

Angelina College
Technology and Workforce Division
AUMT 2434 – AUTOMOTIVE PERFORMANCE ANALYSIS II
General Syllabus

I. BASIC COURSE INFORMATION

- A. **Course Description:** *(as stated in the bulletin, including necessary pre-requisite courses, credit hours)*
 Diagnosis and repair of emission systems, computerized engine performance systems, and advanced ignition and fuel systems; and proper use of advanced engine performance diagnostic equipment. Prepares students for ASE Certification test.
- B. Intended Audience: Second Semester automotive students.
- C. **Instructor:**
 Name: Mark Yarnall
 Office Location: Industrial Technology Building
 Office Hours: 7:00-7:30am Mon thru Thurs 8:00-10:00am Friday
 Phone:936-633-5252
 E-mail Address:myarnall@angelina.edu

II. INTENDED STUDENT OUTCOMES:**A. Core Competencies – (Basic Intellectual Competencies)**

1. Communication: Competency in reading at the college level means the ability to analyze and interpret a variety of printed materials – books, articles, and documents. A core curriculum should offer students the opportunity to master both general methods of analyzing printed materials and specific methods for analyzing the subject matter of individual disciplines. Competency in writing is the ability to produce clear, correct, and coherent prose adapted to purpose, occasion, and audience. Although correct grammar, spelling, and punctuation are each a sine qua non in any composition, they do not automatically ensure that the composition itself makes sense or that the writer has much of anything to say. Students need to be familiar with the writing process including how to discover a topic and how to develop and organize it, how to phrase it effectively for their audience. These abilities can be acquired only through practice and reflection.

Competence in speaking is the ability to communicate orally in clear, coherent, and persuasive language appropriate to purpose, occasion, and audience. Developing this competency includes acquiring poise and developing control of the language through experience in making presentations to small groups, to large groups, and through the media. Listening at the college level means the ability to analyze and interpret various forms of spoken communication.

2. Critical Thinking: Angelina College defines critical thinking as the dynamic process of questioning preconceptions and biases through the gathering and evaluation of data to reach new conclusions that consider realistic implications and consequences.

3. Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

B. Exemplary Objectives – (Found in the Texas Higher Education Coordinating Board Document. Titled: CORE CURRICULUM: ASSUMPTIONS AND DEFINING CHARACTERISTICS Dated: April 1998) NA

C. Course Learning Outcomes – (common to all sections)

1. Understand and diagnose modern automotive emission systems
2. Diagnose advanced automotive ignition and fuel systems
3. Learn proper use of advanced diagnostic tool

III. ASSESSMENT MEASURES OF STUDENT LEARNING OUTCOMES:**A. Assessments for the Core Intellectual Competencies –**

1. Communication -Reading – Textbook chapters will be assigned to students by the semester schedule.
Writing – The students will be given one writing assignment per semester, subject to be determined by the instructor. Speaking – The students will be asked to respond to questions asked by the instructor during lecture periods. Listening – Listening will be measured by the student's appropriately interpreting spoken communication, developing appropriate responses to spoken communication.
2. Critical Thinking – The students will be asked to evaluate and respond to different problems as presented by the instructor during lecture periods.
3. Empirical and Quantitative Skills- The students will be evaluated by written and oral questions in the classroom and lab settings that will require the manipulation and analysis and numerical data or observable facts that will result in informed conclusions.

B. Assessments for Course Learning Outcomes –

1. Study fuel injection components and operation. Students will respond correctly to embedded examination questions.
2. Identify fuel and emission components and their function. Students will respond correctly to embedded examination questions.
3. Discuss onboard diagnosis and engine performance diagnosis including evaporative emission systems. Students will respond correctly to embedded examination questions.

IV. INSTRUCTIONAL PROCEDURES:

A. Methodologies common to all sections.

Students will receive two hours of lecture and six hours of lab each week.

B. Methodologies determined by the instructor

NA

V. COURSE REQUIREMENTS AND POLICIES:

A. Required Textbooks, Materials and Equipment –

Textbook: Automotive Technology A Systems Approach 6th Edition By Jack Erjavec and Rob Thompson with MindTap Access

Tools: Student must provide their own set of tools and tool storage from approved list at the end of this syllabus.

