COURSE SYLLABUS

Course Title: Automotive Basics/ Automotive Technology, Advanced Automotive Technology & Practicum of TDL to articulate with Dual credit SPC Class: AUMT 1316-272 Suspension & Steering Systems (3:1:8)

Semester/Year: Fall 2025
Instructor: Mario R Guerrero
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Office Hours: ***Check posted hours after classes begin or by appointment***

LISD AutoTech-Always Under Estimated: The Power House at the ATC

Continuous Public Notification of Non-Discrimination Policy

Lubbock Independent School District does not discriminate on the basis of race, color, national origin, sex, or disability in its programs or activities and provides equal access to the Boy Scouts and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: Kami Finger,Assistant Superintendent for School Support and Special Services, telephone 806-219-0400, 1628 19th Street Lubbock, TX 79401, 806-219-0400, kami.finger@lubbockisd.org.

A. I.GENERAL COURSE INFORMATION

Course Description: (3:1:8) this course covers the theory and operation of automotive suspension and steering systems, including tire and wheel problem diagnosis, component repair, and alignment procedures. Also covered are diagnosis and repair of electronic load leveling systems, front and rear suspension systems, proper nomenclature and operation of all existing components. Elements of the course may be taught manufacturer specific.

B. **Course Goals/Objectives:** Utilizing appropriate safety procedures, the student will identify and diagnose system components ; repair or replace system components; perform two and four wheel alignments

C. **Course Competencies:** A = 100-90 B = 89-80 C = 79-70 F = 69 or below. A grade of "C" or higher is required in AUMT 1316 in order to earn a specialty certificate in Suspension & Steering

D. **Academic Integrity:** It is the aim of the faculty of Lubbock ISD to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his own, any work which he has not honestly performed, is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension. For further information concerning Cheating and Plagiarism, read the section on Academic Integrity in the SPC General Catalog. **If you have a question as to whether you may work with other students on an assignment, ASK YOUR INSTRUCTOR. On some assignments, working with others is encouraged.**

E. **SCANS and Foundation Skills:** Specific SCANS competencies and foundation skills applicable to this course are listed adjacent to each objective in the course objective table. They include: Foundation Skills (F): 1,2,3,5,6,8,9,10,11,12. Competencies(C): 5,6,7,11,14,15,16,17,18,19,20. A complete list of SCANS competencies and foundation skills is attached at the end of this syllabus.

F. **Verification of Workplace Competencies-Technical Education Division.** The learning outcomes of this course will prepare the student to meet the competencies measured in a comprehensive elective course experience (Course #=s AUMT 1366 , or AUMT 2366). In addition the student will also be prepared to take the ASE Student Certification test for Steering and Suspension Systems.

II. SPECIFIC COURSE/INSTRUCTOR REQUIREMENTS

A. Textbook & Other Required Materials: Ford Training Website is required for this class. See the assignment page and required Ford Class page in this syllabus for more information.

8 ½ x 11 notebook for classroom note taking and assignments
Clear Safety Glasses.

B. **Class Attendance Policy:** Students are expected to attend all classes in order to be successful in a course. The student may be administratively withdrawn from the course when absences become excessive **without notice, there are no excused absences. Excessive absences means 4 (four) or more absences for any reason. Upon the 5th absence, each student will lose 10 points off of their current GPA, the 6th absence an additional 10 points, and the 7th absence an additional 10 points. Excessive absences cause you to miss key points of a class and show you are not reliable/dependable for employment. Two (2) tardies will count as one absence. Leaving class without notifying your instructor is considered an absence, regardless of the time you left.**

When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. It is the student's responsibility to complete work missed within a reasonable period of time as determined by the instructor. Students are officially enrolled in all courses for which they pay tuition and fees at the time of registration. Should a student, for any reason, delay in reporting to a class after official enrollment, absences will be attributed to the student from the first class meeting.

