 COLLINGWOOD SCHOOL

 *Preparing young people to thrive in meaningful lives*

***Science10 Course Outline 2013-2014***

The Prescribed Learning Outcomes for Science 8 to 10 are grouped under the following curriculum organizers:

* Processes of Science
* Life Sciences
* Physical Sciences
* Earth and Space Science

 ***Students will learn to prepare for, study for, and write a cumulative exam that covers all material in this discipline.***

***Texts:*** *BC*Science 10 online textbook, *BC*Science 10 Student workbook and data booklet. Students will need to bring their workbook and data book to class unless the teacher tells them otherwise. The e-text has links to the ministry website and many other helpful sites for review or enrichment. Students are expected to use this website on a regular basis and without reminder from their teacher.

**e-text: www.bcscience.com/bc10/**

**username: FA99**

**password: GK99**

***Teachers:***

 Evan Hall evan.hall@collingwood.org

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***Supplies:***

You will need a pen, pencil, electronic device (for e-text), highlighters, scientific calculator, small metric ruler, eraser and medium binder containing lined and unlined paper. Students will keep a well-organized binder; lab reports and drawings should be inserted into the binder at the appropriate locations.

***Evaluation:***

20% of the final grade in Science 10 will be based on the provincial examination in June.

Your school grade in Science 10 is cumulative over the year and will be determined as follows:

* 40% chapter and unit tests
* 15% quizzes based on daily work
* 20% labs and assignments
* 10% projects and research
* 15% participation and homework

***Expectations:***

* 1. Collingwood’s Morven Campus (grades 8-12) has a policy in place regarding **student work habits. Refer to the rubric on the next page.**
	2. **Attendance** is very important in an activity-based course like Science. Students who miss class are responsible for all missed work. Unexcused absences will result in zeros for any missed assignments, quizzes and tests. Please discuss known absences in advance with your teacher.
	3. **Late submissions**: Please read the Collingwood School Punctuality Protocol.

<http://www.collingwood.org/uploaded/user_files/august_mailouts/23._Punctuality_Protocol.pdf>

* 1. **Participation:** All students are expected to participate in classroom discussions and activities. Part of participation involves being prepared for class. Please ensure that you bring all necessary supplies. You should arrive on time and ready to work, ask questions, and provide a positive element to classroom discussions.
	2. **Safety:** Must pervade all areas of the classroom. Safety in the science classroom is our number one priority due to the potential for danger due to equipment and chemicals. Please do not run or perform dangerous actions in the lab. If you are curious and wish to perform some experiment and are not sure as the safety of your actions, ask the instructor. In addition, please record your own data, be respectful of others by being appropriately quiet, and always clean up your own equipment.
	3. **Homework:** will be assigned on a regular basis. You should expect to do approximately one hour of homework per class. Some students will require more time spent on assignments than others. In the absence of a specific assignment, students should spend time updating their notes, reviewing the day’s material or doing remedial work in an attempt to understand the material covered.
	4. **Tutorial help:** is always available and you are strongly encouraged to get help as soon as difficulties occur. Please see your teacher for the tutorial schedule. It is each student’s responsibility to approach the teacher for help when difficulties arise.
	5. **Absence from tests:** The Collingwood test policy will be adhered to.

<http://www.collingwood.org/uploaded/user_files/august_mailouts/22._Academic_Integrity.pdf>

If a student misses a test due to illness or some other legitimate excuse, they will be able to make up the test on the ***following Thursday morning at 7:00am.***

