

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

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**Course Title:** Toyota Engine Performance II Lab

**Prefix and Course Number:** Auto 223

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**Course Learning Outcomes:**

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

- be familiar with the purpose, types of applications, and operations methods pertaining to transmissions and transaxles, differential, drive line, and constant velocity joints.
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**Course Outline:**

- I. Manual Transmission Diagnosis and Repair
  - A. Diagnose transmission noise, hard shifting, jumping out of gear, and fluid leakage problems; determine needed repairs
  - B. Inspect, adjust, and replace transmission shift linkages, brackets, bushings, cables, pivots, and levers
  - C. Inspect, replace, and align power train mounts
  - D. Inspect and replace transmission gaskets, seals, and sealants; inspect sealing surfaces
  - E. Remove and reinstall transmission
  - F. Disassemble, clean, and reassemble transmission components
  - G. Inspect, adjust, and reinstall transmission shift cover, forks, grommets, levers, shafts, sleeves, detent mechanisms, interlocks, and springs
  - H. Inspect and reinstall input (clutch) shaft and bearings
  - I. Inspect and reinstall main shaft, gears, thrust washers, bearings, and retainers
  - J. Inspect and reinstall synchronizer hub, sleeve, keys (inserts), springs, and blocking rings
- II. Clutches
  - A. Linkage
  - B. Cables
  - C. Automatic Adjuster Mechanisms
  - D. Hydraulic Clutch
    1. slave
    2. master
  - E. Pilot Bearings
  - F. Flywheel
  - G. Bell Housing
  - H. Transmission Case
  - I. Flywheel to Block Runout
  - J. Crankshaft End Play
  - K. Clutch Bell Housing

- III. Drive Shafts and Universal Joints
  - A. Front Wheel Drive
    - 1. constant velocity universal joint
  - B. Rear Wheel Drive
- IV. Rear Axles
  - A. Ring and Pinion Gears
  - B. Differential Case
  - C. Limited Slip Differential
    - 1. clutch components
    - 2. rotating torque
- V. Four-Wheel Drives
  - A. Transfer Case Shifting Mechanism
    - 1. bushings
    - 2. mounts
    - 3. levers
    - 4. brackets
  - B. Front Drive Shafts
  - C. Unit Seals