Students who enroll in a course but have "Never Attended" by the official census date, as reported by the faculty member, will be administratively dropped by the Office of Admissions and Records. A student who does not meet the attendance requirements of a class as stated in the course syllabus and does not officially withdraw from that course by the official census date of the semester, may be administratively withdrawn from that course and receive a grade of "X" or "F" as determined by the instructor.

It is the student's responsibility to verify administrative drops for excessive absences through MySPC using his or her student online account. If it is determined that a student is awarded financial aid for a class or classes in which the student never attended or participated, the financial aid award will be adjusted in accordance with the classes in which the student did attend/participate and the student will owe any balance resulting from the adjustment.

C. **Assignment Policy:** All assignments are due at the beginning of class on the due dates unless otherwise instructed. Assignments may include on-line or off-line review questions, short essay questions, and definitions. **Most of these assignments will be on-line through the Ford on-line curriculum, you should log on to the on-line curriculum at the beginning of the semester as per instructor directions in order to complete them on time**. **There will be no makeup assignments and no late assignments accepted.**

The dates printed in this syllabus can change. Every effort will be made to inform the students of those changes, but the students are ultimately responsible for all assignments regardless of any changed dates. Please check the dates with your instructor throughout the course.

D. **Grading Policy/Procedure and /or Methods of Evaluation:** All exams, including the final exam are mandatory for effective student evaluation. Exams will be objective and will cover both theory and practical skills pertaining to all aspects of the material presented. Adequate study time should be set aside for exam reviews**. There will be No makeup exams given. If a student's financial records are not clear at the time of the final examination, the student will not be allowed to**

take the final exam. The NA3SA certification test mentioned above can be used in place of your final exam.

You will be evaluated during this course by the following method:

Unit exams, written assignments, pop quizzes, attendance and Ford assignments= 25%

Unit skills tests and/or lab sheets = 50% (approximately 4)

Final Exam: 25%

A unit skills test is a measure of how well you follow instructions, your safety in the shop, your use of tools, your cleanliness in the work area, and your attention to detail while you perform diagnostics or repairs within a required time period. **If you're late for a skills test the following will happen; 0 to 5 minutes late = -10pts; more than 5 min. but less than 10 min. late = -20pts; more than 10 min. but less than 15 min.late = -30pts. If you are more than 15 minutes late your will have earned a "0" for the test.**

A task sheet will be used to plan and track students while they perform required skills in the shop. This is not used to average your grade, but it is a professional evaluation of how well you work independently and your level of expertise in completing assigned tasks. Prospective employers will want to see this during an interview, so please follow the shop and repair procedures to the best of your ability.

E. Special Requirements: A student's conduct is expected to follow the guidelines stated in the college catalogue and student handbook, any deviation will result in immediate disciplinary action. No smoking, chewing, or dipping is permitted in the building or outside the back doors of the shop and food and drinks are not allowed in any classroom, **lab, or shop**. All these activities will be limited to break time in designated areas only. Breaks will be limited to 20 minutes. Do not park on the back lot unless preauthorized by your instructor, unauthorized vehicles can be towed at the owner's expense.

Dress Code: The Automotive Program requires you to dress appropriately. Flip flops or opened toed shoes are not allowed in the shop, proper foot attire should be worn to protect your feet, leather work boots are recommended. Jeans/ pants will be worn so that neither one falls to your thighs or knees, belts must hold them at your waist line. Safety glasses will be worn at all times in the shop. If a student fails to comply with the above dress code, he or she, will be sent home and given an absence for that day.

