

# Course Descriptions

*Burnaby Central*

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## APPLIED DESIGN, SKILLS & TECHNOLOGIES TECHNOLOGY EDUCATION

### **Technology 8**

The philosophy that underlies broad-based technological education is that *students learn best by doing*. This curriculum therefore adopts an activity-based, project-driven approach that involves students in problem solving as they develop knowledge and skills and gain experience in the technological subject area of their choice. In Technology Education 8, we explore three technological areas where students demonstrate an understanding of Isometric drawing. Learn the concept of isometric and orthographic views. Convert isometric shapes into architectural structures. They learn about an electronic system and some of the components used. They learn about resistors, capacitors, transistors and etc. Students learn about safety in the wood fabrication shop and build projects to go along the three technology areas.

### **Drafting 9 (Technical Design)**

Students will explore basic drafting that will demonstrate architectural, mechanical and computer aided design (CAD) and model construction.

### **Electronics and Robotics 9**

This course covers basic electronic concepts, including circuits, schematics, electronic test equipment and measurement. Students will construct electronic projects such as strobe lights, electronic games, toys, alarms, timers, motion detectors and amplifiers. Additional costs may be incurred for program options.

### **Woodwork 9**

This course develops a basic knowledge of many aspects of woodworking including design, joinery and finishing. Workplace health and safety will be emphasized. Additional costs may be incurred if students choose to purchase their own wood for individualized projects.

### **Power Technology 9 (Automotive 9)**

This is an exciting class that introduces both female and male students to modern small engine principles. Students not only learn by completing an engine overhaul, they will also design and build a CO2 powered race car model. Students will also learn how to braze and weld metal. Additional costs may be incurred for program options.

**Drafting 10 (Technical Design)**

This course covers basic drafting techniques including pictorial drawings, orthographic projection, dimensioning and geometric construction projects. The theoretical part of the course is incorporated in the drawings on a continuous basis. All drawings are CAD generated.

**Electronics and Robotics 10**

Students will work to develop technological skills that have real value. They will build electronic systems, power supplies and audio equipment. Students will use computers for graphics, computer- assisted design, presentations, design of project circuit boards and project enclosures. Additional costs may be incurred for program options.

**Power Technology 10 (Automotive Technology 10)**

If you can read and understand technical information you can repair and service all components and systems on a modern car. Emphasis is on developing basic skills with practical hands-on applications. Topics will include Ignition, Cooling, Charging, Lubricating, Starting, Computer Controls and Braking systems. Students will also learn how to braze and weld metals.

**Woodwork 10**

This course develops a basic knowledge of many aspects of woodworking including design, joinery and finishing. Workplace health and safety will be emphasized. Students who successfully completed Woodwork 9 will experience more advanced cabinet making techniques. Additional costs may be incurred if students choose to purchase their own wood for individualized projects.

**Art Metal and Jewelry 10 – 12**

In this course students will combine wood, metals and stained glass to create projects with an emphasis on creative expression, the elements and principles of design, form over function and craft production. Some projects may include woodcarvings, stained glass constructions, lost wax castings such as silver rings, jewelry or sculpture, jewelry boxes and picture frames. Additional costs may be incurred for program options.

**Drafting 11**

This course provides students with opportunities to develop their ability to apply Drafting and Design concepts through a practical, hands-on learning environment. During this introductory senior year, students will explore how to create basic drawings by hand using drafting instruments and, on the computer, using a CAD based application program. Areas covered are basic shapes, orthographic projection, dimensioning, pictorial views, developments, sections, architectural, and mechanical drawings. Students will be required to work cooperatively and to communicate their ideas to others.

## **Electronics 11**

This course covers basic electronic concepts in both analog and digital circuits. Students will construct a variety of project designs and will be encouraged to apply circuit design to a chosen application. An introduction to programming micro-controllers using BASIC and assembly language is included. Additional costs may be incurred for program options.

## **Automotive Technology 11**

Cars, cars and more cars. Explore the fascinating and exciting ever-changing world of automobiles. This new course emphasizes basic practical skill development that includes instruction on all systems. Topics include tune-up, engine performance, brakes, and servicing of all aspects of the car. Sixty per cent hands-on practical work.

## **Woodwork 11**

This course provides the opportunity to learn the safe uses of a wide variety of hand and machine woodworking tools. It will also cover some basic knowledge of wood and wood products as well as basic finishing techniques. Students will learn a variety of common woodworking joints. Additional costs may be incurred if students choose to purchase their own wood for individualized projects.

## **Drafting 12**

This course provides students with the opportunity to build on the concepts learned in Drafting 11. Students will work on more advanced activities. There will be an opportunity to work on activities in an area that interests the student. Emphasis on completing work to professional standards using CAD. Students will also be introduced to mechanical engineering concepts. Students will learn to measure mechanical parts and examine their assembly to understand how parts work together. Drawings will be produced by hand and with CAD in 2D and 3D design. They will evaluate a variety of materials to the design of mechanical units and become familiar with various manufacturing processes. Students will develop designs relating to architecture, study the standards and conventions required, use reference material to design for loads and ergonomics and be informed of employment potential in this field. Perspective and rendering will also be presented. This is an excellent introductory engineering course prior to entering a post-secondary engineering program.

## **Electronics 12**

This course covers basic electronic concepts in both analog and digital circuits. Students will construct a variety of project designs and will be encouraged to apply circuit design to a chosen application. An introduction to programming micro controllers using BASIC and assembly language is included. Students will learn the standards and conventions of electronic engineering and learn acceptable attitudes and ethics required in industry. Emphasis will be placed on employment opportunities available in this field. Additional costs may be incurred for program options.

## **Automotive Technology 12**

This course is designed to give students more in-depth instruction on engine management systems, including computer controls. Both basic and advanced practical skills are acquired in this course including problem-solving, repair and servicing vehicles that permit the student to develop marketable abilities and apply appropriate skills to service and maintain the modern automobile. Hands-on practical work with safety related supervised instruction is emphasized.

## **Engine and Drivetrain 12**

This course provides students with opportunities to develop abilities to safely use an assortment of specialized tools and computerized equipment necessary to diagnose, service and maintain the engine, its support systems and the drive mechanisms from the power source to the driven wheels. Includes the clutch, transmission, transaxle, differential and engine.

## **Furniture and Cabinetry 12**

This course provides the opportunity to learn the safe uses of a wide variety of hand and machine woodworking tools. Students will also learn the procedures and techniques used to build high quality cabinetry using both face-frame and flush face construction. Fasteners finishes and adhesives specific to cabinet fabrication will also be examined. This course provides the opportunity to learn the safe uses of a wide variety of hand and machine woodworking tools. Students will learn the procedures and techniques used to build high quality furniture. Fasteners, finishes and adhesives specific to furniture fabrication will also be examined. Additional costs may be incurred if students choose to purchase their own wood for individualized projects.

## **Woodwork 12**

This course will focus on the design and production of craft products using carving, turning, cutting and drilling processes. Students will develop their skills through project-based learning. Additional costs may be incurred if students choose to purchase their own wood for individualized projects.