



# COURSE OUTLINE

**Course Name:** Emission Control Systems

**Department Head/Coordinator:** Jason Devisser

School or Centre:	Department:
School of Transportation Trades	Automotive Service Technician

Course History:	Year of Study:
New Course	2nd Year Post-secondary

<b>Name of Replacing Course (if applicable):</b>	<b>Course Number:</b>	IAST2040
	<b>Number of Credits:</b>	3

**Course Pre-requisites (if applicable):**

None

**Course Co-requisites (if applicable):**

None

**PLAR (Prior Learning Assessment & Recognition)**

No  Yes (details below):

**Course Description:**

Students learn the principles and effects of the by-products of combustion and how they affect our environment. Topics include the legislation pertaining to vehicle emission regulations, pre and post combustion emission systems, evaporative emission systems and gas analysis methods.

### **Instructional Strategies:**

Classroom activities are lectures, demonstrations, audio-visual presentations and exercises. Practical experience takes place in an active shop setting. The extensive workshop experience provides reinforcement of theoretical concepts, develops hand skills, and familiarity with repair procedures, electronic equipment and standard safety procedures. All modules are designed to enable the student to work independently and in groups.

### **Course Learning Outcomes:**

At the end of this course the student will be able to:

- Describe the combustion process
- Describe causes of harmful vehicle emissions
- Describe the effects of products of combustion have on the environment
- Describe legislation pertaining to vehicle emissions
- Identify and describe the design, components and operation of pre combustion emission systems
- Service pre combustion emission systems
- Identify and describe the design, components and operation of post combustion emission systems
- Service post combustion emission systems
- Describe the design, components and operation of OBD II evaporative emission systems
- Service OBD II evaporative emission systems
- Identify gas analysis methods
- Use gas analyzers and assess gas analysis results

### **Program Learning Outcomes:**

- Practice working safely including complying with WorkSafeBC and WHMIS regulations
- Apply employability and communication skills while working in a businesslike manner
- Utilize hand, measuring, and power tools and equipment safely and effectively
- Provide general automotive maintenance services including lubrication and fluids, belts and hoses, exterior lamps, body trim and hardware, tires and wheels, non friction bearings and spindles and hubs
- Assess, diagnose and service hydraulic, drum brake, disc brake, power assist and anti-lock brake systems
- Assess, diagnose and service steering systems
- Assess, diagnose and service suspension systems
- Describe and diagnose electrical, electronic, and ignition systems
- Analyze and diagnose On Board Diagnostic (OBD) System Data using advanced electrical test equipment including computer controls, multiplex and network systems
- Identify and service fuel delivery systems, fuel types, alternate fuels, and gasoline fuel injection components
- Describe and test engine management systems including input sensors and output actuators
- Describe new vehicle technology and hybrid systems
- Describe and service vehicle Pre and Post Combustion Systems, emissions, Test OBD-II Evaporative Emission System, and Perform exhaust gas analysis



**Course Topics and Sequence Covered:**

The combustion process and byproducts  
Vehicle emissions effects and legislation  
Pre combustion emission systems  
Post combustion emission systems  
OBD II evaporative emission systems  
Gas analysis

### **VCC Education and Education Support Policies**

There are a number of **Education** and **Education Support** policies that govern your educational experience at VCC, please familiarize yourself with them.

The policies are located on the VCC web site at:

**<http://www.vcc.ca/about-vcc/policies/index.cfm>**

To find out how this course transfers, visit the BC Transfer Guide at [www.bctransferguide.ca](http://www.bctransferguide.ca).

#### **FOR COMMITTEE USE ONLY**

Date Approved by Education Council:		Date Approved by VCC Board (if applicable):	
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