

# AUTO 017: AUTOMATIC TRANSMISSIONS & TRANSAXLES

---

**Originator**

dredman

**Co-Contributor(s)****Name(s)**

Anderson, Dorothy

**Justification / Rationale**

The Automotive Faculty are reviewing and/or updating this course to assure compliance with local, State, and Federal regulations; support consistency within the curriculum; practice relevance regarding automotive industry and community; and to make improvements that will strengthen the learning environment this course creates thus benefiting the learners.

**Effective Term**

Fall 2022

**Credit Status**

Credit - Degree Applicable

**Subject**

AUTO - Automotive Technology

**Course Number**

017

**Full Course Title**

Automatic Transmissions &amp; Transaxles

**Short Title**

AUTOMATIC TRANS

**Discipline****Disciplines List**

Automotive Technology

**Modality**

Face-to-Face

Hybrid

**Catalog Description**

This course provides theory and hands-on experience in automatic transmissions/transaxles including: theory of operation, service, diagnosis and repair. The course includes the following topics: torque converters, gear sets, hydraulic controls, electrical controls, diagnosis and troubleshooting and partial disassembly and reassembly. A \$20.00 test fee for the appropriate Automotive Service Excellent (ASE) Student Exam is required. A uniform is required for this course.

**Schedule Description**

This class provides lecture/discussion and hands-on experience understanding, servicing, troubleshooting, diagnosing and repairing transmissions/transaxles. A \$20.00 test fee for the appropriate Automotive Service Excellent (ASE) Student Exam is required. A uniform is required for this course. Prerequisite: AUTO 010 or concurrent enrollment.

**Lecture Units**

1.5

**Lecture Semester Hours**

27

**Lab Units**

1.5

**Lab Semester Hours**

81

**In-class Hours**

108

**Out-of-class Hours**

54

**Total Course Units**

3

**Total Semester Hours**

162

**Prerequisite Course(s)**

AUTO 010 or concurrent enrollment

**Required Text and Other Instructional Materials****Resource Type**

Book

**Open Educational Resource**

No

**Author**

Various

**Title**

ASE Automotive Suite (Text, shop manual, and workbook for all 8 ASE automotive categories)

**Edition**

7th

**City**

Tinley Park, Illinois

**Publisher**

Goodheart Wilcox

**Year**

2021

**College Level**

Yes

**Flesch-Kincaid Level**

11.4

**ISBN #**

978-1-64564-559-7

---

**Class Size Maximum**

21

**Entrance Skills**

Describe shop safety practices.

**Requisite Course Objectives**

AUTO 010-Describe shop safety practices and proper procedures regarding handling hazardous material.

---

**Entrance Skills**

Identify basic automotive tools and equipment

**Requisite Course Objectives**

AUTO 010-Identify basic automotive tools and equipment.

---

**Entrance Skills**

Locate applicable vehicle service specifications and procedures using the latest online service information.

**Requisite Course Objectives**

AUTO 010-Locate applicable vehicle service specifications and procedures using the latest online service information.

---

**Entrance Skills**

Properly complete a repair order including all pertinent information and compliant, cause and correction

**Requisite Course Objectives**

AUTO 010-Properly complete a repair order including all pertinent information and compliant, cause and correction.

---

**Entrance Skills**

Properly position and lift a vehicle using a floor jack and jack stands and a vehicle hoist.

**Requisite Course Objectives**

AUTO 010-Properly position and lift a vehicle using a floor jack and jack stands and a vehicle hoist.

---

**Course Content**

1. Orientation, safety & environmental concerns.
2. Automotive repair industry terms and conventions.
3. Hand tools, special service tools and shop equipment.
4. Drive train theory and operation.
5. Transmission theory and operation.
6. Torque converters and pumps.
7. Hydraulic circuits and controls.
8. Gear trains and shafts.
9. Electronic controls.
10. Diagnosis, service and repair of automatic transmissions/transaxles, differentials and drive train components.
11. Automotive industry web-based training modules.

