Course Outline

Biology Year 11

Inspiring excellence, empowering global minds

Overview

The GCSE Biology course at GEMS Wesgreen International Secondary School aims to support students to develop their innovative skills, to think critically as well as problem solving through the application of scientific concepts. Throughout the year we cover and learn key information that allows students to understand how humans interact with the world around us and what we can to contribute further to our global community.

Learning Outcomes

Upon successful completion of the GCSE program, students will demonstrate a deep and comprehensive understanding of the subject matter, as well as the ability to apply critical thinking and problem-solving skills in various contexts.

- Subject Knowledge: Possess a solid foundation of knowledge in the chosen subject areas, including key concepts, theories, principles, and facts relevant to the subject's scope.
- Critical Thinking: Demonstrate the ability to analyze, evaluate, and synthesize information and ideas, leading to well-reasoned arguments and solutions.
- Practical Skills: Exhibit proficiency in practical skills, including experimental techniques, research methodologies, and practical applications relevant to the subject, where applicable.

Chapter Overviews

Term 1

Plant Physiology **Approximate length: 8 hours**

In this topic, students will focus on the excretory products of plants. They will also explore the process of excretion in plants. The students will then learn about the ways plants can detect changes in their environment and respond to them, but the responses are much slower than those of animals. This is because movements in a plant are brought about by changes m the

plant's growth. This chapter is about these growth responses and the chemicals that coordinate them. Plants, like animals, can reproduce sexually and asexually. The sexual organs of a flowering plant are its flowers, which produce pollen and ovules containing the flower's gametes. This chapter looks at both types of reproduction and flowering plants.

Specific objectives with the Edexcel syllabus covered:

- Unit 2i. Excretion in plants
- Unit 2j. Co-ordination and response in plants
- Unit 3a. Reproduction in plants

Animal Physiology **Approximate length: 12 hours**

In this topic, students will learn about the excretory products of animals. They learn that kidneys are involved in the process of excretion through nephrons. They will also explore the fact that animals respond to their stimuli through central nervous system, reflex arc and sense organs. In this chapter, they look at the structure and function of the eye. The body has a second coordination system, which does not involve nerves. This is the endocrine system. It consists of organs called endocrine glands, which make chemical messenger substances called hormones. Hormones are earned in the bloodstream. The students will also explore that the characteristics of living organisms are passed on from their parents to the offsprings. This is done through special sex cells or gametes. In this chapter, we also look at the differences between sexual and asexual reproduction and study in detail the process of human reproduction.

Specific objectives with the Edexcel syllabus covered:

- Unit 2i. Excretion in animals
- Unit 2j. Co-ordination and response in animals
- Unit 3a. Reproduction in animals

Term 2

Organisms and Life Processes **Approximate length: 12 hours**

In this topic, students will explore the topic of inheritance. They will understand the structure of DNA and RNA molecule. They will learn about alleles, homozygous and heterozygous alleles, phenotype and genotype of the offsprings. They will explore codominance, polygenic inheritance, monohybrid inheritance, family pedigrees, determining sex of a person, genetic variation and they will also explain that mutations are rare and random. They will also describe the resistance to antibiotics leading to an increase in bacterial population. The students will also learn about their environment, know more about populations of organism, community and habitat. They will understand the feeding relationships in the ecosystem and explore carbon cycle, nitrogen cycle and influence of human activities on environment.

Specific objectives with the Edexcel syllabus covered:

- Unit 3b. Inheritance
- Unit 4. Ecology and environment

Term 3

Organisms and Life Processes **Approximate length: 5 hours**

In this topic, students will explore the ways to increase crop yield, use of glasshouses for growing plants, importance of microorganisms in the food industry and fish farming.

Specific objectives with the Edexcel syllabus covered:

- Unit 5. Use of biological resources

Assessment

Formative: Throughout the chapters, the students will complete end of chapter assessments, quizzes and problem-solving activities which will allow the teacher to assess the students' progress and inform their planning.

Summative: We will complete internal assessments, mocks, to prepare students for their final GCSE exams. This will allow us to gauge what levels students are working at in order to support or provide appropriate levels of challenge in order to ensure students reach their maximum potential.