

Teacher: Ella Hou

Email: [ellaxiao3@edu4u.ca](mailto:ellaxiao3@edu4u.ca)**Course Description**

“This course furthers students’ understanding of the processes involved in biological systems. Students will study theory and conduct investigations in the areas of biodiversity; evolution; genetic processes; the structure and function of animals; and the anatomy, growth, and function of plants. The course focuses on the theoretical aspects of the topics under study, and helps students refine skills related to scientific investigation”. This description and the unit descriptions below are taken from the Ontario Ministry of Education Website: [http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11\\_12.pdf](http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11_12.pdf)

**UNIT 1: DIVERSITY OF LIVING THINGS****Chapter 1: Understanding Biology**

- a) Definition of a species and biodiversity
- b) Taxonomy and Phylogeny; cladistics diagrams
- c) Dichotomous keys
- d) Prokaryotes vs. Eukaryotes
- e) Six kingdoms of life overview

**Chapter 2: The Prokaryotes, Viruses, and Protists**

- a) Domains Eubacteria and Archaea
- b) Bacterial diseases
- c) Antibiotics and antibiotic resistance
- d) Viruses, Viroids and Prions

- e) Vaccinations
- f) Kingdom Protista

**Chapter 3: The Fungi, Plants, and Animals**

- a) Kingdom Fungi
- b) Symbiotic relationships in Ecosystems
- c) Kingdom Plantae general characteristics
- d) Plant adaptations to living on land
- e) Alternation of Generations
- f) Plant Divisions
- g) Kingdom Animalia general characteristics
- h) Vertebrates vs. invertebrates

**UNIT 2: GENETIC PROCESSES****Chapter 4: Heredity and Reproduction**

- a) DNA Structure and Function
- b) Mitosis and Meiosis
- c) Non-disjunction
- d) Gametogenesis
- e) Sex determination

**Chapter 5: Mendelian Genetics: Patterns of Inheritance**

- a) Mendel’s experiments

- b) Alleles: Dominant and Recessive
- c) Punnet Squares: Mono-hybrid, dihybrid and test-cross
- d) Incomplete dominance and co-dominance
- e) ABO blood type system
- f) Pedigree charts
- g) Sex-linkage
- h) Multi-factorial inheritance
- i) Genetic disorders

**UNIT 3: EVOLUTION****Chapter 7: The Theory of Evolution**

- a) Components of a scientific theory
- b) Evidence supporting evolution
- c) Mutations
- d) Transitional Fossils
- e) Selective breeding
- f) Lamarck vs. Darwin

**Chapter 8: Origin of Species**

- a) Types of Selection, including sexual selection
- b) Genetic Drift
- c) Bottleneck Effect and Founder Effect
- d) Hardy-Weinberg Principle
- e) Definition of Species
- f) Modes of Speciation

## UNIT 4: ANIMALS – STRUCTURE AND FUNCTION

### Chapter 9: Nutrition and the Digestive System

- a) Carbohydrates, fats and proteins
- b) Physical and chemical digestion
- c) Parts & function of the digestive system
- d) Structure of the alimentary canal
- e) Digestive system disorders
- f) Nausea, vomiting and diarrhea

### Chapter 10: The Respiratory System

- a) Parts & function of the respiratory system
- b) Mechanisms of breathing

- c) Control of breathing
- d) Lung capacity
- e) Respiratory disorders

### Chapter 11: The Circulatory System

- a) Open and closed systems
- b) Composition of Blood
- c) Blood vessels: arteries, veins and capillaries
- d) Parts of the heart
- e) Blood pressure and the cardiac cycle
- f) Coronary heart disease

## UNIT 5: PLANTS: ANATOMY, GROWTH, & FUNCTION

### Chapter 12: The importance of Plants

- a) Basic tissue types of vascular plants
- b) Monocot and dicot plants
- c) Basic needs of plants
- d) Structure and function of leaves
- e) Human uses of leaves
- f) Structure and function of stems
- g) Structure and function of roots

- h) Transport of water and sugars in vascular plants

### Chapter 13: Succession, Reproduction, & Sustainability

- a) Asexual reproduction in seed plants
- b) Sexual reproduction in seed plants
- c) Primary and secondary growth
- d) Plant growth regulators

**Plagiarism:** Plagiarism is the act of taking ownership of written material or ideas belonging to someone else, whether knowingly or unknowingly. At Humberside Collegiate Institute, plagiarism is strictly dealt with. A student caught plagiarizing an assignment in this course will receive an automatic mark of zero. A second chance will not be granted. So please be *extremely* careful – even homework copied from another student (although reworded), lab work paraphrased from your partner or the internet without documentation are **all** considered plagiarism. If you are at all concerned or have questions about plagiarism, please ask!