	Course Objectives: Upon completion of this course, you should be able to:	
F1,2,5,6,9,12	• Discuss the function of steering and suspension systems.	C5,6,7,15
F1,2,5	• Explain why it is important to maintain proper alignment of the steering system.	C5,6,7,15
F1,2,5,12	• Understand the need for safety during repair and practice safe working habits.	C5,7
F1,2,5,8-10,12	• Use service manuals and manufacturers' specifications to properly complete steering and suspension tasks.	C5-7,15,18-20
F1,2,5,8-12	• Diagnose problems associated with both the steering and suspension systems.	C5-7,15,18-20
F1,2,5,8-12	• Discuss and demonstrate how alignments are performed.	C5-7,15,18-20
F1,2,5,9,12	• Name the components of the steering and suspension systems and discuss the purpose of each.	C5,7,15
F1,2,5,8	• Discuss special handling requirements for towing, jacking, and lifting.	C5,7
	Content Outline:	
	Unit I: Introduction to Under car Systems Unit Objectives: Upon completion of this unit, you will be able to:	
F1,2,5,6,10	• Discuss the functions of steering and suspension systems.	C5,7,15 C5,7,15
F1,2,5,6	• Explain the importance of maintaining proper wheel alignment.	C5,7,15
F1,2,5,6	• Discuss shop safeties factors, and follow safe working procedures.	
F1,2,5,6	• Discuss the different types of lubricants used in steering and suspension systems.	C5,7,15 C5,7,15
F1,2,5,6	• Discuss the different types of seals and their uses.	C5,7,15
F1,2,5,6	• Discuss the different types of bearings and their uses.	*C5,7,15,16, 19,20
F1,2,5,6,8,9,12	• Inspect and replace wheel bearings.	C5,7,15
F1,2,5,6,8,9,12	• Inspect and replace wheel-bearing seals.	*
F1,2,5,6,8,9,12	• Inspect and replace axle seals.	C5,7,15
F1,2,5,6	• Discuss the axes of movement.	
F1,2,5,6	• Discuss over steer and under steer.	

	Unit II: Wheel and Tire Diagnosis and Repair Unit Objectives: Upon completion of this unit, you will be able to:	
F1,2,5,6,12	• Discuss the different tire ratings in use today.	C5,7,15
F1,2,5,6,12	• Diagnose tire wear problems and determine needed repairs.	C5,7,15,16, 19,20
F1,2,5,6,12	• Inspect tires and adjust air pressure correctly. Diagnose tire pressure monitoring systems	C5,7,15,16
F1,2,5,6,8-12		C5,7,15-20
F1,2,5,6	• Diagnose wheel and tire vibration problems.	C5,7,15
F1-6	• Rotate tires correctly.	C5,7,15
F1,2,5,6,8,9,12	• Measure run out of wheel and tire assemblies.	C5,7,15-20
F1,2,5,6,8,9,12	• Diagnose tire pull problems.	C5,7,15
F1,2,5,6,8,9,12	• Perform static and dynamic wheel balancing.	C5,7,15,16, 19,20
	• Correctly install and torque wheel assemblies.	
	Unit III : Front and Rear Suspension Components and Service Unit Objectives: Upon completion of this unit, you will be able to:	
F1,2,5,8	• Distinguish between a conventional frame and a unibody.	C5,7,15
F1,2,5,8	• Identify and discuss the different types of springs.	C5,7,15
F1,2,5,8	• Discuss the difference between sprung and unsprung weight as it relates to suspension.	C5,7,15
F1,2,5,8	• Identify and discuss the function of shocks, bushings, and stabilizers.	C5,7,15
F1,2,5,8	• Discuss the function of coil spring system components.	C5,7,15
F1,2,5,8	• Distinguish between torsion bar suspension and coil spring suspension.	C5,7,15
F1,2,5,8		C5,7,15
F1,2,5,8-12	• Identify a Macpherson strut suspension system.	C5,7,14-20
F1,2,5,8-12	• Determine the cause(s) of typical front suspension.	C5,7,14-20
F1,2,5,8-12	• Perform a road test to aid in diagnosis.	C5,7,14-20
F1,2,5,8	• Inspect, diagnose, and service Macpherson Struts.	C5,7,15
F1,2,5,6,8	• Identify and service rear coil and leaf springs.	C5,7,15
F1,2,5,6,8	• Identify and discuss the three types of rear suspensions.	*
F1,2,5,6,8	• Service front and rear shock absorbers.	C5,7,15,16, 19,20
F1,2,5,6,8	• Service front and rear stabilizers and control arms and bushings.	C5,7,15
	• Discuss electronically controlled or air controlled suspension systems.	

