

9/12/2025

DATE



REQUIRED COURSE



ELECTIVE COURSE

TEC

DIVISION



NEW COURSE



REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	AUT-082		TITLE: (30 Characters Max)		Manual Drive Train and Axles								
SEM CR HRS:	3.0	Lecture:	2.0		Lab:	2.0	ICCB Lab:	2.0	ECH:	4.0			
Course Level:	<input type="checkbox"/> Gen Ed/IAI <input type="checkbox"/> Baccalaureate/Non-IAI		<input checked="" type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/Not in Degree Audit		Clinical Practicum:	0.0	Work-based Learning:	0.0	WBL ECH:	0.0			
Course PCS & CIP:	12 - 47.0604		IAI Code:		N/A			Contact Hours (Minutes/Week)					
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:		Max:		16 Wks	200	8 Wks	400
Prerequisites:	AUT-048 and AUT-051												
Corequisites:	None												
Catalog Description: (40 Word Limit)	This course is the study of the diagnosis and repair of clutches, manual transmissions, transaxles and differentials. CV joints, drive shafts, front-wheel drive and four-wheel drive operations will be discussed.												

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Intro to drive trains and safety	4			
Clutch construction, operation and troubleshooting	4	4		
Manual transmission and transaxle construction, operation and troubleshooting	8	8		
Drive shaft, universal joint and constant velocity axle construction, operation and troubleshooting	4	4		
Rear axle assembly construction, operation and troubleshooting	6	10		
Four wheel drive component construction, operation and troubleshooting	4	4		
Noise, vibration and harshness service	2	2		
TOTAL	32	32	0	0

EVALUATION			
QUIZZES <input checked="" type="checkbox"/>	EXAMS <input checked="" type="checkbox"/>	ORAL PRES <input type="checkbox"/>	PAPERS <input type="checkbox"/>
LAB WORK <input checked="" type="checkbox"/>	PROJECTS <input type="checkbox"/>	COMP FINAL <input checked="" type="checkbox"/>	OTHER <input type="checkbox"/>

COURSE MATERIALS	
TITLE:	Manual Drive Trains and Axles
AUTHOR:	Johanson/Duffy
PUBLISHER:	Goodheart-Willcox
VOLUME/EDITION/URL:	4th edition
COPYRIGHT DATE:	2021

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Intro to drive trains and safety	4	1. Identify and compare various drive train designs while predicting safety concerns during the repair process.
Clutch construction, operation and troubleshooting	8	1. Identify clutch components and display their hands-on mechanical abilities while replacing and troubleshooting a vehicle's clutch system.
Manual transmission and transaxle construction, operation and troubleshooting	16	1. Identify manual transmission/transaxle components and display their hands-on mechanical abilities while disassembling, troubleshooting and reassembling a manual transmission/transaxle.
Drive shaft, universal joint and constant velocity axle construction, operation and troubleshooting	8	1. Determine which component is faulty and is causing noise or vibration in a constant velocity axle or drive shaft assembly.
Rear axle assembly construction, operation and troubleshooting	16	1. Identify rear axle assembly components and display their hands-on mechanical abilities while disassembling, troubleshooting and reassembling a rear axle assembly.

Four wheel drive component construction, operation and troubleshooting	8	1. Disassemble, inspect, adjust and/or replace transfer case and four wheel drive components while developing or following a troubleshooting plan.
Noise, vibration and harshness service	4	1. Solve the problem of pinpointing the source of abnormal noises and vibrations associated with a vehicle.
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Outcomes*	Outcome Title	At the successful completion of this course, students will be able to:
Course Outcome 1	Axle Assembly Gears	Demonstrate how to safely disassemble and set up the gears in an axle assembly.
Course Outcome 2	ASE 1 2 3 ManDriveT	Perform the ASE Education Foundation priority 1, 2 and 3 task for Manual Drive Train.
Course Outcome 3	ASE Cert ManDriveT	Obtain the ASE Education Foundation Student Certification for Manual Drive Train.
Primary Laker Learning Competency	Information & Technology Literacy: Students evaluate information effectively using the appropriate technological tools.	
Secondary Laker Learning Competency	Creative Thinking & Problem Solving: Students think creatively to solve problems.	

*Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 primary and 1 secondary Laker Learning Competency. Limit to 3-5.