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| --- | --- | --- | --- | --- |
| **Work Habits** | **FULLY MEETING (FM)** | **MEETING (M)** | **MINIMALLY MEETING (MM)** | **NOT MEETING (NYM)** |
| **RESPONSIBILITY** | **FM (ALWAYS)** | **M (\*MOSTLY)** | **MM (INCONSISTENTLY)** | **NYM (SELDOM)** |
| **Punctuality** | Always on time for class | Mostly on time for class | Inconsistently on time for class | Seldom on time for class |
| **Preparedness - materials** | Always prepared for class | Mostly prepared for class | Inconsistently prepared for class | Seldom prepared for class |
| **Completion of in-class assignments** | Always completes work on time and is on-task during classroom activities | Mostly completes class work in a focused manner | Inconsistently – work is completed in class in a focused manner | Seldom completes work during class time; focus frequently slips |
| **Respect for work** | Always respects the quality of own work | Mostly respects the quality of own work | Inconsistently respects the quality of own work | Seldom respects the quality of own work |
| **Homework** | Homework assignments are always completed on time | Homework assignments completed on time | Inconsistently – Homework is completed on time | Seldom completes homework |
| **Catches up on missed work** | Independently catches up on missed work; work always fully meets expectations | Mostly makes up missed work and meets expectations | Missed work is made up, but might require extended deadlines | Seldom is missed work completed |
| **ATTITUDE** | **FM (ALWAYS)** | **M (\*MOSTLY)** | **MM (INCONSISTENTLY)** | **NYM (SELDOM)** |
| **Attitude (overall)** | Engages in and demonstrates great interest in learning | Mostly engages in and demonstrates an interest in learning | Inconsistently engaged in classroom activities | Seldom engages in class activities |
| **Participation (attitude/contributes)** | Participates and/or makes a positive contribution in classes | Mostly participates in class discussions | Inconsistently participates in classes/discussions | Seldom contributes to the classroom environment  |
| **Team work** | Acts as a leader with other students | Mostly works well with others | Inconsistent ability to work with other students | Seldom works well with others |
| **Respect for others** | Respectful and encouraging of other students and their work | Most often is respectful of other students and their work | Generally respectful of other students and their work | Seldom is respectful of other students and their work |
| **Following instructions** | Listens and follows teacher instructions | Mostly listens and follows teacher instructions | Inconsistently listens and follows teacher instructions | Seldom follows instructions |
| **INDEPENDENCE** | **FM (ALWAYS)** | **M (\*MOSTLY)** | **MM (INCONSISTENTLY)** | **NYM (SELDOM)** |
| **Effort** | Puts forth an energetic/vibrant effort | Mostly puts forth strong effort | Inconsistently puts forth effort | Seldom applies him/herself |
| **Time Management** | Manages time extremely well and is able to work without direct supervision; on task | Mostly often manages time well and is able to work without direct supervision | Inconsistently manages time; does require direct supervision | Seldom is on task and often requires direct supervision  |
| **Extra help** | Seeks extra help when needed; regularly attends tutorials | Mostly attends tutorials when needed | Inconsistently seeks help when needed | Seldom seeks help and does not attend tutorial sessions |
| **Initiative** | Willing to ask for assistance and helps other | Most often helps others | Inconsistently helps others | Seldom helps others |
| **Risk Taking** | Demonstrates a high degree of willingness to take chances | Mostly willing to take chances | Inconsistently willing to take chances | Seldom willing to take chances |

* 1. **Lab Procedures and reports:**

1. Unless otherwise instructed, work with one partner only.

2. It is assumed that behaviour during labs will be mature and serious.

3. All necessary safety precautions must be taken. Safety will be discussed as required

 before the beginning of the experiment.

4. When you have finished the experiment, clean up your area and return all equipment to

 Its storage place. Your area must be in good order before you leave.

5. Lab reports will usually be collected at the beginning of the class the day after the

 experiment is done. Each lab will be marked out of 10 or 20. Lab report marks will be

 assigned on the basis of:

a) lab techniques/behaviour/preparation/clean‑up.

b) neatness and completeness of report.

c) accuracy of observations and results.

d) answers to questions.

e) punctuality. Marks will be deducted for labs not turned in on time. Reports will not

 normally be accepted for marks after class reports are returned.

f) originality. Even though you work with a partner, and your data are shared, the lab

 write‑up must be your own.

* 1. **Diagrams** must be drawn with a sharp pencil. Label lines are to be in pencil and drawn with a ruler and labels must be printed in ink or in pencil.

**Critical Thinking**

The Science Department considers the development of the critical thinking skills of our students to be essential to their success in science and in life. Critical thinking is a complex process with many essential facets. In order to address this complexity we have chosen areas of focus for each grade. These are indicated in the table below. As students progress through these grades they will continue to master the skills from earlier grades. The skills chosen as a focus for later grades will also not be ignored in the earlier grades. Each student report card will include a comment on the progress being made in the grade specific area of critical thinking.

|  |  |
| --- | --- |
| **Critical Thinking Skills** | **Grade**  |
| Ask pertinent questions | 7 |
| Adjust opinions when new facts are found.  | 7 |
| Admit a lack of understanding or information where necessary | 7 |
| Look for evidence | 8 |
| Examine problems carefully | 8 |
| Analyze data | 8, 9 |
| Define criteria | 9 |
| Weigh evidence and draw reasoned conclusions | 8,9 |
| Reject incorrect or irrelevant information | 10 |
| Assess statements and arguments | 10, 11 |
| Identify assumptions and biases | 10, 11 |
| Consider a variety of explanations  | 11, 12 |
| Identify missing information | 11 |
| Suspend judgment until all facts have been gathered and considered | 12 |
| Synthesize concepts across disciplines | 12 |

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http://zaidlearn.blogspot.com/2008/03/coaching-critical-thinking-to-think.html

***Curriculum***

**Processes of science**

*It is expected that students will:*

* A1 Demonstrate safe procedures
* A2 perform experiments using the scientific method
* A3 represent and interpret information in graphic form
* A4 demonstrate scientific literacy
* A5 demonstrate ethical, responsible, cooperative behaviour at all times
* A6 describe the relationship between scientific principles and technology
* A7 demonstrate competence in the use of technologies specific to investigative procedures and research

