MASTER SYLLABUS

AUTO221 – AUTOMATIC TRANSMISSIONS

Created by: Dennis Tuper

Canino School of Engineering Technology
Automotive Technology
Spring/2019
A. **TITLE:** AUTOMATIC TRANSMISSIONS

B. **COURSE NUMBER:** AUTO221

C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

# Credit Hours: 4
# Lecture Hours: 3 per week
# Lab Hours: 3 per week
Other: per week

Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE:** NO

E. **GER CATEGORY:** NONE

F. **SEMESTER(S) OFFERED:** SPRING

G. **COURSE DESCRIPTION:**

Fundamental principles of automatic transmissions including adjustments, repairs, and on-vehicle testing. Each student will participate in an actual overhaul of an automatic transmission. Students receive equal number of lecture and lab sessions.

H. **PRE-REQUISITES/CO-REQUISITES:**

a. Pre-requisite(s): YES

   Automotive Electrical Systems (AUTO 112) and (AUTO 122),
   Engine Performance I (AUTO 113) and (AUTO 114),
   Engine Performance II (AUTO 213),
   Automotive Braking Systems (AUTO 141) and (AUTO 144),
   Or permission of instructor.

b. Co-requisite(s): NONE

I. **STUDENT LEARNING OUTCOMES:**

<table>
<thead>
<tr>
<th>Course Student Learning Outcome (SLO)</th>
<th>Program Student Learning Outcome (PSLO)</th>
<th>ISLO</th>
<th>Subsets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe power flow through a Simpson-style planetary gear-set of an automatic transmission and calculate gear ratios of all forward gears and reverse.</td>
<td>ALO1, ALO2</td>
<td>5</td>
<td></td>
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<tr>
<td>Identify the basic components and their location in regards to an automatic transmission.</td>
<td>ALO1, ALO2</td>
<td>5</td>
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<tr>
<td>Successfully perform a multiple disc clutch apply device overhaul per the appropriate NATEF Job Sheet. (44)</td>
<td>ALO1, ALO2, AL04</td>
<td>5</td>
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<tr>
<td>Demonstrate basic knowledge of torque converter clutch operation and identify the related components.</td>
<td>ALO1, ALO2</td>
<td>5</td>
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</table>
The students will investigate and apply learned knowledge involving electronic transmission controls in current model vehicles through homework, quizzes, and applicable NATEF Jobsheets (19, 20, 24).

<table>
<thead>
<tr>
<th>KEY</th>
<th>Institutional Student Learning Outcomes (ISLO1-5)</th>
<th>Automotive Learning Outcomes (ALO1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
<td>Diagnosis and repair all automotive systems</td>
</tr>
</tbody>
</table>
| 1 | **Communication Skills**  
Oral [O], Written [W] | Demonstrate the ability to find all related system diagnostic/repair information within auto service publications. |
| 2 | **Critical Thinking**  
Critical Analysis [CA], inquiry & Analysis [IA], Problem Solving [PS] | | |
| 3 | **Foundational Skills**  
Information Management [IM], Quantitative Lit/Reasoning [QTR] | Utilize the 8 point service procedures to diagnose and solve problems. |
| 4 | **Social Responsibility**  
Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T] | Demonstrate safety procedures while conducting automotive service activities. |
| 5 | **Industry, Professional, Discipline Specific Knowledge and Skills.** | | |

**J. %** **APPLIED LEARNING COMPONENT:** YES  
1] CLASSROOM/LAB  
2] SERVICE LEARNING

**K. %** **TEXTS:**  
AUTOMATIC TRANSMISSIONS AND TRANSAXLES, HALDERMAN PEARSON, 2018, 7th EDITION, ISBN# 978-0134616797  
NATEF STANDARDS JOB SHEETS AREA A2, ERJAVEC CENGAGE, March 2015, 4th EDITION, ISBN# 978-1111646981

**L. %** **REFERENCES:**

**M. %** **EQUIPMENT:**  
1] STUDENT’S REQUIRED TOOL PACKAGE  
2] AUTOMOTIVE PROGRAM PROVIDED SPECIAL TOOLS AS NEEDED

**N. %** **GRADING METHOD:** A-F

**O. %** **SUGGESTED MEASUREMENT CRITERIA/METHODS:**  
1] Homework Assignments and Quizzes
P. **DETAILED COURSE OUTLINE:**

1] Syllabus, general discussion, show & tell of gear-sets and various transmission parts  
2] Discuss homework, Fluid checks and related jobsheets, cross sections and stick diagrams  
3] Discuss homework, power flow and 31TE logical diagnostics, 41TE and AOD gearsets  
4] Discuss homework, torque converters, vibration diagnostics jobsheet  
5] Discuss homework, fluid types and hydraulic system components / operation, stall-testing  
6] Discuss homework, hydraulic control valves and solenoid operation / diagnostics  
7] ASE Practice questions/review and Midterm exam  
8] Discuss homework, discuss Midterm exam, valve body service  
9] Discuss homework, transmission overhaul procedures, precautions, misc special tools  
10] Discuss homework, electronic transmission control operation and diagnostics  
11] Electronic transmission control operation and diagnostics  
12] Discuss homework, CVT operation and service procedures, operation animations  
13] Open discussion on newer transmissions, 8, 9, 10 speed power-flow, operation animations  
14] ASE Practice questions/review and End of Semester exam  
15] Final Exam

Q. **LABORATORY OUTLINE:**  YES

**Wk. 1-4 |** Practice-Unit Transmission Overhaul and Power-Flow  
**Wk. 5 |** Torque Converter Testing, Lock-Up Converter related Tasks  
**Wk. 6 |** Fluid and Filter Replacement and Pressure Testing related Tasks  
**Wk. 7-12 |** Live-Unit Transmission Overhaul and Power-Flow  
**Wk. 14 |** Complete any unfinished Tasks and Jobsheets