

Summary

Topic 3.3 - Nutrition and energy systems

Subject	Year	Start date	Duration
Sports, exercise and health science	IB1	Week 2, February	4 weeks 7 hours

Course Part

Topic 3 - Nutrition and Energy Systems

Description

Students will understand how the three energy systems contribute to different events i.e. 100m sprint - primarily Phosphocreatine (anaerobic). They will have an in-depth knowledge of the three energy systems and how they function.

Inquiry & Purpose

Inquiry / Higher Order Questions

Type

Inquiry Questions

Skills-based

How does the relative contribution of energy systems vary from sport to sport?

Curriculum

Aims

Appreciate scientific study and creativity within a global context through stimulating and challenging opportunities

Acquire a body of knowledge, methods and techniques that characterize science and technology

Apply and use a body of knowledge, methods and techniques that characterize science and technology

Develop an ability to analyse, evaluate and synthesize scientific information

Develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities

Develop experimental and investigative scientific skills including the use of current technologies

Develop and apply 21st-century information and communication skills in the study of science

Become critically aware, as global citizens, of the ethical implications of using science and technology

Develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge

◇ Objectives

Demonstrate knowledge and understanding of

- facts, concepts and terminology
- methodologies and techniques
- communicating scientific information

Apply

- facts, concepts and terminology
- methodologies and techniques
- methods of communicating scientific information

Formulate, analyse and evaluate

- hypotheses, research questions and predictions
- methodologies and techniques
- primary and secondary data
- scientific explanations

📖 Syllabus Content

Core

Topic 3: Energy systems

3.3 Nutrition and energy systems

- 3.3.1 Annotate a diagram of the ultrastructure of a generalized animal cell.
- 3.3.2 Annotate a diagram of the ultrastructure of a mitochondrion.
- 3.3.3 Define the term cell respiration.
- 3.3.4 Explain how adenosine can gain and lose a phosphate molecule.
- 3.3.5 Explain the role of ATP in muscle contraction.
- 3.3.6 Describe the re-synthesis of ATP by the ATP-CP system.
- 3.3.7 Describe the production of ATP by the lactic acid system.
- 3.3.8 Explain the phenomena of oxygen deficit and oxygen debt.
- 3.3.9 Describe the production of ATP from glucose and fatty acids by the aerobic system.
- 3.3.10 Discuss the characteristics of the three energy systems and their relative contributions during exercise.
- 3.3.11 Evaluate the relative contributions of the three energy systems during different types of exercise.

 **ATL Skills** **Approaches to Learning****Thinking**

- In this unit, we will

ask students to formulate a reasoned argument to support their opinion or conclusion

give students time to think through their answers before asking them for a response

reward a new personal understanding, solution or approach to an issue

ask open questions

set students a task which required higher-order thinking skills (such as analysis or evaluation)

build on a specific prior task

help students to make their thinking more visible (for example, by using a strategy such as a thinking routine)

make a link to TOK

**Communication****Self-management**

- In this unit, we will

set deadlines for students to meet

require students to revise and improve on work previously submitted

ask students to set their own learning goals

ask students to break down a larger task into specific steps

ask students to look for personal relevance in the subject matter

practise or discuss strategies to increase concentration

give students feedback on their approach to a task

model positive skills and behaviours such as being well organized and punctual

help students to learn from failures or mistakes

create an atmosphere where students do not think they have to get everything right first time

**Research**



Developing IB Learners

☆ Learner Profile



Inquirers



Knowledgeable



Thinkers



Communicators



Open-minded



Balanced