Calgary Board of Education

**Nelson Mandela High School**
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# Biology 30 Course Outline – Fall 2023

## Teacher Contact Info


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## Course Description

From molecular biology to community ecology, Biology 30 builds on a variety of biological concepts. Students will examine how genetic information in DNA is inherited and expressed, and they'll analyze the value and impacts of new biotechnologies and treatments such as genetic engineering and hormone therapy. They'll study the nervous system and describe how the brain, eye and ear function to sense and respond to the environment. They'll explain how the endocrine system and its hormones regulate and maintain an internal balance, and they'll investigate the male and female reproductive systems, including the major processes in human fetal development. Students will gain a deeper understanding of ecology by exploring how communities change over time, and they'll apply mathematical models to explain population growth.

Biology 30 consists of four units of study: Nervous and Endocrine Systems, Reproduction and Development, Cell Division, Genetics and Molecular Biology, Population and Community Dynamics.

Assessment of the outcomes and science skills (listed on next page) will determine a student's class grade, with a scheduled Diploma Exam in January

## Course Materials and Resources

- **Required:** Binder with loose-leaf paper, pens, pencils, erasers, ruler, and calculator.
- **Optional:** Splash-proof goggles, lab apron/coat *(these will be supplied for labs as needed, but students have the option to purchase and bring their own)*
- **All required course materials, as well as additional resources, will be posted on D2L.** Textbooks may be used as a supplementary resource in class but cannot be taken home. **Students have access to a digital copy of the textbook with the username and password available on D2L.** It is important for students to take an active role in their learning and stay current in their schoolwork if away for any reason.
- Tutorials are scheduled by each teacher at least twice per week. Tutorials run either before school (8:30 am - 9:00 am) or after school (3:32 pm - 4:00 pm). Students are welcome to request additional support at any time, or to attend tutorials run by other teachers.

## Key Links:

- For a more detailed list of curricular outcomes, please see the Biology 30 Program of Studies
- NMHS Code of Conduct, Digital Citizenship, Academic Integrity, Assessment Rules

## Assessment

Student work will be assessed using the CBE High School Proficiency Scale. For more info, see: "Understanding the High School Proficiency Scale".

| CBE High School Proficiency Scale | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Beginning** | | **Developing** | | **Proficient** | | **Exemplary** | |
| **B1 – 20%** | **B2 – 40%** | **D1 – 55%** | **D2 – 65%** | **P1 – 75%** | **P2– 85%** | **E1 – 95%** | **E2 – 100%** |
| The student demonstrates a level of understanding and/or skill that is **not yet meeting** expectations of the course outcomes.<br>▪ The quality of work may be **vague** and/or **undeveloped**.<br>▪ Targeted adjustments to planning and instruction will be necessary for further learning in this area. | | The student demonstrates a **basic level** of understanding and/or skill that meets expectations of the course outcomes.<br>▪ The quality of work may be **adequate** and/or **concrete**.<br>▪ Adjustments to planning and instruction may be necessary for further learning in this area. | | The student demonstrates a **well-developed** level of understanding and/or skill that meets expectations of the course outcomes.<br>▪ The quality of work may be **clear** and/or **well-reasoned.**<br>▪ The student can be confident of being prepared for further learning in this area. | | The student demonstrates a mastery level of understanding and/or skill that meets expectations of the course outcomes.<br>▪ The quality of work may be **perceptive** and/or **insightful**.<br>▪ The student can be confident of being prepared for further learning in this area. | |

## Bio 30 Course Outcomes

The final mark for Biology 30 is a weighted average of your class mark (70%) and the mark you achieve on the **Biology 30 Diploma Exam (30%)**.

Your class mark will be calculated from evidence of your understanding of course outcomes and scientific skills as outlined below.

### Unit A - Nervous & Endocrine Systems

**A1** - Students will explain how the nervous system controls physiological processes.

**A2** - Students will explain how the endocrine system contributes to homeostasis.

### Unit B - Reproduction & Development

**B1/2** - Students will explain how survival of the human species is ensured through reproduction. Students will explain how human reproduction is regulated by chemical control systems.

**B3** - Students will explain how cell differentiation and development in the human organism are regulated by a combination of genetic, endocrine and environmental factors.

### Unit C - Cell Division, Genetics & Molecular Biology

**C1** - Students will explain the processes of mitosis and meiosis.

**C2** - Students will explain the basic rules and processes associated with the transmission of genetic characteristics.

**C3** - Students will explain classical genetics at the molecular level

### Unit D - Population & Community Dynamics

**D1** - Students will describe a community as a composite of populations in which individuals contribute to a gene pool that can change over time.

**D2/3** - Students will explain the interaction of individuals in a population with one another and with members of other populations. Students will explain, in quantitative terms, the change in populations over time.

### Science Skills

***Note:*** *SK4 - Communication & Teamwork has been distributed throughout SK1, SK2 and SK3, as communication and teamwork are a fundamental part of these skills.*

**SK1 - Initialize & Plan**

Ask questions about observed relationships, and plan investigations of questions, ideas, problems and issues. *Work as members of a team in addressing problems, and apply the skills and conventions of science in communicating information and ideas and in assessing results.*

**SK2 - Perform & Record**

Describe the change in position and speed of objects mathematically and graphically. *Work as members of a team in addressing problems, and apply the skills and conventions of science in communicating information and ideas and in assessing results.*

**SK3 - Analyze & Interpret**

Analyze data and apply mathematical and conceptual models to develop and assess possible solutions. *Work as members of a team in addressing problems, and apply the skills and conventions of science in communicating information and ideas and in assessing results.*