

## **Systems & Engineering (Automotive):**

### **Unit 1: Mechanical engineering fundamentals**

This unit focuses on mechanical engineering fundamentals as the basis of understanding the principles and building blocks associated with mechanical devices.

While this unit contains the fundamental physics and theoretical operation of mechanical systems the main focus is on the planning and construction of a working system.

Students study basic mechanical engineering principles, including the representation of mechanical devices, the motions performed and the required mathematical calculations. The unit allows for a 'hands-on' approach as students apply their knowledge in the construction functional systems. These systems can be purely mechanical or may also incorporate an electrical or electronic component. In researching the conversion and use of energy in systems, students are also required to consider environmental and social issues.

## **Systems & Engineering (Electronics):**

### **Unit 2: Electrotechnology engineering fundamentals**

This unit focuses on building understanding of the principles of electrical and electronic circuits, collectively referred to as Electrotechnology.

Students study Electrotechnology principles and apply their knowledge to plan and provide basis operational systems. These systems should include integration of both mechanical and electronic components. Students also use their knowledge and skills to research and write technical reports.

Whilst this unit covers the fundamental physics and theoretical operation of Electrotechnology systems and how they work, the main focus is on the planning and construction of a working-system.

In this unit, students study fundamental Electrotechnology principles, including electrical theory, representation of components and devices, elementary applied physics in electrical circuits, and associated mathematical calculations. Students apply their knowledge in the construction of a functional system which can be predominantly electrotechnology or more desirable include a mechanical component to form an integrated system. This unit also encourages the students to explore and make use of new and emerging technologies.

