Northern Secondary School
Grade 11 Microbiology, Biotechnology & Forensics Evaluation Policy

Grade 11 IDC3O will provide students with the theoretical knowledge and laboratory skills necessary for performing, interpreting and reporting laboratory analyses. Course work will be divided into three strands, Microbiology, Biotechnology and Forensic Science.

The evaluation policy Final mark will be divided into 60% Term Work, 10% independent project and 30% Summative Evaluation. Term work will consist of assignments, quizzes, tests, lab reports, etc. Summative Evaluation may be a combination of practical and written exam.

<table>
<thead>
<tr>
<th>Achievement Categories</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Knowledge and Understanding</td>
<td>15-20%</td>
</tr>
<tr>
<td>Thinking and Investigation</td>
<td>10-15%</td>
</tr>
<tr>
<td>Communication</td>
<td>10-15%</td>
</tr>
<tr>
<td>Application</td>
<td>15-20%</td>
</tr>
<tr>
<td>Science Fair Project</td>
<td>10%</td>
</tr>
<tr>
<td>Summative Evaluation</td>
<td>30%</td>
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</tbody>
</table>

Achievement Categories
The science expectations in the following achievement categories describe the knowledge and skills that you are expected to demonstrate:

- **Knowledge and Understanding**
  Knowledge evaluation includes quizzes, completion of exercises in class, tests and assignments.

- **Thinking and Investigation**
  You will be evaluated on the skills and strategies required for inquiry based learning, including: use of tools and equipment and initiating and planning of lab and research projects.

- **Communication**
  You will be assessed on your communication skills in the form of scientific terminology, data tables, graphs, notebooks, reports, and oral presentations.

- **Applications**
  Your ability to analyze issues, assess impacts of science in the environment and society and propose courses of action related to issues will be evaluated.

The expectations for each category are outlined in greater detail on the Achievement Chart.

Learning Skills
Learning skills are reported separately from the percentage mark, and will indicate your demonstration of those skills required to be successful in science. These skills are grouped under the following headings on the Provincial Report Card:

- **Responsibility**
  - Fulfils responsibilities and commitments.
  - Completes and submits work according to deadlines.
  - Accepts responsibility and manages own behaviour.

- **Organization**
  - Devises and follows a plan for completing work.
  - Manages time to complete tasks.
  - Identifies, gathers, evaluates and uses information, technology and resources to complete tasks.

- **Independent Work**
  - Independently plans to complete tasks.
  - Uses class time appropriately to complete tasks.
  - Follows instruction with minimal supervision.

- **Collaboration**
  - Accepts various roles and an equitable share of work.
  - Responds positively to ideas of others.
  - Works with others to resolve conflicts and build consensus.

- **Initiative**
  - Looks for and acts on new opportunities for learning.
  - Demonstrates capacity for innovation and risk.
  - Advocates appropriately for self and others.
  - Approaches new tasks with a positive attitude.

- **Self-Regulation**
  - Sets own goals and monitors progress.
  - Seeks clarification or assistance when needed.
  - Reflects critically on own strengths, needs and interests.

Please sign below, indicating that you have read this sheet and understand the expectation of the course. If you have any questions, please ask your teacher immediately.

Student’s Signature: _____________________________

Parent/Guardian’s Signature: ______________________

Summative Evaluation
Thirty percent of your grade will be based on evaluations given near the end of the year. The evaluations may be any combination of the following:

- Application of laboratory skills
- An assignment, project, presentation
- Written exam in the formal exam period(s)

Scientific Investigation Skills
Scientific investigation skills will be learned and practiced through a year-long Science Project, worth 10%.
MICROBIOLOGY STRAND:
Overall Goals:
- to understand microorganisms and their use in laboratory investigations
- to learn and carry out microbiological processes & methods of research and implementation
- to study and evaluate the impacts and consequences of microorganisms on society and the environment.

Topics of Study:
- Lab Safety
- Microscopy
- Cell Culturing
- Centrifugation
- Measuring Microbial growth
- Immunology: Antibodies, Vaccines
- Antibiotic resistance
- Food safety

BIOTECHNOLOGY STRAND:
Overall Goals:
- to understand the theory & foundations of biotechnology
- to learn and carry out biotechnological processes & methods of research and implementation
- to evaluate the impacts and consequences of biotechnology on society and the environment.

Topics of Study:
- DNA Structure and Function; Protein Function
- Mutations: Mechanisms and Consequences
- Manipulation and Analysis of DNA
- Restriction Digestion, Gel Electrophoresis
- Isolation of Chromosomal DNA
- Transformation of Competent Bacteria
- Genetically Modified Foods

FORENSIC SCIENCE STRAND
Overall Goals:
- To understand the scientific principles underlying analysis of crime scene evidence.
- To gain experience in utilizing the methods of Forensic Investigators in evidence collection and analysis.
- Understanding and investigating the role of communication of Forensic evidence specifically in relation to the application of Forensic science to law.

Topics of Study:
- Chromatography
- Atomic Absorption Spectrophotometry
- Fingerprinting: Traditional and DNA
- Isolation and Identification of Unknown Substances
- Blood typing and Analysis
- Entomology
- Microscopy and its Uses in a Forensic Lab
- Arson

Course Policies

For convenience, some of our course policies are outlined here. Refer to your Northern Agenda for further details.

Homework
Homework will be assigned on a regular basis. When no formal homework is assigned, you will be responsible for carrying out independent study and review. Completion of homework is considered crucial to your success in this course. Parents can play an important role by reviewing important dates recorded in students’ agendas.

Assignments
You are expected to hand in assignments on time. If assignments are persistently late, appropriate measures will be taken, including referral to the Vice Principal. Assignments will be accepted until your teacher discusses them with the class or returns them to the class. If the assignment has not been submitted by this time you will receive a mark of zero. It is the science department’s policy not to give additional assignments for the purposes of “boosting” marks.

Daily Absences from Class
If you foresee missing a science class (trip, game or appointment) it is your responsibility to see your science teacher beforehand:
- To hand in assignments due or write quizzes
- To find out what you will be missing
- For extended illness, arrangements will be made to help you keep up with work missed.

Missed Tests
Tests will be announced well in advance. You will always know if an absence will cause you to miss a test. Please observe the following if this happens:

Foreseen Absence
If you know you are going to miss a test you must discuss your options with your teacher prior to the test, otherwise a mark of zero will be recorded. It is your responsibility to make these alternate arrangements with your teacher.

Illness
If you are ill and miss a test it is expected that you see your teacher the day you return, even if you do not have that class that day. It is your responsibility to find your teacher immediately. Failure to do this may generate a mark of zero. If you are in good health and able to attend school, be prepared to write the test immediately on your return. A note explaining your absence from the test will be required.