

Welcome to Science 10!

The goal of this course is to help you build and connect your understanding of science in the context of your daily life as well as to introduce you to the disciplines of science that you might study in future courses. Throughout this course you will explore the four Big Ideas, Content and Competencies as set by the BC Curriculum [<https://curriculum.gov.bc.ca/curriculum/science/10/core>]. The four Big Ideas are:

- **DNA** is the basis for the diversity of living things.
- Energy change is required as atoms rearrange in **chemical processes**.
- **Energy** is conserved, and its transformation can affect living things and the environment.
- The formation of the **universe** can be explained by the big bang theory.

Assessment

Throughout this course you will complete a variety of activities, each activity will include instructions and expectations.

• **Written Work:** Throughout this course you will be expected to synthesize information, conduct inquiries and express your opinion. In general, for written work I expect you to answer in complete sentences and well-thought-out paragraphs, and where necessary I expect your opinions to be supported by what you have learned. I encourage you to use additional sources, and if you do so please be sure to include the source link.

• **Projects:** The majority of the projects in this course are inquiry based which means you will be asked to explore a topic by answering a question. This may require you to do external research, conduct an experiment, collect data, hypothesize, and synthesize information. In general, for projects I expect you to document your learning in an organized way and present your findings in a summative project such as a documentary or slideshow.

How To Be Successful

1. Actively work through activity sheets, trying examples and reflecting on material.
2. Document your learning neatly and in a well-organized manner.
3. It is recommended that you keep to a regular learning routine and keep organized with a calendar. The suggested timeline in the "Course Organization" chart below may be helpful!
4. One-on-One Help is available! If you need assistance, please don't hesitate to contact me to ask a question or to set up a one-on-one appointment. We can do this in person or we can meet online using Zoom. Remember, I am your teacher and I'm here to help.

Substantive Activity (Genetic Engineering -- Step 1 & 2)

In order to be officially activated in this course you must first complete a substantive activity. For this activity you will need the 'Issues 21: Genetic Engineering' book and the accompanying worksheet. This activity explores the real world twenty-first century issues on the topic of genetic engineering such as genetically engineered food, designer babies, gene doping, Frankenfish and more. You will also explore the ethics of genetic engineering and the innovative genetically engineered solutions to global climate issues. The substantive activity covers a variety of curriculum outcomes such as:

Big Ideas

Content

Curricular Competencies

- **DNA** is the basis for the diversity of living things.
- **applied genetics** and **ethical considerations**
- Make observations aimed at identifying their own questions, including increasingly complex ones, about the natural world
- Consider social, ethical, and environmental implications of the findings from their own and others' investigations
- Contribute to care for self, others, community, and world through individual or collaborative approaches
- Contribute to finding solutions to problems at a local and/or global level through inquiry
- Communicate scientific ideas, claims, information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations
- Express and reflect on a variety of experiences, perspectives, and worldviews through **place**

Resources

- BC Science 10 Connections (Nelson, 2018)
- BC Science 10 (McGraw Hill, 2008)
- Issues 21 Genetic Engineering (Scholastic, 2015)
- Supplemental handouts and web resources

Course Organization

In the chart below you will find a list of course activities along with their grade weight and a suggested timeframe. Note that once the substantive activity is complete, the time allotted for the remainder of the course is 16 weeks.

	Suggested Time (1 week ~ 5 hours)	Weight (%)	Mark	Date
Substantive Activity (Genetic Engineering – Step 1 & 2)	1 week	5%		
Genetics				
Genetic Basics Worksheet (textbook)	2 weeks	10%		
Assignment: Making a Model of DNA (handout)	1 hour	3%		
Assignment: Mendilian Genetics Worksheet (handout)	30 min	3%		
Project: Genetic Engineering – Step 3 (research essay)	2 weeks	8%		
Physics				
Physics Worksheet	2 weeks	12%		
Project: Modelling Energy Transfer and Transformation	1 week	4%		
Project: Choose ONE Investigation 3A: Build a Rube Goldberg Machine Investigation 3B: Investigate Energy Transformation and Transfer	1 week	5%		
Project: Documentary	1 week	6%		
Astronomy				
Astronomy Worksheet	2 weeks	16%		
Project: What are our responsibilities as explorers of the universe?	1 week	5%		
Chemistry				
Chemistry Worksheet (textbook)	3 weeks	14%		
Chemistry Quiz (and study time)	1 week	9%		
Final Grade		100%		