Crocus Plains Regional Secondary School
Biology 40S
Course Outline

Teacher: Ms. Andrea Bucklaschuk
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Required Materials:
- Pencils and pens
- Eraser and whiteout
- Binder
- Basic calculator
- A willingness to learn

Attendance Policy: Your participation and attendance is essential for success in this class. Absences from class must be verified by parents calling the school within a day of the absence. Missed unit tests may be given a grade of **ZERO**, unless they are excused by a parent/guardian.

If you are absent for any reason, it is **your** responsibility to find out what you have missed and to catch up. Please do not ask for missed work during class time. Powerpoints are all uploaded to TEAMS.

If you know you will be absent ahead of time, please see me at least 2 days in advance of your absence. At that time, we can decide whether you will complete work while absent or make it up when you return.

Late Assignment Policy: Meeting deadlines and time management are two skills that I hope you will learn throughout this course. For this reason, consequences will apply for late or missing work. If your work is late:

1) Your assignment may be subject to a **penalization by 25%**.
2) We will set a second deadline for your assignment.
3) Your parents may be contacted, advising them of the situation and the new due date.
4) If your assignment is not handed in by the second deadline, you will receive **0%** on the assignment.
5) It is your responsibility to communicate should you not be able to meet a deadline.

I want you to do well! I want to help you reach your goals in this class. If you have valid reasons for not being able to complete your work on time, please speak to me **before the due date**, and we can arrange an alternate deadline. I can only be understanding if I know the situation, otherwise I will assume it is a lack of maturity and accommodations will be less likely to be granted. Remember, THIS IS A GRADE 12 COURSE.

Course Description: Biology 40S focuses on 2 parts: genetics and biodiversity.

Within these topics, the course is further subdivided into 5 units: (1) Understanding Biological Inheritance, (2) Mechanisms of Inheritance, (3) Evolutionary Theory and Biodiversity, (4) Organizing Biodiversity, and (5) Conservation of Biodiversity.

Unit Descriptions

Part 1: Genetics

Unit 1: Understanding Biological Inheritance
Approximate Instructional Time for Unit of Study: 3½ weeks

Specific Learning Outcomes:

- B12-1-01: Outline Gregor Mendel's principles of inheritance, stating their importance to the understanding of heredity.
- B12-1-02: Explain what is meant by the terms *heterozygous* and *homozygous*.
- B12-1-03: Distinguish between *genotype* and *phenotype*, and use these terms appropriately when discussing the outcomes of genetic crosses.
- B12-1-04: Use Punnett squares to solve a variety of autosomal inheritance problems, and justify the results using appropriate terminology.
- B12-1-05: Describe examples of and solve problems involving the inheritance of phenotypic traits that do not follow a dominant-recessive pattern.
- B12-1-06: Explain the basis for sex determination in humans
- B12-1-07: Describe examples of and solve problems involving sex-linked genes.
- B12-1-08: Use pedigree charts to illustrate the inheritance of genetically determined traits in a family tree and to determine the probability of certain offspring having particular traits.
- B12-1-09: Discuss ethical issues that may arise as a result of genetic testing for inherited conditions or disorders.
- B12-1-10: Discuss the role of meiosis and sexual reproduction in producing genetic variability in offspring.
- B12-1-11: Explain how chromosome mutations may arise during meiosis.
- B12-1-12: Identify monosomy and trisomy chromosome mutations from karyotypes.

Unit 2: Mechanisms of Inheritance
Approximate Instructional Time for Unit of Study: 4 weeks

Specific Learning outcomes

- B12-2-01: Outline significant scientific contributions/discoveries that led to the current understanding of the structure and function of the DNA molecule.
- B12-2-02: Describe the structure of a DNA nucleotide.
- B12-2-03: Describe the structure of a DNA molecule.
- B12-2-04: Describe the process of DNA replication.
- B12-2-05: Compare DNA and RNA in terms of their structure, use, and location in the cell.
- B12-2-06: Outline the steps involved in protein synthesis.
- B12-2-07: Relate the consequences of gene mutation to the final protein product.
- B12-2-08: Discuss implications of gene mutation for genetic variation.
- B12-2-09: Investigate an issue related to the application of gene technology in bioresources.
- B12-2-10: Investigate an issue related to the application of gene technology in humans.

