

BAA Automotive Maintenance 11

District Name: Coquitlam

District Number: SD #43

Developed by: Geoff McElginn

Date Developed: March, 2004

School Name: Centennial School

Principal's Name: Bryan Evans

Board/Authority Approval Date: April 20, 2004

Board/Authority Signature:



Course Name: Automotive Maintenance

Grade Level of Course: 11

Number of Course Credits: 4

Number of Hours of Instruction:

120

Prerequisite(s): Open without prerequisite to grade 11 and 12 students and to grade 10 students who have successfully completed Power Technology 9

Special Training, Facilities or Equipment Required: A fully equipped Automotive shop facility suitable for teaching a full senior Automotive curriculum, taught by a fully qualified

Course Synopsis: Automotive Maintenance 11 is designed to provide students with the opportunity to develop a practical understanding of the automobile with respect to purchasing, operating and maintaining a vehicle. Students will be exposed to a range of theoretical and practical experiences covering basic aspects of safety, tools, fasteners and automotive service procedures. Students will learn by doing, and will be expected to participate in a hands-on working environment using tools and equipment normally found in commercial repair shops, and to perform basic service procedures on a variety of vehicles.

Rationale: Students choosing to enrol in Automotive Maintenance 11 will be given the opportunity to participate in a practical way in a course which will help them to develop skills which will serve them well in the future regardless of the career path they choose. Problem solving , safety instruction, the proper use of tools, and basic mechanical troubleshooting are all general skills which will provide lifetime benefits to students, and the practical instruction specifically related to vehicle purchasing and service will be help to ensure that students become well-informed consumers.

Organizational Structure:

Unit/Topic	Title	Time
Unit 1	Getting Started; Shop Safety, Tools, Fasteners, Service Information, Jacking and Hoisting	20 hours
Unit 2	Mechanical Basics; Engines, Powertrain, Lubrication, Electrical Systems, Brakes, Suspension and Steering, Cooling System, Tires	30 hours
Unit3	Service Procedures / Practical Shop Work	50 hours
Unit 4	Automobile Detailing	10 hours
Unit 5	Purchasing a Car	10 hours
Total Hours		120 hours

Unit/Topic/Module Descriptions:

Unit 1: Getting Started; Shop Safety, Tools, Fasteners, Service Information, Jacking and Hoisting **Time: 20 hours**

Students will be familiarized with Automotive shop safety, basic hand tools, fasteners, sources of service information, and safe jacking and hoisting procedures. These areas must be covered in detail before students are allowed to undertake any practical shop work.

Curriculum Organizer: Shop Safety

It is expected that students will:

- recognize and identify hazards typical to an automotive shop situation

Curriculum Organizer: Tools

It is expected that students will:

- recognize and identify typical hand tools found in an automotive shop
- select appropriate tools for a variety of shop jobs
- use tools in an appropriate fashion
- organize and store tools properly

Curriculum Organizer: Fasteners

It is expected that students will:

- recognize and identify various automotive fasteners and fastening systems
- select fasteners appropriate for a range of automotive service procedures

Curriculum Organizer: Service Information

It is expected that students will:

- demonstrate familiarity with various sources of automotive service information including Car Care Guides, manufacturers service manuals and online or computer-based information systems

Curriculum Organizer: Jacking and Hoisting

It is expected that students will:

- recognize various automotive chassis designs
- identify correct lifting points for a variety of vehicle designs
- demonstrate the set up and use of jacking and hoisting equipment in a safe and appropriate manner

Unit 2: Mechanical Basics; Engine, Powertrain, Lubrication, Electrical System, Brakes, Suspension and Steering, Cooling Systems, Tires

Time: 30 hours

Students will be instructed on the basic systems requiring service on cars and light trucks in preparation for practical work in the shop. Note that this instruction will be spread throughout the course and will build upon the students' growing awareness of the operation of the various systems.

Curriculum Organizer: Engine

It is expected that students will:

- identify the basic parts of an automotive engine
- explain the basic operating principles of an automotive engine
- recognize specific engines and engine components as they relate to basic automotive service

Curriculum Organizer: Powertrain

It is expected that students will:

- recognize and identify various common powertrain configurations and components found in cars and light trucks

Curriculum Organizer: Lubrication

It is expected that students will:

- explain the purpose of various fluids and lubricants used in automotive applications
- recognize and identify automotive fluids and lubricants
- select appropriate fluids and lubricants when servicing automotive components, and use and dispose of these fluids and lubricants appropriately

Curriculum Organizer: Electrical System

It is expected that students will:

- identify basic components of the automotive electrical system
- demonstrate safe and appropriate procedures when servicing the electrical system

Curriculum Organizer: Brakes

It is expected that students will:

- explain the basic operation of automotive braking systems
- identify components typically found in automotive braking systems
- recognize symptoms indicating brake service is required
- describe how braking systems are inspected

Curriculum Organizer: Suspension and Steering

It is expected that students will:

- identify the components found in typical automotive suspension and steering systems

Curriculum Organizer: Cooling System

It is expected that students will:

- explain the basic operation of automotive cooling systems

- recognize symptoms indicating cooling system service is required
- demonstrate safe work procedures when performing cooling system service

Curriculum Organizer: Tires

It is expected that students will:

- recognize typical tire construction and tread design
- demonstrate appropriate and safe work procedures when servicing tires

Unit 3: Service Procedures / Practical Shop Work Time: 50 hours

This is the hands-on part of the course. The students will participate in live demonstrations of the procedures they will be expected to perform in the shop, and will then practice these procedures in group situations. As the students become more confident and proficient, more procedures will be demonstrated and more complex tasks will be performed.