B. Assignments - (Appropriate due dates, schedules, deadlines)

Basic Fundamentals of Advanced Engine Performance

1. Retrieve and record stored OBD I diagnostic trouble codes; clear codes. P-2
2. Retrieve and record stored OBD II diagnostic trouble codes; clear codes. P-1
3. Diagnose the causes of emissions or drivability concerns resulting from malfunctions in the computerized engine control system with stored diagnostic trouble codes. P-1
4. Diagnose emissions or drivability concerns resulting from malfunctions in the Computerized engine control system with no stored diagnostic trouble codes; Determine necessary action. P-1
5. Check for module communication errors using a scan tool. P-2
6. Inspect and test computerized engine control system sensors, powertrain control module (PCM), actuators, and circuits using a graphing multimeter (GMM)/digital storage Oscilloscope (DSO); perform necessary action. P-1
7. Obtain and interpret scan tool data. P-1
8. Access and use service information to perform step-by-step diagnosis. P-1
9. Diagnose drivability and emissions problems resulting from malfunctions of interrelated Systems (cruise control, security alarms, suspension controls, traction controls, A/C, Automatic transmissions, non-OEM-installed accessories, or similar systems); Determine necessary action. P-3
10. Practice recommended precautions when handling static sensitive devices. P-2
11. Diagnose drivability and emissions problems resulting from failures of interrelated systems (cruise control, security alarms, torque controls, suspension controls, traction controls, torque management, A/C, automatic transmission, and similar systems); determined needed repairs. P-3

C. Course Policies – (This course conforms to the policies of Angelina College as stated in the Angelina College Handbook.)

Educational Accommodations – If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you may fill out the Educational Accommodations application within your AC Portal, under the “Student Services” tab. A Student Success team member will contact you once the application is received. At a post-secondary institution, you must self-identify as a person with a disability in order to receive services; for questions regarding the application process you can visit the Office of Student Success and Inclusion in the Student Center (205A); text 936.463.8078; or email access@angelina.edu. To report any complaints of discrimination related to a disability, you should contact Mr. Steve Hudman, Dean of Student Affairs, in Room 101 of the Student Center. You may also contact Dean Hudman by calling (936) 633-5292 or by emailing shudman@angelina.edu.

Attendance – Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences or four (4) cumulative absences may be dropped from the class. Records will be turned in to the academic dean at the end of the semester. Do not assume that non-attendance in class will always result in an instructor drop. **You must officially drop a class or risk receiving an F.** This is the official Angelina College Policy.

Additional Specific Requirements for this Course –

- A. Academic Requirements: Students will be expected to complete all required reading and homework assignments.
- B. There will be pop tests for student-only information and 3 major tests throughout the semester.
- C. Administrative Requirements: The students are allowed a minimum of 3 consecutive or 4 accumulative absences before being dropped. Missing assignments are given an automatic "0". Late assignments will not be accepted resulting in a "0" for the assignment. Students may be given a one-time chance on a makeup exam at the instructor's discretion.

VI. COURSE CONTENT:

A. Content/ Topics - (as required by the individual Instructor)

Fuel system and components, OBD II, diagnostic procedures including emissions and evaporative systems as well as advanced ignition system diagnosis.

B. Additional Content

NA

VII. EVALUATION AND GRADING:

A. Grading Criteria

This class is a theory and lab based combination. Attendance, classroom participation, book work, tests and lab grades will be used to assess the final grade.

B. Determination of Grade

- A. Test #1
- B. Test #2
- C. Test #3
- D. Test #4
- E. Test #5
- F. Midterm
- G. Test Average
- H. Final Exam
- I. Writing and reading assignment grade
- J. Speaking and critical thinking grade
- K. Attendance

- L. Average of Competency Profile Grade
- M. Overall Grade (G+H+L)/3=
- N. Final Grade will be awarded based on:
 - 90 – 100 = A
 - 80 – 89 = B
 - 70 – 79 = C
 - 69 or less = F

VIII. SYLLABUS MODIFICATION:

The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.

IX. As a student enrolled in a Technology & Workforce program, you will encounter certain risks while you are in a classroom, laboratory experience, or in a clinical or practicum setting. In the event that you sustain an injury and /or require any medical testing or care, all resulting medical expenses (hospital, ambulance, or physician fees), are your financial responsibility and not the responsibility of Angelina College or the clinical/practicum site.

Craftsman Tools (Sears)

476 piece VoTech starter set

00921473000P D302400 \$1525

VoTech Auto Add On

00921452000P D302410 \$850

½” impact wrench

00951115000P 51115 \$200

26 inch 10 Drawer heavy duty ball bearing 2 pc Combo \$290

Craftsman total \$2865 Craftsman offers a student discount program that may make this total lower, you must sign up on the Craftsman website.

Snap-on Tools Student Discount program

Advanced automotive set

SEPAADS \$2991

Add on Group 3

9000GS30 \$1928

Automotive Multi-meter kit

MTIND683ASEP \$132

Roll Cart 3 drawers

KRSC33AP \$559

Snap-on total \$5610 You must register for the Snap-On student program to receive these prices

Mac Tools

265 piece Master set #1

MTS100AS \$3100

79 piece Master set #7 (Impact and sockets)

MTS700AS \$2700

3 Drawer Utility cart

MB199UC \$?

The MAC tools website says that they give 50% off for students that register for their program so the total for the tools sets should be about \$3000 plus the cost of the cart.

Matco Tools

Auto Master set

24795348 \$3828

Sliding top cart 5 drawer

STC50 \$738

Matco total \$4566 You must register for the Matco Student program to receive these prices.