

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**



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:**

| Course Student Learning Outcome (SLO) | Program Student Learning Outcome (PSLO) | ISLO | Subsets |
|---|---|------|---------|
| Describe power flow through a Simpson-style planetary gear-set of an automatic transmission and calculate gear ratios of all forward gears and reverse. | ALO1, ALO2 | 5 | |
| Identify the basic components and their location in regards to an automatic transmission. | ALO1, ALO2 | 5 | |
| Successfully perform a multiple disc clutch apply device overhaul per the appropriate NATEF Job Sheet. (44) | ALO1, ALO2, AL04 | 5 | |
| Demonstrate basic knowledge of torque converter clutch operation and identify the related components. | ALO1, ALO2, | 5 | |

| | | | |
|--|------------------------|---|--|
| 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). | ALO1, ALO2, AL03, AL04 | 5 | |
|--|------------------------|---|--|

| KEY | Institutional Student Learning Outcomes (ISLO1-5) | Automotive Learning Outcomes (ALO1-4) |
|--------|--|--|
| ISLO # | ISLO & Subsets | |
| 1 | Communication Skills Oral [O], Written [W] | Diagnose and repair all automotive systems |
| 2 | Critical Thinking Critical Analysis [CA], inquiry & Analysis [IA], Problem Solving [PS] | Demonstrate the ability to find all related system diagnostic/repair information within auto service publications. |
| 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

- 2] Midterm and End of Semester Exams !
- 3] Final Exam !
- 4] Participation !
- 5] NATEF Standards Job Sheets !

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