Welcome to Grade 12 Biology (SBI 4U)

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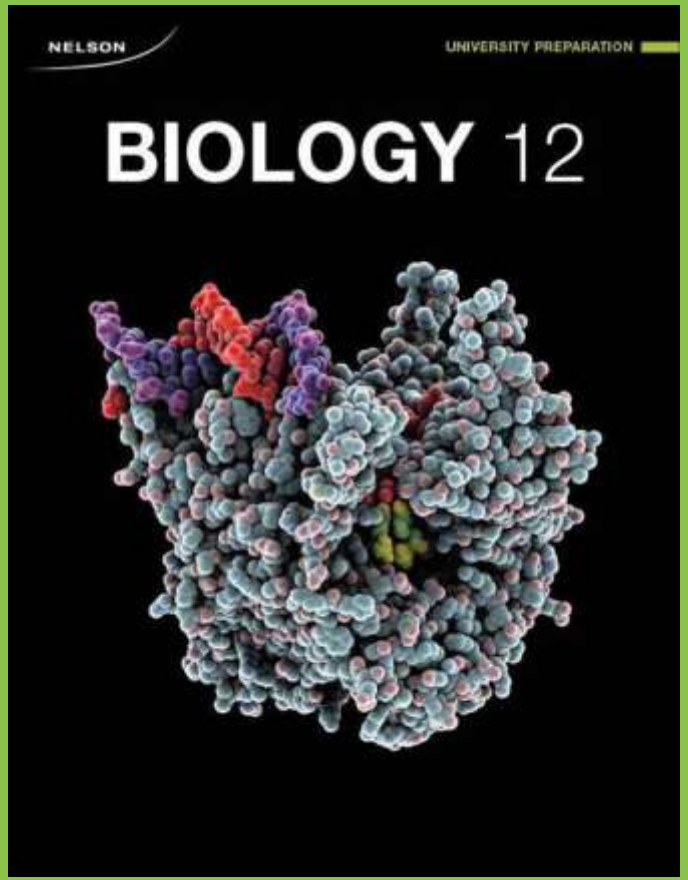


Purposes of the Course

❑ **Key purpose:** for in-depth study of the concepts and processes associated with biological systems: Students will study theory and conduct investigations in the areas of

- **Biochemistry**
- **Metabolic processes**
- **Molecular genetics**
- **Homeostasis**
- **Population dynamics**

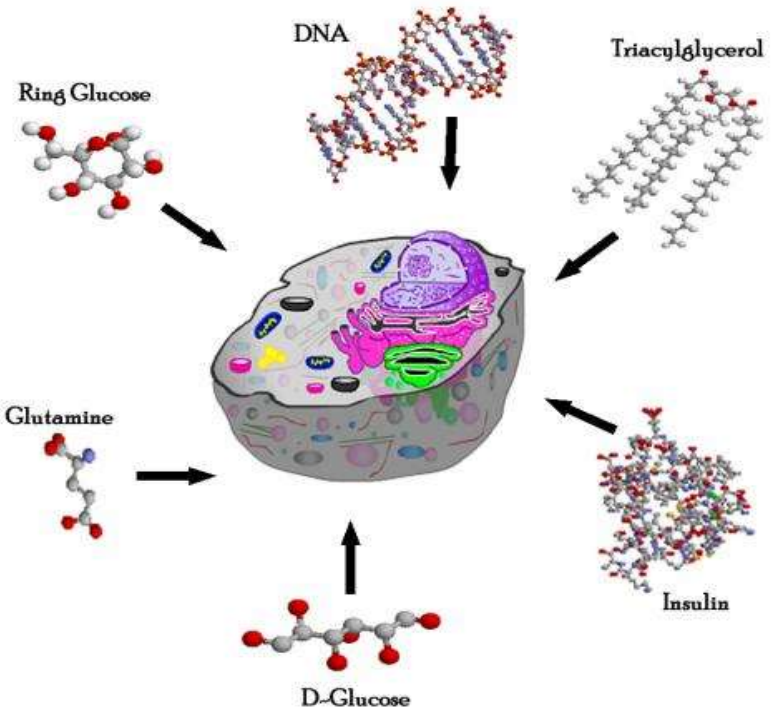
❑ **Academic purpose:** to relate science to technology, society, the environment, and on achievement of detailed knowledge and the refinement of skills needed for further study in various branches of the life sciences and related fields.

WHAT ABOUT SBI4U!!!