Part 2: Biodiversity

Unit 3: Evolutionary Theory and Biodiversity
Approximate Instructional Time for Unit of Study: 3½ weeks

Specific Learning Outcomes:

- B12-3-01: Define the term *evolution,* explaining how evolution has led to biodiversity by altering populations and not individuals.
- B12-3-02: Describe and explain the process of discovery that led Charles Darwin to formulate his theory of evolution by natural selection.
- B12-3-03: Outline the main points of Darwin's theory of evolution by natural selection.
- B12-3-04: Demonstrate, through examples, what the term *fittest* means in the phrase *"survival of the fittest"*.
- B12-3-05: Explain how natural selection leads to changes in populations.
  B12-3-06: Describe how disruptive, stabilizing, and directional selection act on variation.
- B12-3-07: Distinguish between *natural selection* and *artificial selection.*
- B12-3-08: Outline how scientists determine whether a gene pool has changed, according to the criteria for genetic equilibrium.
- B12-3-09: Discuss how genetic variation in a gene pool can be altered.
- B12-3-10: Describe how populations can become reproductively isolated.
- B12-3-11: With the use of examples, differentiate between *convergent evolution* and *divergent evolution* (adaptive radiation).
- B12-3-12: Distinguish between the two models for the pace of evolutionary change.

Unit 4: Organizing Biodiversity
Approximate Instructional Time for Unit of Study: 6 weeks

Specific Learning Outcomes:

- B12-4-01: Define the concept of biodiversity in terms of ecosystem, species, and genetic diversity.
- B12-4-02: Explain why it is difficult to determine a definition of *species*.
- B12-4-03: Describe the dynamic nature of classification.
- B12-4-04: Describe types of evidence used to classify organisms and determine evolutionary relationships
- B12-4-05: Compare the characters of the domains of life.
- B12-4-06: Compare the characteristics of the kingdoms in the Eukarya domain.
- B12-4-07: Investigate an evolutionary trend in a group of organisms.

Unit 5: Conservation of Biodiversity
Approximate Instructional Time for Unit of Study: 1 1/2 weeks

Specific Learning Outcomes:

- B12-5-01: Discuss a variety of reasons for maintaining biodiversity.
- B12-5-02: Describe strategies used to conserve biodiversity.
- B12-5-03: Select and use appropriate tools or procedures to determine and monitor biodiversity in an area.
- B12-5-04: Investigate an issue related to the conservation of biodiversity.

Final Mark - Course Evaluation Structure:

- Unit/Term Work/Cumulative Tests/Quizzes – 80%
- Course Final - Exam - 20%

EXPECTATIONS

1. Your behavior in class must not prevent the teacher from giving the lesson or interfere with anyone else's opportunity to learn. This means only one person talks at a time.

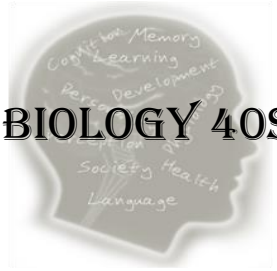
2. Observe all safety rules of a science lab. Including **NO FOOD OR DRINK** in the science lab on lab days.

3. Arrive to class on time and prepared with your supplies (notebook, textbook, pen, pencil, eraser, ruler).

4. Complete and hand in your homework and assignments **on time.**

5. Cell phones or any electronic devices are to be limited as much as possible in the classroom, they cause distractions to other students.

6. Communication. I am not a mind reader. If assignments come in late, with no communication, expect there to be a consequence. As such, if you are away for a period of time, without communication, do not expect me to catch you up. This is a grade 12 class, a level of maturity and independence is required.



BIOLOGY 40S

I have read the above syllabus for Ms. Bucklaschuk's Biology 40S course. By signing below, I:

- Demonstrate that I understand the requirements of the course and agree to give my best effort.

- **Acknowledge that I have been to the class TEAMS website and am able to access the page where homework and additional class information will be posted.**

Studies show that parental involvement is one of the largest factors in a student's academic achievement. For that reason, it is my intention to achieve an open line of communication. Please include the most convenient way that I may contact you. Feel free to contact me at bucklaschuk.andrea@bsd.ca with any questions or concerns.

Preferred method of contact:

Phone: Email Address:

Guardian Signature: _____

Student Name : _____

Student Signature: _____

Any additional information (including health information) that I would like Ms. Bucklaschuk to know:

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