# Dr. E. P. Scarlett High School
# Science 30

| Course | |
|---|---|
| Pre-Requisite | Minimum 50% in Chemistry 20, Biology 20 or Physics 20. |
| Textbook | Science 30 |
| Supplies | Binder, loose-leaf paper, scientific calculator, pens, pencil, eraser |

| Teacher(s) | E-mail | Room |
|---|---|---|
| Mr. Colquhoun | dwcolquhoun@cbe.ab.ca | 161 |
| Ms. Young | adyoung@cbe.ab.ca | 149 |

**TEACHER COMMUNICATION**: Teachers will respond to e-mail within two business days. E-mail is the best way to contact teachers.

**COURSE DESCRIPTION**:

**Topics to be covered (in order):**

**Unit 1: Chemistry in the Environment (approximately 20 days) Unit Weight 25%**
**Key Concepts**

- acids and bases
- pH and hydronium ion concentration
- stoichiometry and titration of strong monoprotic acids and strong monotropic bases
- buffers and buffering capacity
- sources and environmental impact to $SO_x$, $NO_x$, acid deposition and photochemical smog
- sources, uses and environmental effects of organic compounds

biomagnification and persistence of pollutants

**Unit 2: Living Systems Respond to Their Environment (approximately 24 days) Unit Weight 25%**
**Key Concepts**

- structure and function of the circulatory system
- composition of human blood tissue and the role of blood
- immune response and defense mechanisms to pathogens
- cardiovascular health
- chromosomal behaviour
- principle of Mendelian genetics
- deoxyribonucleic acid DNA and protein synthesis

mutations and gene therapy

**Unit 3: Electromagnetic Energy (approximately 20 days) Unit Weight 25%**
**Key Concepts**

- devices based on electric and magnetic fields (electric motors, generators and transformers)
- the electromagnetic spectrum, its properties and its effects on living tissue
- basic properties of field theory for the comparison of gravitational, electric and magnetic fields

- principles of field theory and applications in technology
- technologies used to study the structure and history of the universe
- circuitry

**Unit 4: Energy and the Environment (approximately 12 days)  Unit Weight 25%**
**Key Concepts**

- global energy consumption and its impact on the biosphere
- sources of renewable energy
- balancing energy use with sustainable development
- conversion of solar energy, fossil fuels and wind and water power into thermal and electrical energy
- fission and fusion, nuclear change
- heats of formation and Hess's law
- nuclear, wind, hydro, biomass, tidal, fuel cell and geothermal energy technologies

## LEARNER OUTCOMES:

- **Attitudes** - Students will be encouraged to develop attitudes that support the responsible acquisition of application of scientific and technological knowledge to the mutual benefit of self, society and the environment.
- **Knowledge** - Students will construct knowledge and understandings of concepts in life science, and apply these understandings to interpret, integrate and extend their knowledge
- **Science, Technology and Society (STS)** - Students will develop an understanding of the nature of science and technology, the relationships between science and technology and the social and environmental contexts of science and technology
- **Skills** - Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively and for making informed decisions.
- Alberta Learning: https://www.alberta.ca/programs-of-study.aspx

## EXTRA SUPPORT:

- Students should make use of class time to ask for help
- Teachers are available in their classrooms at 8:30am (Mon – Thurs) for extra help
- Science help room is available 8 – 8:45 (Mon – Thurs) and Tuesday 12-12:30 in room 151
- If additional support is still needed, students should make appointments with teachers.

## LEARNER ASSESSMENT:

- Learning is a process. Teachers will use a variety of instructional tools and assessment to help students understand the Program of Study outcomes.
- Formative assessment informs instruction and provides guidance to students about how to improve.
- Summative assessment (such as quizzes and/or unit exams) will be used to verify that students have learned the intended outcomes.  As a result, summative assessments will represent a greater portion of the students' overall grade

- Teachers will post grades in Powerschool which is available for students and parents to view

**Evaluation:**

Coursework will be weighted in the following manner within each unit:

- Assignments, Laboratory Reports, Projects, Quizzes, Chapter Tests 30%
- Unit Exams 70%

Diploma exams for this year should be back to the full mandatory weighting of 30%

**CLASS EXPECTATIONS**:

- Regular attendance and a readiness to actively engage with the course content
- This is an in-person course. D2L is used for online support. Students should check D2L often for instructions and resources.
- Understanding that learning is a process which builds on prior knowledge, as a result effective study habits are required.
- When learning complex ideas, sustained motivation and cognitive engagement are required to maintain considerable mental effort. As a result, cell phone use should be minimal and appropriate for the school environment
- Academic Integrity – a commitment to the regular and honest completion of work (ie. no cheating or copying from peers or the internet). Students and parents are required to be familiar with academic integrity policies found on the school website (https://school.cbe.ab.ca/school/DrEPScarlett/teaching-learning/program-approach/academic-integrity/Pages/default.aspx).
- Students are required to complete all assessments, even when absent.
- Reasons for unavoidable absences should be communicated to teachers. It is the student's responsibility to arrange with their teacher, to make up missed assessments.

**SAFETY**:

- Students will follow all Laboratory Safety rules each time they are in a science classroom
- Laboratory safety rules are posted in classrooms and in D2L shells
- Students will complete a Laboratory Safety course in D2L prior to conducting any labs.

**LABORTORY OPPORTUNITIES**:

- Students will have the opportunity to participate in the following labs:
    - Chemistry: Titration, Esters, Concentration and Dilution.
    - Biology: Heart Dissection, Blood Pressure and Heart Rate, DNA Models.
    - Physics: Magnets, Circuit Boards, Generators vs Motors.

- Additional labs may be included if resources and time allow

| Fees | Description |
|---|---|
| $5.00 (optional) | Lab Goggles – if students would like to own their goggles, they are available to purchase in the business office (goggles are available for each lab). |

**POSSIBLE ADDITIONAL RESOURCES**:

To supplement the course material, some appropriate and supplemental videos/movies may be shown in class, including (but not limited to): Crash Course Chemistry Videos, PhET Simulations, TED Talks, magic doctor videos and youtube videos.