It has 5 units:

- ✓**UNIT 1: BIOCHEMISTRY**
- ✓**UNIT 2: METABOLIC PROCESSES**
- ✓**UNIT 3: MOLECULAR GENETICS**
- ✓**UNIT 4: HOMEOSTASIS**
- ✓**UNIT 5: POPULATION DYNAMICS**

UNIT 1:BIOCHEMISTRY ~(6 classes and 1 labs; 20 hours)



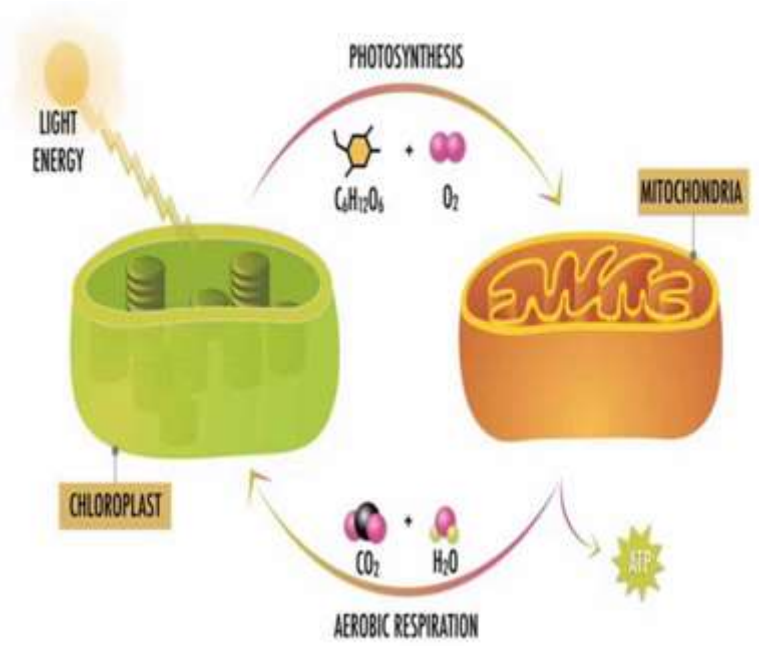
In this Unit, you will:

- analyse technological applications of enzymes in some industrial processes, and evaluate technological advances in the field of cellular biology;

- investigate the chemical structures, functions, and chemical properties of biological molecules involved in some common cellular processes and biochemical reactions;

- demonstrate an understanding of the structures and functions of biological molecules, and the biochemical reactions required to maintain normal cellular function.

UNIT 2: METABOLIC PROCESSES ~ (7 classes)= 21 hours)



In this Unit, you will:

- analyse the role of metabolic processes in the functioning of biotic and abiotic systems, and evaluate the importance of an understanding of these processes and related technologies to personal choices made in everyday life;

- investigate the products of metabolic processes such as cellular respiration and photosynthesis;

- demonstrate an understanding of the chemical changes and energy conversions that occur in metabolic processes.

UNIT 3: MOLECULAR GENETICS ~ (8 classes; 25 hours)

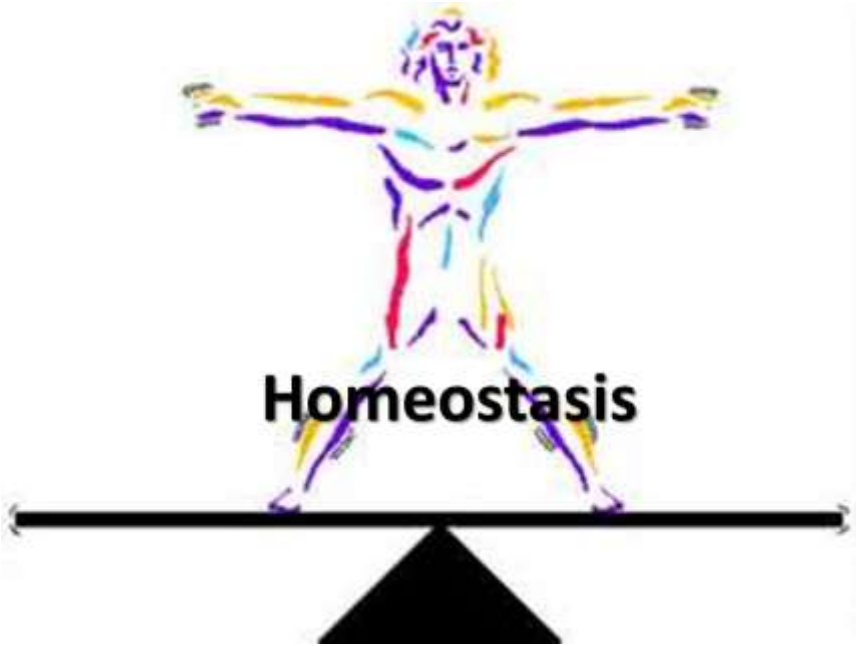
In this Unit, you will:

