Lake Land College
Course Information Form

COURSE NUMBER:	AUT-052	TITLE: (30 Characters Max)		Engine Computer Systems and Sensors				

SEM CR HRS:	3	Lecture:		2	Lab:	2	ECH:	4

Course Level:	☐ Gen Ed / IAI ☐ Baccalaureate /Non-IAI	☑ Career/Technical ☐ Dev Ed/ Not in Degree Audit	Clinical Practicum:	0	Work-based Learning:	0	WBL ECH:	0

COURSE PCS #	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 computerized engine control system operation and diagnosis. Focusing on computer networks, sensors and basic engine performance diagnosis.

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Computer fundamentals	4	5		
CAN and network communications	4	5		
Temperature sensors	3	2		
Throttle position sensors	3	2		
MAP/BARO sensors	3	2		
Mass air flow sensors	3	2		
Oxygen sensors	3	2		
On-board diagnosis	4	5		
Scan tools and engine performance diagnosis	4	5		
TOTAL	31	30	0	0

EVALUATION

QUIZZES	☑	EXAMS	☑	ORAL PRES	☐	PAPERS	☐
LAB WORK	☑	PROJECTS	☐	COMP FINAL	☑	OTHER	☐

COURSE MATERIALS

TITLE:	Automotive Electrical and Engine Performance
AUTHOR:	James D. Halderman
PUBLISHER:	Pearson
VOLUME/EDITION/URL:	Eighth Edition
COPYRIGHT DATE:	2020

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		The student will be able to:
Computer fundamentals	9	1. Identify various parts of onboard computers, inputs and outputs devices that are controlled by computers.
CAN and network communications	9	1. Identify the types of networks and serial communications used on automotive vehicles. 2. Explain the diagnosis of communication faults.
Temperature sensors	5	1. Explain the purpose and function of different types of vehicle temperature sensors. 2. Perform diagnosis on these sensors.
Throttle position sensors	5	1. Explain the purpose and function of the throttle position sensors. 2. Perform diagnosis on the throttle position sensors.
MAP/BARO sensors	5	1. Explain the purpose and function of a MAP and a BARO sensor. 2. Perform diagnosis on the MAP and BARO sensors.
Mass air flow sensors	5	Explain the purpose and function of the mass air flow sensors. Perform diagnosis on mass air flow sensors.

Oxygen sensors	5	Explain the purpose and function of the oxygen sensors. Perform diagnosis on the oxygen sensors.
On-board diagnosis	9	Explain the purpose and functions of the systems that operate monitors, the codes system, freeze frame information, PCM tests , and global modes.
Scan tools and engine performance diagnosis	9	Explain the diagnosis process steps, the different types of scan tools, code or no code diagnosis, and the methods used to reprogram modules.
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Outcomes*	At the successful completion of this course, students will be able to:
Course Outcome	Testing of the various engine control sensors.
Course Outcome	Executing reading different module trouble codes.
Course Outcome	Distinguishing a diagnostic strategy to repair drivability concerns with a vehicle.
Primary Laker Learning Competency	Information & Technology Literacy: Students not only identify when information is necessary, but they also find, evaluate and use that information effectively with the appropriate technological tools.
Secondary Laker Learning Competency	Creative Thinking & Problem Solving: Students think creatively and solve problems by successfully combining knowledge in new ways.

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.