**Specific Chapters of the textbook and supplements:**

* Safety in Your Science Classroom pp. xxii-xxv.
* Science Skills
* Integrated Throughout the Course
* Class Notes and Handouts

**UNIT 1:**

**Life Science: Sustainability of Ecosystems**

*It is expected that students will:*

* + B1 explain the interaction of abiotic and biotic factors within an ecosystem
	+ B2 assess the potential impacts of bioaccumulation
	+ B3 explain various ways in which natural populations are altered or kept in equilibrium

Vocabulary

abiotic, aeration, adaptive radiation, bioaccumulation, biodegradation, biome, biotic, climax community, carbonate, commensalism, decomposers, denitrification, ecological succession, ecosystem, food chains, food pyramids, food webs, heavy metals, keystone species, lightning, mutualism, nitrification, natural selection, nutrients, parasitism, PCBs, pesticides, pH, phosphorus, photosynthesis, potassium, predation, proliferation, symbiosis, trophic levels

**Specific Chapters of the textbook and supplements:**

* Chapter 1: ***Biomes and ecosystems are divisions of the biosphere***
* Chapter 2: ***Energy flow and nutrient cycles support life in ecosystems***
* Chapter 3: ***Ecosystems continually change over time***
* Class Notes and Handouts

**UNIT 2:**

**Physical Science: Chemicals and Radioactivity**

*It is expected that students will:*

* C1 differentiate between atoms, ions, and molecules using knowledge of their structure and components
* C2 classify substances as acids, bases, or salts, based on their characteristics, name, and formula
* C3 distinguish between organic and inorganic compounds
* C4 analyse chemical reactions, including reference to conservation of mass and rate of reaction
* C5 explain radioactivity using modern atomic theory

Vocabulary

acids, alpha particle, atomic number, atoms, bases, beta particle, Bohr diagrams, bromothymol blue, catalyst, combustion, compounds, concentration, conservation of mass, covalent bonding, decomposition, electron, fission, fusion, gamma radiation, half‐life, indigo carmine, inorganic, ionic bonding, ions, isotope, Lewis diagrams, light, litmus paper, mass number, methyl orange, molecules, neutralization (acid‐base), neutron, organic, phenolphthalein, polyatomic, proton, radioactive decay, salts, single and double replacement, surface area, symbolic equations, synthesis, valence electron

**Specific Chapters of the textbook and supplements:**

* Chapter 4: ***Atomic theory explains the formation of compounds***
* Chapter 5: ***Compounds are classified in different ways***
* Chapter 6: ***Chemical reactions occur in predictable ways***
* Chapter 7: ***The atomic theory explains radioactivity***

Class Notes and Handouts

**UNIT 3:**

**Physical Science: Motion**

*It is expected that students will:*

* C6 explain the relationship of displacement and time interval to velocity for objects in uniform motion
* C7 demonstrate the relationship between velocity, time interval, and acceleration

Vocabulary

acceleration, displacement, slope, time interval, uniform motion, velocity, *scalar, vector*

**Specific Chapters of the textbook and supplements:**

* Chapter 8: ***Average velocity is the rate of change in position***
* Chapter 9: ***Acceleration is the rate of change in velocity***
* Class Notes and Handouts

**UNIT 4:**

**Earth and Space Science: Energy Transfer in Natural Systems**

*It is expected that students will:*

D1 explain the characteristics and sources of thermal energy

D2 explain the effects of thermal energy within the atmosphere

D3 evaluate possible causes of climate change and its impact on natural systems

Vocabulary

atmosphere, conduction, convection, Coriolis effect, El Niño, greenhouse gases, heat, kilopascals, kinetic molecular theory, La Niña, ozone layer, permafrost, prevailing winds, thermal energy, tornado

**Specific Chapters of the textbook and supplements:**

* Chapter 10: ***The kinetic molecular theory explains the transfer of thermal energy***
* Chapter 11: ***Climate change occurs through natural processes and human activities***
* Class Notes and Handouts

**Earth Science: Plate Tectonics**

*It is expected that students will:*

D4 analyse the processes and features associated with plate tectonics

D5 demonstrate knowledge of evidence that supports plate tectonic theory

Vocabulary

asthenosphere, continental drift theory, converging/diverging plates, earthquakes, epicentre, fault, hot spot, inner core, lithosphere, mantle, mantle convection, outer core, paleoglaciation, plate boundary, plate tectonic theory, primary waves, ridge push and slab pull, rift valley, secondary waves, spreading ridge, subduction zone, surface waves, tectonic plate, transform fault, trench, volcanic belt, volcanic island arc, volcanoes

**Specific Chapters of the textbook and supplements:**

* Chapter 12: ***Thermal energy transfer drives plate tectonics***
* Class Notes and Handouts

The End ☺