Curriculum Organizer: Service Procedures

It is expected that students will:

- demonstrate skills acquired through lectures and practical demonstrations of shop service procedures
- identify appropriate service procedures to be used when presented with particular vehicle service challenges
- demonstrate familiarity with correct service procedures including the following:
 - jacking and hoisting
 - oil and lube services
 - compression testing
 - tune up
 - battery service lighting system service brake
 - inspection and service cooling system
 - inspection and service tire service and repair
 - general safety inspection

Curriculum Organizer: Practical Shop Work

It is expected that students will:

- demonstrate safe work procedures at all times in the shop
- demonstrate effective use of all resources made available to them while carrying out work in the shop
- apply knowledge gained through lectures, demonstrations and practical experience
- demonstrate the ability to select the correct tools and equipment for each job
- use all tools and equipment safely and properly
- recognize and identify mechanical problems with vehicles when presented with the symptoms
- exercise care and responsibility when performing service on any vehicle
- demonstrate the ability to work as part of a team
- demonstrate continuous progress in terms of development of practical skills

Unit 4: Automobile Detailing

Time: 10 hours

Students will expand their ability to maintain an automobile through instruction and demonstration covering the correct procedures to follow when cleaning and detailing a vehicle.

Curriculum Organizer: Washing, Polishing, Waxing

It is expected that students will:

- demonstrate the ability to properly wash a vehicle using the correct tools, equipment and chemicals
- identify the correct procedure to follow to determine whether a vehicle requires polishing, waxing or both
- demonstrate the skills required to properly polish and wax a vehicle including the selection of the appropriate materials and equipment

Unit 5: Purchasing a Car**Time: 10 hours**

Now that students are familiar with the various systems found in a car or light truck, they will be instructed on how to evaluate and purchase a used car. Included in this section will be information on financing and insurance.

Curriculum Organizer: Used Car Evaluation

It is expected that students will:

- identify various types of vehicles and compare and contrast them in terms of suitability for particular needs
- recognize possible defects commonly found in used vehicles
- demonstrate familiarity with methods of protecting themselves from fraud and misrepresentation
- demonstrate familiarity with negotiating tactics
- receive information regarding vehicle financing
- demonstrate familiarity with insurance requirements

Instructional Components:

- classroom lecture
- practical demonstration
- interactive demonstration
- video instruction
- group activities
- written assignments
- practical shop work

Assessment Components:

- Effective formative assessment via:
 - Clearly articulated and understood learning intentions and success criteria
 - Questions posed by students, peers and teachers to move learning forward
 - Discussions and dialogue
 - Feedback that is timely, clear and involves a plan
 - Students are resources for themselves and others – peer and self-assessment
 - Student ownership

Formative assessment used to adapt learning experiences and inquiry plans on an on-going basis to meet specific learning goals.

Development, awareness and action, based upon metacognition intended to lead to learner independence and self-coaching.

Summative Assessment:

Summative assessments will be determined as students demonstrate proficiency/mastery toward particular learning outcomes. Summative assessments and final grades will reflect the following:

- Students will work collaboratively with the teacher to determine summative achievement on assignments and letter grades based upon dialogue, and evidence of learning
- Behaviour and work habits will NOT be included when determining letter grades
- Marks will not be deducted for late work
- Extra credit and bonus marks will not be awarded
- Plagiarizing will not result in reduced marks/grades –the student will be required to demonstrate their learning authentically
- Attendance will not be considered toward letter grade
- Only individual learning demonstrated –no group marks – will be used to determine grades
- Letter grades will reflect learning towards the learning outcomes articulated above
- Letter grades will be based upon criteria provided/agreed upon toward the learning outcomes
- Letter grades will be determined in relation to the learning outcomes – not in comparison to the achievement of other students
- Poor work will not be assessed towards grades – students will only be assessed on quality work
- Professional judgment and evidence will be used to determine final letter grade in consultation with the student
- Zeros will not be assigned to missed assignments – all required assignments must be completed
- Formative or practice towards learning outcomes will not be included in final grade assessment
- Most recent evidence toward learning outcomes will be used to assign letter grades – learning is not averaged over time

Learning Resources:

Appropriate print materials including Car Care Guides, manufacturers service manuals, online or computer-based information system

Additional Information:

This is a general interest course and is not intended to prepare students for a career in the automotive service industry, and as such, is not a prerequisite for more advanced secondary Automotive courses. It is an excellent introduction to this area, and students may wish continue their education by choosing from the range of Automotive course offered at a more advanced level.