South Central College  

AST 1412 Clutch and Driveline  

Course Outcome Summary  

Course Information  

Description: This course covers standard automotive and light truck clutches. Content includes design, adjustment, overhaul, diagnosis, and repair. Also included are mechanical and hydraulic systems. The drive line section includes phasing, alignment and balance. (Prerequisite: Admission into the Automotive Service program and AST1112 or instructor approval)  

Total Credits: 2  
Total Hours: 48  

Types of Instruction  

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Credits/Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>1/16</td>
</tr>
<tr>
<td>Lab</td>
<td>1/32</td>
</tr>
</tbody>
</table>

Pre/Corequisites  

Admission into the Automotive Service program  

Institutional Core Competencies  

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.  

Course Competencies  

1. Exhibit professionalism  
   Learning Objectives  
   Identify safety practices  
   Demonstrate shop safety  

2. Research drive train system operation  
   Learning Objectives  
   Identify, interpret drive train concern; determine necessary action  
   Describe various noise, vibration, and harshness diagnostic techniques  
   Define motor and transmission mount diagnosis
3. **Identify clutch components**

   **Learning Objectives**
   - Examine clutch disc designs
   - Identify clutch power flow
   - Diagnose clutch noise, binding, slippage, pulsation and chatter; determine necessary action
   - Diagnose clutch noises

4. **Inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots and springs; perform necessary action**

   **Learning Objectives**
   - Service hydraulic clutch master, slave cylinder, lines, hoses, check for fluid leaks, use proper fluid type per manufacturer specification, bleed and fill system
   - Service clutch cables/automatic adjuster mechanisms

5. **Inspect and replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing and linkage and pilot bearing/bushing (as applicable)**

   **Learning Objectives**
   - Inspect standard and dual mass flywheel and ring gear for wear and cracks, determine necessary action
   - Examine clutch bellhousing, engine block, core plugs, rear main engine oil seal, alignment dowels and transmission mating surfaces
   - Measure bell housing bore to crank runout and face squareness
   - Measure flywheel runout and crankshaft end play; determine necessary action

6. **Identify drive shaft components**

   **Learning Objectives**
   - Diagnose universal joint noise, vibration concerns; perform necessary action
   - Inspect drive shaft slip yoke/spline
   - Inspect / service or replace center support bearings
   - Measure drive shaft angle
   - Inspect driveline phasing
   - Inspect drive shaft run out/balance

7. **Identify front drive axle components**

   **Learning Objectives**
   - Diagnose constant velocity joint noise and vibration concerns, determine necessary action
   - Identify front drive axle components
   - Service drive axle fixed joint
   - Service drive axle plunge joints
   - Inspect, service and replace shafts, yokes, boots, and CV joints

8. **Diagnose universal joint noise and vibration concerns, determine necessary action**

   **Learning Objectives**
   - Service universal joints
   - Describe servicing universal joint with ball joint press
   - Perform universal joint service with vise and hammer

**SCC Accessibility Statement**

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: [www.southcentral.edu/disability](http://www.southcentral.edu/disability)
This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.