	Unit IV: Wheel Alignment Diagnosis, Adjustment, and Repair Unit Objectives: Upon completion of this unit, you will be able to:	
F1,2,5,6,12	• Discuss the need for correct alignment service.	C5,7,15
	• Discuss how caster, camber, and toe affect steering control and tire wear.	C5,7,15
F1,2,5,6,12		
F1-6,12	• Diagnose vehicle steering problems and determine needed repairs.	C5,7,15
F1-6,12	• Measure vehicle ride height and determine needed repairs.	C5,7,15,16
F1-6,12	• Check and adjust front and rear camber.	C5,7,15,16
F1-6,12	• Check and adjust caster.	C5,7,15,16
F1-6,12	• Check and adjust front and rear toe.	C5,7,15,16
F1-6,12	• Center a steering wheel.	C5,7,15,16
F1-6,12	• Check toe-out-on turns.	C5,7,15,16
F1-6,12	• Check steering axis inclination.	C5,7,15,16
F1,2,5,6,12	• Check, adjust, or repair front-to-rear wheel tracking.	C5,7,15,16

	Unit V: Steering System Diagnosis and Repair Unit Objectives: Upon completion of this unit, you will be able to:	
F1,2,5,8	• Inspect steering gear system fluid levels and adjust according to manufacturer specifications.	C5,7
F1,2,5,8-10,12	• Inspect, adjust, and replace a power steering pump drive belt.	C5,7,15,16
F1,2,5,8-10,12	• Diagnose and repair fluid leakage problems.	*C5,7,15,16, 19,20
F1,2,5,8-10,12	• Perform a power steering pump pressure test and determine needed repairs.	*
F1,2,5,8-10,12	• Remove, inspect, and repair a power steering pump assembly.	*
F1,2,5,8-10,12	• Inspect and replace mounting bushings and brackets on a rack and pinion gear assembly.	*
F1,2,5,8-12	• Diagnose problems in rack and pinion gearboxes and determine needed repairs.	C5,7,11,14,15
F1,2,5,8-12	• Adjust a rack and pinion steering gear assembly.	C5,7,15,16
F1,2,5,8-12	• Inspect and replace inner bellows and tie rods on a rack and pinion gear assembly.	*
F1,2,5,8-12	• Inspect, adjust, or replace a power steering control valve.	*
F1,2,5,8-12		*
F1,2,5,8-12	• Inspect and replace a pitman arm.	*
F1,2,5,8-12	• Inspect and replace a center link, tie rods and adjust.	*
F1,2,5,8-12	• Inspect and replace an idler arm assembly.	C5,7,11,14,15
F1,2,5,8-12	• Diagnose problems in conventional steering gear boxes and determine needed repairs.	C5,7,15,16
F1,2,5,8-12	• Adjust bearing preload and sector lash on a conventional gearbox.	C5,7,15
F1,2,5,8-12	• Discuss 4 wheel steering operation. • Discuss alignment procedures on 4 wheel steering systems.	C5,7,15
F1,2,5,8-12	• Diagnose problems in rack and pinion gearboxes and determine needed repairs on Hybrid Electronic steering	C5,7,11,14,15

AUMT 1316 Steering and SuspensionAssignment and Exam Schedule

Log on to this course on Blackboard using your SPC credentials, also log on to the on-line Ford Training curriculum by following your instructor's directions. Become familiar with the websites and look for all on line assignments on Blackboard and the Ford Training site. The Ford Training page follows this page. It is your responsibility to keep up with all assignments and turn in by the due dates listed below and on line.

