

Year 10 Sports Science

Students will learn about the systems of the human body and examine how they work together to produce movement. Through practical activities, they will explore the major components of the musculoskeletal, cardiovascular and respiratory systems and their contributions and interactions during physical activity. Students will develop an understanding of the characteristics of anaerobic and aerobic pathways and will relate them to the types of activities that utilise each of the pathways. They will participate in a range of laboratory exercises to collect data, evaluate it and relate it to improving performance of movement. This subject is recommended for students who may be interested in Physical Education in VCE or VET Sport and Recreation.

Sports Science introduces students to a number of key areas of the VCE Physical Education study in order to strengthen the development of their understanding. Key areas include both concepts and skills required to investigate the effects of performance on body systems and the various influences on performance. This is predominantly a theory-based course, with practical classes designed to enhance understanding of topics covered in class. This is a Semester based elective.

AREAS OF STUDY

Musculoskeletal System

- The musculoskeletal system working to produce movement in physical activity: bones of the human body, major muscles and muscle structure, classification of joints and joint action
- Characteristics and functions of muscle fibres, fibre arrangement and type
- Types of muscular contraction (isotonic, isometric and isokinetic), agonists, antagonists and stabilisers and the concept of reciprocal inhibition

Cardiorespiratory System

- The cardiovascular and respiratory systems, including the structure and function of the heart and lungs, mechanics of breathing, gaseous exchange, blood vessels, blood flow around the body at rest and during exercise

Energy Systems

- Introduction to the characteristics of aerobic and anaerobic pathways (with or without oxygen) and their contribution to movement and dominant fibre type associated with each pathway

OUTCOMES

Musculoskeletal System

- Use of correct anatomical terminology to identify bones, muscles, joints and joint actions used in human movement
- Performance, observation and analysis of a variety of movements used in physical activity and the identification of the bones, muscles, joints and joint actions responsible for movement
- Use of correct terminology to identify muscle fibre types and muscular contractions required to perform a variety of activities at different intensities, including reciprocal inhibition

Cardiorespiratory System

- Performance, measurement and reporting on changes to the cardiovascular, respiratory and muscular systems at rest compared to exercise.
- Identification of the dominant energy pathway utilised in a variety of aerobic or anaerobic activities determined by the intensity and duration of the activity

Energy Systems

- Collection, analysis and reporting on primary data related to responses to exercise and anaerobic and aerobic pathways, and skill acquisition and proficiency.