**Deadlines:** The deadline for assignments and lab reports etc. is at the *beginning* of class. In accordance with the school's policy on assessment and evaluation, any assignment or lab report handed in after the deadline will receive a penalty of 5% per day, up to a maximum of 10%. Lab reports/assignments etc. will not be accepted once they have been handed back. Exceptions for extenuating circumstances may apply at the discretion of the teacher.

### Absences

If you know you are going to be absent for a class (appointment, field trip, sports event), then **you must inform the teacher beforehand**. This shows that you are *organized*, conscientious and that you have *initiative*. The sooner you discuss the conflict, the more likely an acceptable alternate arrangement can be made. Failure to do so will jeopardize any consideration.

Missed	Action Student Should Take
Regular Class	Check the website to obtain notes, homework, and/or assignments <b>BEFORE</b> the following class.
Quiz	You must follow-up <b>with the teacher and provide confirmation</b> (parental note or parents call teacher or on an official field trip or team list) <b>that the absence was excused</b> . For most legitimate absences the teacher will offer a make-up quiz at his or her convenience.
Test	<b>MISSING A TEST IS A SERIOUS MATTER.</b> The teacher should be informed as soon as possible and consulted <u>the morning of your return to school</u> . This action, on your part, is very important as it shows initiative and maturity in handling missed work. For a legitimate absence for a test, a parental phone call on the day of your absence explaining why you missed the test must be made. You will then be permitted to write a make-up test at a time arranged by your teacher. An effort will be made to accommodate you but please be aware that tests are time sensitive. Be prepared to write the day you come back.
Lab	<b>You will not receive marks for an experiment that you have NOT performed.</b> In the case of absence, arrangements must be made to make up the experiment as soon as possible. Lab experiments are also time sensitive; as soon as the marked reports are passed back, you can no longer make up the lab and may receive zero for the experiment.

## Final Thoughts

---

To do well in Biology requires time and effort. Unfortunately, we cannot *make* you learn. So please do not think by just sitting in class and taking notes that you will be successful in Biology. Coming to class prepared can help you to achieve an excellent mark in Biology. This means *before* you come to class you are:

- reading relevant sections in the text; and reading them critically
- reading over your notes from the previous class
- writing down questions you can ask to clarify your understanding
- attempting all assigned homework questions or seeking clarification from teacher if a question is difficult
- visiting me in my office or make an appointment to get extra help
- retrieving any missed work from the course website

Most of all take charge of your education; remain engaged, organized and prepared and you will be successful!

## **Learning Skills**

---

Learning skills, such as completion of homework and regular attendance are not evaluated as achievement of the course expectations; however, they do play an important role in achievement and in student success.

The following learning skills will be evaluated throughout the course and represented on the Provincial Report Card:

### **Responsibility**

- \* Fulfills responsibilities and commitments within the learning environment.
- \* Completes and submits class work, homework, and assignments according to agreed upon timelines.
- \* Takes responsibility for and manages own behaviour.

### **Organization**

- \* Devises and follows a plan and process for completing work and tasks.
- \* Establishes priorities and manages time to complete tasks and achieve goals
- \* Identifies, gathers, evaluates, and uses information, technology, and resources to complete tasks.

### **Independent Work**

- \* Independently monitors, assesses, and revises plans to complete tasks and meet goals.
- \* Uses class time appropriately to complete tasks.
- \* Follows instructions with minimal supervision.

### **Collaboration**

- \* Accepts various roles and an equitable share of work in a group
- \* Responds positively to the ideas, opinions, values, and traditions of others.
- \* Builds healthy peer-to-peer relationships through personal and media-assisted interactions.
- \* Works with others to resolve conflicts and build consensus to achieve group goals.
- \* Shares information, resources, and expertise, and promotes critical thinking to solve problems and make decisions.

### **Initiative**

- \* Looks for and acts on new ideas and opportunities for learning.
- \* Demonstrates the capacity for innovation and a willingness to take risks
- \* Demonstrates curiosity and interest in learning.
- \* Approaches new tasks with a positive attitude.
- \* Recognizes and advocates appropriately for the rights of self and others.

### **Self-Regulation**

- \* Sets own individual goals and monitors progress towards achieving them.
- \* Seeks clarification or assistance when needed.
- \* Assesses and reflects critically on own strengths, needs, and interests.
- \* Identifies learning opportunities, choices, and strategies to meet personal needs and achieve goals.
- \* Perseveres and makes an effort when responding to challenges.

(adopted from Ontario Provincial Report Card, Grades 9-12, September 2010)