Unit I: Introduction to under car Systems – August 26th -- September 11th

Unit I Assignment: **Log on to the on-line curriculum Ford website, you will need directions from your instructor. Review the Ford Training page and see what is required for Unit 1. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Participate in all class and lab activities, other written and in-class assignments will be assigned throughout the unit, maybe even on-line.

Assignment Due: (Ford training for unit 1) September 11th

Unit I Written Exam: September 11th (on blackboard or Ford Training)

Unit 1 Skill Exam: September 11th

Unit II: Wheel and Tire Diagnosis and Repair -- September 16th – October 2nd

Unit II assignment: **Review the Ford Training page and see what is required for Unit 2. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned lab projects. Turn in all assignments, other written and in-class assignments will be assigned throughout the unit, maybe even on-line.

Assignment Due: October 2nd

Unit II written Exam October 2nd (on blackboard or Ford Training)

Unit II Skills Exam October 2nd

Unit III: Front and Rear Suspension Components and Service – October 7th-- October 23rd

Unit III Assignment: **Review the Ford Training page and see what is required for Unit 3. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned class or lab projects.

Assignment Due: October 23rd

Unit III written Exam October 23rd (on blackboard or Ford Training)

Unit III Skills Exam October 23rd

Unit IV: Wheel Alignment Diagnosis, Adjustment, and Repair – October 28th-- November 13th

Unit III assignment: **Review the Ford Training page and see what is required for Unit 4. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** . **Define the terms below,** turn in on the due date, and actively participate in all assigned projects. , other written and in-class assignments will be assigned throughout the unit, maybe even on-line.

Terms:

Toe	Positive Caster	Camber	Toe-Out
Steering Axis Inclination	Included Angle	Toe –in	Set Back
Negative Caster	Caster	Toe-Out-On Turns	Tracking
Positive Camber	Negative Camber		

Assignment Due: November 13th

Units IV Exam: November 13th (on blackboard or Ford Training)

Units IV Skills Test: November 13th THANKSGIVING HOLIDAY November 26th – 28th (no classes**)**

Unit V: Steering System Diagnosis and Repair – November 18th -- December 4th

Unit IV Assignment: **Review the Ford Training page and see what is required for Unit 5. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned lab projects. Turn in all assignments. , other written and in-class assignments will be assigned throughout the unit, maybe even on-line.
Assignment Due: December 4th
Unit V Written Test: This will be included on the final exam. Unit V Skills Test: This test will be given on a needed and time allowing basis only.
FINAL EXAM—due by DECEMBER 9th @ 7:00pm (on Blackboard)

AUMT 1316

Ford Training Website = college.fordservicetraining.com

Unit 1: Introduction of Under Car Systems. (Syllabus Title)
All of F101014003 – Steering and Suspension Fundamentals

1. F100101400301 – Course Introduction
2. F100101400302 – Steering System
3. F100101400302 – Suspension System
4. F100101400304 – Inspection and Maintenance

Unit 2: (Wheel and Tire Diagnosis and Repair)

1. All of F204003103 – Tire Inspection and Maintenance – (5 modules)
2. All of F204002103 – Tire Information – (6 modules)
3. All of F204001103 – Basic Tire and Wheel Service – (6 modules)
4. All of 33G01W1 – Tire/Wheel Vibration Analysis – (5 modules)

Unit 3: (Front and Rear Suspension Components and Service)

1. F206206102 – Steering & Suspension System Diagnosis and Service
2. F20620610201 – Introduction
3. F20620610202 – Diagnostic Procedures Suspension
4. F20620610203 – Diagnostic Procedures Steering

Unit 4: (Wheel Alignment Diagnosis, Alignment & Service)

1. F206206102 – Steering & Suspension System Diagnosis And Service, yes the same category on the Ford site as Unit 3
2. F20620610204 – Steering and Suspension Alignment
3. F20620610205 – Symptoms and Possible Causes