**Lab Content**

1. Safety & environmental protection.
2. General: Transmission and Transaxle Diagnosis.
3. In-Vehicle Transmission/Transaxle Maintenance and Repair.
4. Off-Vehicle Transmission and Transaxle Repair.
5. Transmission/transaxle tools and Equipment.
6. Transmission/transaxle maintenance requirements.

**Course Objectives**

	Objectives
Objective 1	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.
Objective 2	Diagnose, service, and repair torque converters and pump concerns.
Objective 3	Diagnose, service, and repair hydraulic circuits concerns.
Objective 4	Diagnose, service, and repair gear trains and shafts concerns.

Objective 5	Diagnose, service and repair electronic controls system concerns.
Objective 6	Perform regular maintenance.
Objective 7	Evaluate all required tasks to meet the Automotive Service Excellence (ASE) 2017 Master Automotive Service Technician (MAST) standards.

### Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:	
Outcome 1	Demonstrate shop safety practices while working in a team setting.
Outcome 2	Practice proper inspection, diagnostic, and repair skills given an automatic transmission/transaxle concern, using the proper diagnostic and repair tools, in a team setting.
Outcome 3	Demonstrate proficiency in referencing service information while exhibiting the ability to inspect and perform maintenance on automatic transmissions/transaxles and documenting repairs.

### Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Demonstration, Repetition/Practice	Demonstrate their ability to correctly perform a given task not limited to laboratory assignments, research projects, interactive role-play and group activities.
Technology-based instruction	Classroom and lab activities require critical thinking and diagnosis.
Collaborative/Team	Evaluate classroom and lab materials in a team setting while performing lab activities.
Lecture	Each class is half lecture covering multiple aspects of course content.
Laboratory	Participate in lab based activities to complete meet the Automotive Service Excellence (ASE) 2017 Master Automotive Service Technician (MAST) standards.
Discussion	Participate in classroom discussions.

### Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
College level or pre-collegiate essays	A research report submitted or completed, not limited to a, written, presentation, however, the learner is required to research information pertaining to the assignment.	Out of Class Only
Reading reports	Turned in by report, written, presentation, however the learner is required to research information pertaining to the assignment.	Out of Class Only
Student participation/contribution	Lab activities and learner may participate in role play activities.	In and Out of Class
Mid-term and final evaluations	Used to evaluate learners' knowledge and understanding of the information presented. Examples of these are not limited to quizzes, exams, presentations, research, or projects.	In and Out of Class
Group activity participation/observation	Learner may participate in role play activities.	In and Out of Class
Presentations/student demonstration observations	Learners will synthesize materials and prepare a presentation or other research assignment.	In Class Only
Laboratory projects	Evaluate lab based activities in order to complete the Automotive Service Excellence (ASE) 2017 Master Automotive Service Technician (MAST) standards.	In Class Only

Written homework	Readings from required text: 1-3 chapters per week from both classroom and shop manuals. Homework from required text: multiple-choice questions, fill in the blank and essay questions to be graded each week.	Out of Class Only
------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------

## Assignments

### Other In-class Assignments

1. Readings from required text
2. Homework from required text
3. Start of 2 SP2 safety
  - a. Mechanical Safety
  - b. Pollution prevention
4. Participation in discussion related to topic of lecture
5. Review and discuss vehicle diagnosis, troubleshooting and repair of personal, shop and other vehicles to be evaluated by the instructor during lab time
6. Must develop teamwork skills through classroom interaction and discussion

### Other Out-of-class Assignments

1. Readings from required text: 1-3 chapters per week from both classroom and shop manuals. Each chapter, 2 hours per week.
2. Homework from required text: multiple-choice questions, fill in the blank and essay questions to be graded each week. Each chapter, 2 hours per week.
3. Completion of 2 SP2 safety tests, each subject including an average of 4 hours total.
  - a. Mechanical Safety
  - b. Pollution prevention
4. Assigned readings and written summaries from selected instructor handouts. 1 hour
5. Written summaries and analysis of assigned websites.
6. Must complete a course project consisting an essay describing, analyzing and summarizing a selected topic, including out of class research and fieldwork. 8 hours
7. Vehicle diagnosis, troubleshooting and repair of personal, shop and other vehicles to be evaluated by the instructor during lab time.
8. Hands-on lab worksheets matching each course objective. These will be graded by the instructor throughout the semester during lab time, 1 hour per week.
9. Must develop teamwork skills through lab activities and assigned special projects, 8 hours total.
10. Automotive industry web-based training modules, each taking roughly, 8 hours total.
11. Exam prep, 12 hours total.