- analyse some of the social, ethical, and legal issues associated with genetic research and biotechnology;

- investigate, through laboratory activities, the structures of cell components and their roles in processes that occur within the cell;

- demonstrate an understanding of concepts related to molecular genetics, and how genetic modification is applied in industry and agriculture.

UNIT 4: HOMEOSTASIS ~ (7 classes; 20 hours)



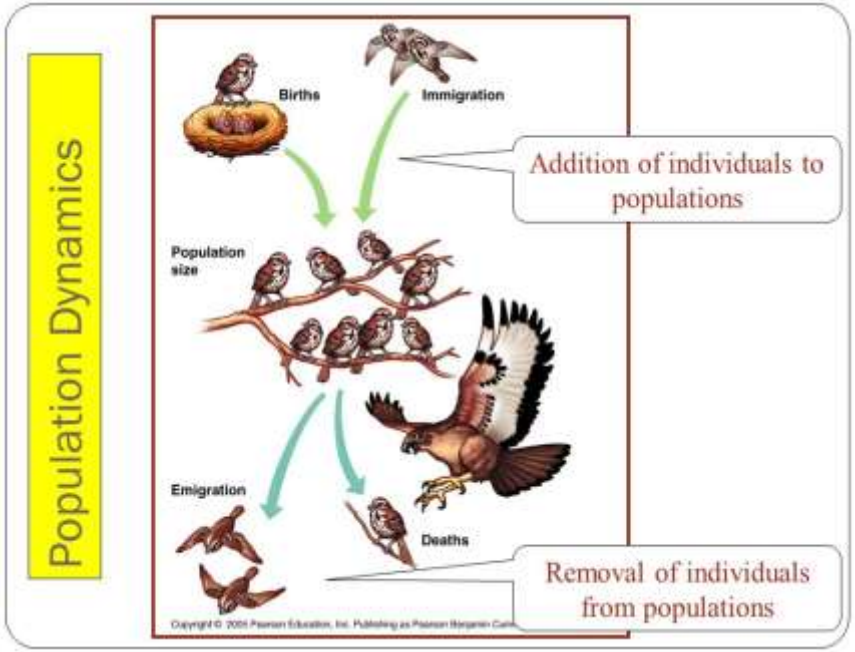
In this Unit, you will:

- evaluate the impact on the human body of selected chemical substances and of environmental factors related to human activity;

- investigate the feedback mechanisms that maintain homeostasis in living organisms;

- demonstrate an understanding of the anatomy and physiology of human body systems, and explain the mechanisms that enable the body to maintain homeostasis.

UNIT 5: POPULATION DYNAMICS ~ (6 classes; 18 hours)



In this Unit, you will:

- analyse the relationships between population growth, personal consumption, technological development, and our ecological footprint, and assess the effectiveness of some Canadian initiatives intended to assist expanding populations;

- investigate the characteristics of population growth, and use models to calculate the growth of populations within an ecosystem;

- demonstrate an understanding of concepts related to population growth, and explain the factors that affect the growth of various populations of species.

ASSESSMENT, EVALUATION & REPORTING

Term Work
&
Mid Term

70%

Final Exam
(Research report + Oral Exam)

30%

Total= 100%

BREAKDOWN OF ASSESSMENT/EVALUATION SCORES

Term Work:

- ✓ Classroom participation
- ✓ Lab report
- ✓ Online Quizzes
- ✓ Unit Quiz test
- ✓ Open book test
- ✓ Home work
- ✓ Assignments: Debate & Poster presentation
- ✓ **Mid Term**

Total =70%

Final Exam

30%

OTHER ASSESSMENT/EVALUATION

- ❖ Punctuation
- ❖ Individual work
- ❖ Collaboration
- ❖ Initiative
- ❖ Organization
- ❖ Respect to others (peer & teacher)

