



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**AUTOMATIC TRANSMISSIONS
AMS3137 5 Credit Hours**

Student Level:

This course is open to students on the college level in either the freshman or sophomore year and to area high school vocational students.

Catalog Description:

AMS 3137 - AUTOMATIC TRANSMISSIONS (5 hrs)

This course will enable the student to gain basic understanding and hands on experience utilizing industry standard procedures in the diagnosis and repair of the automatic transmission and transaxle systems. Topics presented throughout the course cover diagnoses, removal, repair, and installation of automatic transmissions and transaxles, both on and off the vehicle, including the disassembly of oil pumps, converters, gear trains, shafts, bushings, cases and friction and reaction units.

Prerequisites:

None

Controlling Purpose:

This course is designed to help the student increase their knowledge concerning entry-level skills contained in the sequenced competencies, for success, after graduation from the Automotive Technology Program.

Learner Outcomes:

Upon completion of this course, the student will be able to identify the principles and procedures needed for diagnosis and repair of automatic transmissions.

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

Units Outcomes and Criterion Based Evaluation Key for Core Content:

The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:

A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.

- B = All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.
- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
- F = Failing, will be computed in GPA and hours attempted.
- N = No instruction or training in this area.

UNIT 1: General Transmission and Transaxle Diagnosis						
Outcomes: The student will demonstrate an understanding of generalized automatic transmission/transaxle diagnosis.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Identify and interpret transmission/transaxle concern; assure proper engine operation; determine necessary action.
						Research applicable vehicle and service information, such as transmission/transaxle system operation, vehicle service history, service precautions, and technical service bulletins.
						Locate and interpret vehicle and major component identification numbers (VIN, vehicle cert. labels, and calibration decals).
						Diagnose fluid usage, level, and condition concerns; determine necessary action.
						Perform pressure tests; determine necessary action.
						Perform stall tests; determine necessary action.
						Perform lock-up converter system tests; determine necessary action.
						Diagnose electronic, mechanical, hydraulic, vacuum control system concerns; determine necessary action.
						Diagnose noise and vibration concerns; determine necessary action.
						Diagnose transmission/transaxle gear reduction/multiplication concerns using driving, driven, and held member (power flow) principles.

UNIT 2: Transmission and Transaxle Maintenance and Adjustment

Outcomes: The student will gain knowledge of transmission maintenance and common repair procedures.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Inspect, adjust or replace throttle valve (TV) linkages or cables; manual shift linkages or cables; transmission range sensor; check gear select indicator (as applicable).
						Service transmission; perform visual inspection; replace fluids and filters.

UNIT 3: In-Vehicle Transmission and Transaxle Repair

Outcomes: The student will gain knowledge of in-vehicle transmission and transaxle repair procedures.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Inspect, adjust or replace (as applicable) vacuum modulator; inspect and repair or replace lines and hoses.
						Inspect, repair, and replace governor assembly.
						Inspect and replace external seals and gaskets.
						Inspect extension housing, bushings and seals; perform necessary action.
						Inspect, leak test, flush, and replace cooler, lines, and fittings.
						Inspect and replace speedometer drive gear, driven gear, vehicle speed sensor (VSS), and retainers.
						Diagnose electronic transmission control systems using a scan tool; determine necessary action.
						Inspect, replace, and align power train mounts.

UNIT 4: Off-vehicle Transmission and Transaxle Repair

Outcomes: The student will gain knowledge of off-vehicle transmission and transaxle repair procedures.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Disassemble, clean and inspect transmission/transaxle.
						Inspect, measure, clean, and replace body valve (includes surfaces, bores, springs, valves, sleeves, retainers, brackets, check-balls, screens, spacers, and gaskets).
						Inspect servo bore, piston, seals, pin, spring, and retainers; determine necessary action.
						Inspect accumulator bore, piston, seals, spring, and retainers; determine necessary action.
						Assemble transmission/transaxle.

UNIT 5: Oil Pump and Converter

Outcomes: The student will gain knowledge of enter-grated pump and converter repair procedures.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas.
						Measure torque converter endplay and check for interference; check stator clutch.
						Inspect, measure, and reseal oil pump assembly and components.

UNIT 6: Gear Train, Shafts, Bushings and Case

Outcomes: The student will gain knowledge of enter-grated shafts, bushings, and gear train repair procedures.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Measure endplay or preload; determine necessary action.
						Inspect, measure, and replace thrust washers and bearings
						Inspect oil delivery seal rings, ring grooves, and sealing surface areas.
						Inspect bushings; determine necessary action.
						Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); determine necessary action.
						Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action.
						Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary actions.
						Inspect, measure, repair, adjust or replace transaxle final drive components.
						Inspect and reinstall parking pawl, shaft, spring, and retainer; determine necessary action.

UNIT 7: Friction and Reaction Units

Outcomes: The student will gain knowledge of enter-grated operation of a reaction and friction units.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; determine necessary action. Inspect bands and drums; determine necessary action.
						Measure clutch pack clearance; determine necessary action.
						Air test operation of clutch and servo assemblies.
						Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; replace as needed.
						Inspect bands and drums; determine necessary action.

Projects Required:

As assigned.

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

Students are required to furnish their own Personal Protection Equipment ie Safety Glasses.

Attendance Policy:

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:

The grading policy will be outlined by the instructor in the course syllabus.

Maximum class size:

Based on classroom occupancy

Course Time Frame:

The U.S. Department of Education, Higher Learning Commission, and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching, and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

Disability Services Program:

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.