

**Course Objectives/Course Outline**  
**Spokane Community College**

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**Course Title:** High Performance Engines

**Prefix and Course Number:** AUTO 270

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**Course Learning Outcomes:**

**By the end of this course, a student should be able to:**

- Safely and accurately use a chassis dynamometer to test and/or tune a vehicle
- Describe the varying applications of high performance in the automotive industry
- Understand the interaction of an engine's basics with each subsystem
- Select the correct camshaft for a given project
- Modify cylinder heads for improved performance
- Select and perform appropriate ignition system upgrades
- Tune fuel injection systems with a laptop
- Select, tune and/or modify carburetors
- Describe the different types of induction systems
- Understand the affect different fuels will have on an internal combustion engine
- Explain the function of turbo chargers and their related components
- Define a supercharger and its function
- Describe the effect nitrous oxide has on an engine
- Understand how the exhaust system plays into the performance of an engine
- Describe varies accessories that affect an engine's performance
- Define how the drive train can affect how the engine's power is transmitted to the ground
- Explain how the chassis and suspension can contribute to a vehicles overall performance
- List various performance modifications that can be made to light duty diesel pickups

**Course Outline:**

- I. High Performance Sections
  - A. Dynamometer Usage and Tuning
  - B. High Performance Applications
  - C. Engine Basics
  - D. Camshafts and Valvetrain
  - E. Cylinder Heads
  - F. Ignition Systems
  - G. Fuel Injection/Engine Management
  - H. Carburetion
  - I. Induction
  - J. Fuels
  - K. Turbochargers
  - L. Superchargers
  - M. Nitrous Oxide
  - N. Exhaust Systems
  - O. High Performance Accessories
  - P. Drive Trains
  - Q. Chassis, Suspension & Brakes
  - R. Diesel Performance