E – Excellent

G – Good

S – Satisfactory

N – Need Improvement

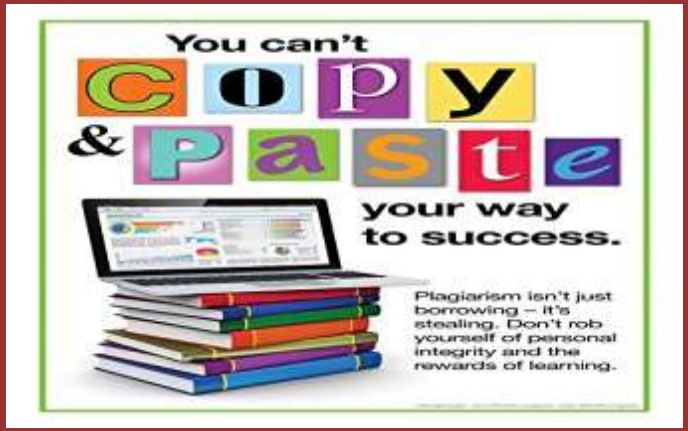
CATEGORIES OF THE ACHIEVEMENT CHART

	Weight	Level 1 50-59%	Level 2 60-69%	Level 3 70-79%	Level 4 80-100%
Knowledge & Understanding	**25%**	**Limited** display of knowledge, skills and ability to apply concepts	**Some** success in displaying knowledge, skills and application of concepts	**Considerable** display of knowledge, skills and ability to apply concepts	**Thorough** understanding of concepts and ability to communicate, think creatively and apply concepts
Thinking, Inquiry & Problem Solving	**25%**				
Communication	**25%**				
Application	**25%**				

OTHER ISSUES & EXPECTATIONS

Talk to me before hand for an extension to avoid the late penalty!!

Missed any test due to a legitimate reason? talk to me. We will set another time to cover it.



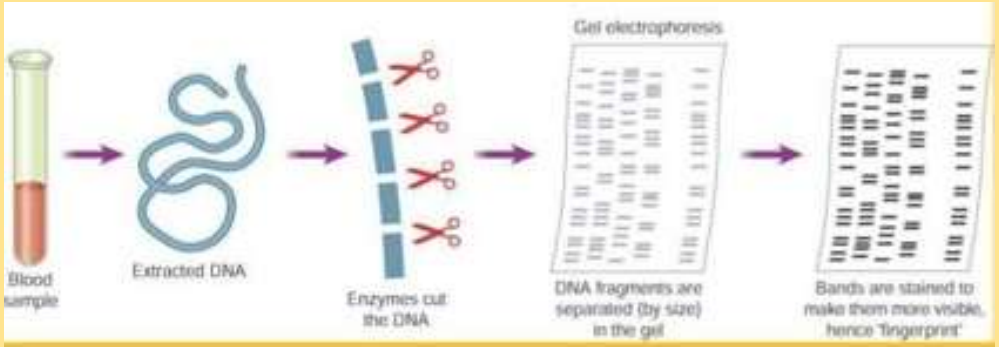
No Plagiarism!! TEA has zero tolerance for any form of **Academic Misconduct**

DO YOU HAVE ANY QUESTIONS ?

Activity: Career Exploring!!!!!

Q1. IDENTIFY THESE SCIENTISTS AND THEIR CONTRIBUTION TO THE FIELDS OF BIOLOGY .

Cambridge University scientists James D. Watson and Francis H.C. Crick (the double-helix structure of DNA, 1953)



Medical professionals

Marine Biologist

Ecologist

DISCUSSION ON CAREER EXPLORATION

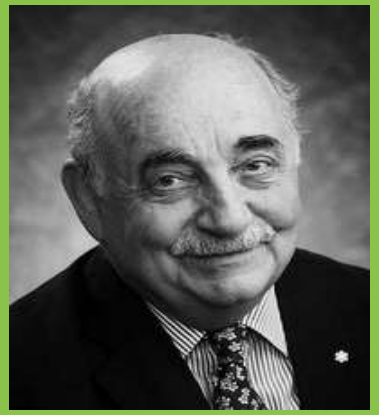
Wildlife Biologist

Biotechnologist

DISCUSSION ON CAREER EXPLORATION

Evelyn Merle Nelson, Canadian mathematician: universal algebra with applications to theoretical computer science.

Maud Leonora Menten, Canadian physician-scientist: enzyme kinetics and histochemistry



Albert Juan Aguayo, OC FRSC, Canadian neurologist at McGill University.

Michael Archer
Professor Emeritus
Departments of Nutritional Sciences and Medical Biophysics
He Contributes to environmental and genetic mechanisms of cancer development

15 MIN.