two options which will be chosen by your teacher. One is that you still complete the assignment. This will require that you stay at a time which is convenient **for your teacher**. The second option is that you will be given a completely new assignment. *Exceptions:* by ***prior*** arrangement or sickness.

 b) Late assignments will be accepted and reassessing assignments will be allowed until the test for each outcome is written. Following the test for the outcome, no further reassessing will be allowed.

8. If you need extra help, PLEASE do not leave it until the week before the final exam.

I will be available at lunch most days to assist you with any difficulties you may be having and/or to allow you to reassess or complete late assignments.

9. Attendance: Regular attendance is necessary for success in this class. At 5 unexcused absences your parents will be notified. At 10 unexcused absences your parents/guardians will be requested to come in for a meeting with your teacher and administration. If your parents/guardians fail or refuse to come in for a meeting you and they will be forfeiting your credit for this class.

10. Attendance: Regular attendance is necessary for success in this class. At 5 unexcused absences your parents will be notified. At 10 unexcused absences your parents/guardians will be requested to come in for a meeting with your teacher and administration. If your parents/guardians fail or refuse to come in for a meeting you and they will be forfeiting your credit for this class.

11. Tests:

 a) You will always be notified of an exam at least a few days (often a week) ahead of time. All students will write the exam on the appointed day.

 b) If you are aware that you will be absent on the day set for an exam you must notify your teacher immediately. If you miss an exam for a legitimate reason, you must bring a note of explanation from home when you return to class, and make arrangements as soon as possible to write the exam. If you miss an exam and there is no legitimate reason, you may forfeit your chance to write the exam, thus not completing the summative work for the year, meaning you will not receive your credit.

 c) Exams are considered the assessment of what has been mastered. Re-writes will not be allowed unless a majority/the entire class needs to be re-taught and re-assessed.

**To be successful in Physical Science 20 you should do most of the following:**

* ask questions during class when you don’t understand.
* review your notes after class (2 – 5 minutes after class or at night).
* ensure due dates are met.

Use your time productively in class by:

* + doing class work in class rather than other course work.
	+ staying focused on the task at hand rather than wasting valuable assignment and practice time socializing.
	+ completing and correcting practice problems and assignments AS SOON AS POSSIBLE AFTER THEY ARE ASSIGNED. Delaying doing them until the night before the exam will result in frustration with the material.
	+ getting notes and completing missed work immediately following any missed class.
	+ coming for help when you are struggling well before an exam or the due date of an assignment (at lunch or after school). Often 5 – 10 minutes is all that is need to clarify a concept or procedure.
	+ studying well in advance for quizzes and exams by:
		- re-doing practice problems and assignment problems (not all of them but enough to know if they have got the skill). Simply reading your notes is NOT enough for most of us.
		- reviewing your notes for factual information, concepts and formulas/charts that were highlighted to be important.

**Good luck and have a good year!!**

**Instructional Strategies**

Direct Demonstrations/Lectures/Physics Videos

Indirect Individual/Group Presentations/Problem Solving

Experiential Conducting Experiments/Simulations/Field Trips

Independent Study Essays & Reports/Homework/Science Projects

**Adaptive Dimension**

The adaptive dimension aims to meet learner needs and is an expectation inherent in the Goals of Education. The continuum of curricular programs authorized by Saskatchewan Education recognizes the need for variations in curriculum content and delivery mechanisms. The continuum indicates that within each program, and therefore within each course of study, adaptation is required. Teachers are empowered to adjust the curriculum content in order to meet students’ needs; as professionals they must ensure that the instructional approaches are also adapted.

Physical Science 20 will be a challenging program based largely on lectures, assignments, and labs. Students will be somewhat responsible for their own learning. This will come in the form of assigned readings, questions and problems assigned for homework, and essays and projects. The instruction for Physical Science 20 will be delivered in a manner that will benefit all students while at the same time preparing them for Physics and Chemistry 30.

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**Expectations and Important Information**

*In order to create the most effective classroom atmosphere with the highest level of success, we must create a safe environment that encourages each of us to set and achieve goals. The following must be adhered to in order to succeed.*

1. Give attention and respect to others’ opinion and the opportunity to voice that opinion.

2. Do not allow yourself to be distracted by electronic devices.

a. **No cell phones. (Cell phones ARE to go in the basket when you enter the room.)**

b. No iPod Touches or other hand held devices unless permission is granted **that day** by the teacher.

3. Be in the classroom with all materials needed for the class before the bell.

4. If you are late, quietly join the class.

 a. If the door is closed, knock and wait for the door to be answered.

 b. Catch up on what is happening quickly.

5. Be responsible.

 a. You are responsible for any and all assignments when absent. If absent, you are required to find out what was missed.

 b. If you know you will be missing prior to the date, feel free to ask, at an appropriate time, what we will be doing. I will do my best to provide you with materials and instruction so you will not fall behind.

6. It is your responsibility to **ask questions immediately** when you do not fully understand the concepts being taught. Reviewing is a skill you should be developing on your own. If you need help on how to study please come to see me.

7. There will be questions/assignments given almost every day. You will not necessarily be given class time to finish the questions/assignments, but they MUST be completed on the due date.

8. Assignments

 a) If assignments are not complete on the date that they are due, they MUST be handed in on that date nonetheless. There are then two options which will be chosen by your teacher. One is that you still complete the assignment. This will require that you stay at a time which is convenient **for your teacher**. The second option is that you will be given a completely new assignment. *Exceptions:* by ***prior*** arrangement or sickness.

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**Good luck and have a good year!!**