HIGHLAND PARK SENIOR HIGH
INTERNATIONAL BACCALAUREATE WORLD SCHOOL

Accelerated Biology/Biology Course Outline

MYP Level 5 Grade 10
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I. Course Summary

In this required one-year course, students will be introduced to the study of living things through four basic biological themes: structure and function, universality versus diversity, equilibria within systems, and evolution. The scientific method, biological drawing, laboratory skills and safety will be emphasized. Students will explore varying scientific concepts and evaluate evidence to understand the social, sometimes political, environmental, technological and economic factors that influence and are influenced by science. Students will engage in holistic learning, intercultural perspectives, and communication models to prepare them for the future. Students will engage in a variety of different learning activities: readings, lab inquiry, group work, individual work, projects, presentations, papers, and exams. The International Baccalaureate (IB) learner profile will be followed. Throughout the year, we will learn by using real world problems, simulations, document analysis, debates, and journals to help students become inquirers, knowledgeable, thinkers, communicators, principled, open minded, risk takers, balanced, caring, and reflective.

II. Units of Study:

1. Scientific Method, Effective Lab Writing, Learning for success
2. Biochemistry
3. Cells
4. Genetics
5. Evolution
6. Physiology
7. Ecology

III. Priority Standards as required by the State of Minnesota

9.4.1.1.2 Describe how the functions of individual organ systems are integrated to maintain homeostasis in an organism.
9.4.1.2.2 Recognize that the work of the cell is carried out primarily by proteins, most of which are enzymes, and that protein function depends on the amino acid sequence and the shape it takes as a consequence of the interactions between those amino acids.
9.4.1.2.4 Explain the function and importance of cell organelles for prokaryotic and/or eukaryotic cells as related to the basic cell processes of respiration, photosynthesis, protein synthesis and cell reproduction.
9.4.2.1.1 Describe factors that affect the carrying capacity of an ecosystem and relate these to population growth.
9.4.2.2.2 Explain how matter and energy is transformed and transferred among organisms in an ecosystem, and how energy is dissipated as heat into the environment.
9.4.3.1.2 In the context of a monohybrid cross, apply the terms phenotype, genotype, allele, homozygous and heterozygous.
9.4.3.1.3 Describe the process of DNA replication and the role of DNA and RNA in assembling protein molecules.
9.4.3.2.1 Use concepts from Mendel's Laws of Segregation and Independent Assortment to explain how sorting and recombination (crossing over) of genes during sexual reproduction (meiosis) increases the occurrence of variation in a species.
9.4.3.3.2 Use scientific evidence, including the fossil record, homologous structures, and genetic and/or biochemical similarities, to show evolutionary relationships among species.
9.4.3.3.4 Explain why genetic variation within a population is essential for evolution to occur.
9.4.3.3.5 Explain how competition for finite resources and the changing environment promotes natural selection on offspring survival, depending on whether the offspring have characteristics that are advantageous or disadvantageous in the new environment.
9.4.4.1.2 Describe the social, economic and ecological risks and benefits of changing a natural ecosystem as a result of human activity. For example: Changing the temperature or composition of water, air or soil; altering populations and communities; developing artificial ecosystems; or changing the use of land or water.
9.4.4.2.2 Explain how the body produces antibodies to fight disease and how vaccines assist this process.

The aims of MYP sciences are to encourage and enable students to:
• understand and appreciate science and its implications
• consider science as a human endeavour with benefits and limitations
• cultivate analytical, inquiring and flexible minds that pose questions, solve problems, construct explanations and judge arguments
• develop skills to design and perform investigations, evaluate evidence and reach conclusions
• build an awareness of the need to effectively collaborate and communicate
• apply language skills and knowledge in a variety of real-life contexts
• develop sensitivity towards the living and non-living environments
• reflect on learning experiences and make informed choices

IV. Text/Resources:
Student will either check out a copy of Biology, by Stephen Nowicki from the library and/or be given access to online resources. Readings are assigned for students to review. The webpage will provide links to any necessary resources.

V. Methods of Assessment:
Highland Senior uses a 70/30 system, where Summative Assignments are weighted at 70% of the final grade and Formative Assessments are weighted at 30% of the final grade. Examples of Summative Assessments are labs, tests, presentations and essays. Formative assignments are meant to give the student rapid feedback for improvement. These include quizzes, exit tickets, quick-writes, journal entries, and commonly homework.

Additionally, the IB/MYP rubrics will be followed for assessing summative and formative assignments. There are four areas or criteria that assignments fall under:

Criterion	Area of Focus	Examples
A	Knowing and Understanding	Tests, Quizzes, Homework
B	Inquiring and Designing	Lab Design, Evaluation of design
C	Processing and Evaluating	Data Collection, Reaching conclusions, Evaluating Data
D	Reflecting on the Impacts of Science	Essays, Presentations

IB MYP Rubrics use an 8-point international scale, with 8 representing "excellent achievement" and 1 representing "limited achievement". When these assessments will be counted toward a person's grade in class, they will be converted to a standard A, B, C, D or N scale and the point value will appear on the rubric. Parents and Guardians, please ask your student to share these rubrics with you. They are also found on the class webpage.

Additional information regarding Highland Park Senior's Grading and Assessment Policies can be found on the HPHS web page.

VI. Studying and Homework:
Each student is expected to review each day's lesson. Ideally the student will use one or more of the following ideas: rewrite notes, self-quiz, attempt to recall material (rather than simply reread a text passage). Additionally, they should return to previous material that may help build connections to the current concepts.

Homework is frequent and usually in the form of designing, formatting, evaluating lab investigations. Students are given ample class time to work through concepts, ask questions and receive feedback in order to make sure homework is completed properly.
Specifically, with regard to labs, students are expected to turn in labwork 3-4 days in advance of the due date in order to utilize the feedback for a more thorough final copy.

Materials needed for class: Pens, Pencils, colored pencils, notebook, metric ruler, calculator, scissors.

Expectations for classroom behaviour: Safe, Responsible, Respectful.

VII. Technology Expectations

Cell phone use is not permitted in classrooms. Please have phones put away before entering the classroom. Parents expecting to contact their child for appointments, must go through the main office switchboard in order for a student to be released.

iPads are to be charged before coming to school. iPads are used only at certain times during the class period and should not be out unless indicated by the need of the assignment.