## Grade Methods

Letter Grade Only

## Distance Education Checklist

**Include the percentage of online and on-campus instruction you anticipate.**

**Online %**

50

**On-campus %**

50

## Lab Courses

**How will the lab component of your course be differentiated from the lecture component of the course?**

The lab activities require hands-on, live vehicles or equipment. There is physical interaction with the vehicles and the learner based on service procedures and required equipment.

**From the COR list, what activities are specified as lab, and how will those be monitored by the instructor?**

The lab content is comprised of the required tasks to meet the Automotive Service Excellence (ASE) 2017 Master Automotive Service Technician (MAST) standards.

**How will you assess the online delivery of lab activities?**

Laboratory activities will not be delivered in the online setting, only in person.

**Instructional Materials and Resources****Effective Student/Faculty Contact**

**Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?**

**Within Course Management System:**

Discussion forums with substantive instructor participation  
Online quizzes and examinations  
Regular virtual office hours  
Timely feedback and return of student work as specified in the syllabus  
Weekly announcements

**External to Course Management System:**

Direct e-mail  
Synchronous audio/video

**Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.**

Regular effective contact will be practiced through online lecture, discussion board postings, email communications, regular announcements, prompt grading and feedback of assignments, and virtual office hours. This contact between the facilitator and learner on a regular basis will enhance learner confidence and understanding and promote critical thinking and analyzation of subject matter.

**If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.**

Interaction between instructor and learner will help to enhance learning and understanding of subject material.

**Other Information****Provide any other relevant information that will help the Curriculum Committee assess the viability of offering this course in an online or hybrid modality.**

With the uncertainty of the teaching environment, enabling the lecture portion of this course to be delivered in an online setting, while keeping the hands-on portion face-to-face, will ensure learners can access needed training to ensure knowledge and experience is achieved to gain employment in the automotive field.

**MIS Course Data****CIP Code**

47.0604 - Automobile/Automotive Mechanics Technology/Technician.

**TOP Code**

094800 - Automotive Technology

**SAM Code**

C - Clearly Occupational

**Basic Skills Status**

Not Basic Skills

**Prior College Level**

Not applicable

**Cooperative Work Experience**

Not a Coop Course

**Course Classification Status**

Credit Course

**Approved Special Class**

Not special class

**Noncredit Category**

Not Applicable, Credit Course

**Funding Agency Category**

Not Applicable

**Program Status**

Program Applicable

**Transfer Status**

Transferable to CSU only

**General Education Status**

Y = Not applicable

**Support Course Status**

N = Course is not a support course

**Allow Audit**

Yes

**Repeatability**

No

**Materials Fee**

No

**Additional Fees?**

Yes

**Additional Fee Amount**

\$20.00

**Additional Fees Description**

Automotive Service Excellent (ASE) Student Exam

**Approvals****Curriculum Committee Approval Date**

3/17/2022

**Academic Senate Approval Date**

3/24/2022

**Board of Trustees Approval Date**

4/22/2022

**Chancellor's Office Approval Date**

05/07/2022

**Course Control Number**

CCC000631447

**Programs referencing this course**Automotive Air Conditioning Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=104>)Automotive Transmission Axle Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=108>)Automotive Braking Systems Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=109>)Automotive Light and Medium Duty Diesel Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=111>)Automotive Steering, Suspension, Alignment Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=112>)Automotive Introductions Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=201>)Advanced Transportation Technologies AS Degree (<http://catalog.collegeofthedesert.eduundefined/?key=44>)

Advanced Transportation Technologies AS Degree (<http://catalog.collegeofthedesert.eduundefined/?key=45>)  
Automotive Technology AS Degree (<http://catalog.collegeofthedesert.eduundefined/?key=57>)