Unit 5: (Steering System Diagnosis and Repair)

1. Ford site below to be used in conjunction with the Task Sheet to teach steering system diagnosis and repair.
2. F206207102- Vehicle Dynamic Control – 8 modules, pick and choose them or do all, most of these are semi related to suspension and steering

SCANS COMPETENCIES

C-1 **TIME** - Selects goal - relevant activities, ranks them, allocates time, prepares and follows schedules.
C-2 **MONEY** - Uses or prepares budgets, makes forecasts, keeps records and makes adjustments to meet objectives.
C-3 **MATERIALS AND FACILITIES** - Acquires, stores, allocates, and uses materials or space efficiently.
C-4 **HUMAN RESOURCES** - Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

INFORMATION - Acquires and Uses Information

C-5 Acquires and evaluates information.
C-6 Organizes and maintains information.
C-7 Interprets and communicates information.
C-8 Uses computers to process information.

INTERPERSONAL–Works With Others

C-9 Participates as members of a team and contributes to group effort.
C-10 Teaches others new skills.
C-11 Serves Clients/Customers–works to satisfy customer's expectations.
C-12 Exercises Leadership–communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.
C-13 Negotiates-works toward agreements involving exchanges of resources; resolves divergent interests.
C-14 Works With Diversity–works well with men and women from diverse backgrounds.

SYSTEMS–Understands Complex Interrelationships

C-15 Understands Systems–knows how social, organizational, and technological systems work and operates effectively with them.
C-16 Monitors and Corrects Performance–distinguishes trends, predicts impacts on system operations, diagnoses systems performance and corrects malfunctions.
C-17 Improves or Designs Systems–suggests modifications to existing systems and develops new or alternative systems to improve performance.

TECHNOLOGY–Works With a Variety of Technologies

C-18 Selects Technology–chooses procedures, tools, or equipment, including computers and related technologies.
C-19 Applies Technology to Task–understands overall intent and proper procedures for setup and operation of equipment.
C-20 Maintains and Troubleshoots Equipment–prevents, identifies, or solves problems with equipment, including computers and other technologies.

FOUNDATION SKILLS

BASIC SKILLS–Reads, Writes, Performs Arithmetic and Mathematical Operations, Listens and Speaks

F-1 Reading–locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.

F-2 Writing–communicates thoughts, ideas, information and messages in writing and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.

F-3 Arithmetic–performs basic computations; uses basic numerical concepts such as whole numbers, etc.

F-4 Mathematics–approaches practical problems by choosing appropriately from a variety of mathematical techniques.

F-5 Listening–receives, attends to, interprets, and responds to verbal messages and other cues.

F-6 Speaking–organizes ideas and communicates orally.

THINKING SKILLS–Thinks Creatively, Makes Decisions, Solves Problems, Visualizes and Knows How to Learn and Reason

F-7 Creative Thinking–generates new ideas.

F-8 Decision-Making–specifies goals and constraints, generates alternatives, considers risks, evaluates and chooses best alternative.

F-9 Problem Solving–recognizes problems, devises and implements plan of action.

F-10 Seeing Things in the Mind's Eye–organizes and processes symbols, pictures, graphs, objects, and other information.

F-11 Knowing How to Learn–uses efficient learning techniques to acquire and apply new knowledge and skills.

F-12 Reasoning–discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

PERSONAL QUALITIES–Displays Responsibility, Self-Esteem, Sociability, Self-Management, Integrity and Honesty

F-13 Responsibility–exerts a high level of effort and perseveres towards goal attainment.

F-14 Self-Esteem–believes in own self-worth and maintains a positive view of self.

F-15 Sociability–demonstrates understanding, friendliness, adaptability, empathy and polite-ness in group settings.

F-16 Self-Management–assesses self accurately, sets personal goals, monitors progress and exhibits self-control.

F-17 Integrity/Honesty–chooses ethical courses of action.