Pittsburg State University

## DEPARTMENT OF AUTOMOTIVE TECHNOLOGY

### ***Course Syllabus***

#### **Course Name: Automotive Electrical / Electronic Equipment Lab**

#### **Course Numbers:** AT 216-01 **Course Time Schedules**: T/TH 2:00 - 4:30

 AT 216-02 M/W 2:00 - 4:30

#### **Credit Hours:** 3 **Semester:** SP2014

**Classroom:** N104 KTC **Lab:** N114 KTC

**Instructor:** Mike Elder **Telephone:** (620) 235-4557

**Office:** N120b (Kansas Technology Center) **Fax:** (620) 235-6190

**Office Hours:** MWF 8:00 – 11:00AM **E-mail:** melder@pittstate.edu

 T/TH 8:00 – 9:00AM

##### COURSE DESCRIPTION:

AT-216 is the co-requisite lab course for the AT215 Electrical/Electronic Equipment course. It provides students with hands-on experiences using automotive service equipment to apply the theory and principles that are taught in the AT-215 co-requisite course.

**CO-REQUISITE:** AT-215 Electrical/Electronic Equipment

**WRITING TO LEARN:**

AT-216 is a ***writing to learn*** course. Writing assignments will be incorporated to add to the learning experience of the student. Writings will include, test and quiz short answer and essay questions, lab activity sheets and six, two page, electrical circuit diagnostic analysis reports. **Students must complete at least five of the six diagnostic analysis report (DAR) writing assignments to pass the course.**

**PHILOSOPY OF WRITING:**

I believe writing is an essential life-skill. Writing will help you not only to learn the course material, but will help improve your ability to organize your thoughts and improve your critical thinking skills needed to diagnose modern vehicles. Success in your future career will hinge on how well you use your acquired knowledge and critical thinking skills to solve problems. Writing skills will also be necessary to communicate your ideas and recommendations to others. Developing effective writing skills requires practice, which will be incorporated into the lessons and activities of this course.

##### PURPOSE OF THE COURSE:

This course is designed to acquaint the student with the use of various test equipment, diagnostic and repair procedures that are used in diagnosing and repairing automotive electrical systems. Course activities will help students learn to apply electrical/electronic theories and develop their diagnostic skills on automotive electrical components and systems.

##### COURSE OBJECTIVES:

The major objective of the lab portion of this course is to allow the student to have hands-on experience with on-board electrical/electronic components found on current production vehicles. The student will become familiar with various types of test equipment and the procedures required to diagnosis the various electrical components and systems found on vehicles. Interrelationships of systems and component diagnosis are heavily stressed.

**REQUIRED TEXT AND MATERIALS:**

Text: Diagnosis & Troubleshooting of Automotive Electrical, Electronic, and Computer Systems, Sixth Edition, By: James D. Haldaman, Prentice Hall Publishers Inc. 2012.

Workbook: ELECTRICAL TASK MANUAL NATF PRO, Jones & Bart, **ISBN:** 9780763785086

Equipment: Colored Pencils, Safety glasses, and Three Ring Binder.

**INSTRUCTIONAL RESOURCES:**

###### Instructional Power Point Presentations – Posted on CANVAS

 B. On-line Training Resources

###### C. Computer reference material

###### D. Late model automobile electrical components

E. Hand tools and lab equipment

###### F. Computer projection instruction and videos

**TEACHING STRATEGIES:**

A wide variety of instructional methods are used to provide students with a meaningful learning experience. These include group discussion, cooperative learning activities, demonstrations, and lab activities, in addition to more traditional methods such as writing reports.

**REQUIREMENTS FOR THE COURSE:**

Reading Assignments Lab Activities

 -Text: Related Chapters - Complete lab task sheets

Written Assignments

-Electrical circuit diagnostic analysis reports (DAR)

-Short answers and essays (Exams)

-Lab activity questions

**EVALUATION CRITERIA:**

**Grading will be categorized and weighted as follows:**

Diagnostic analysis reports (6) 40%**\***

**\*Students must pass this writing portion of the coursework to pass the class.**

Lab Activities 30%

Professionalism / Class participation 10%

Exams/Quizzes 20%

**Total 100%**

**GRADING SYSTEM:**

**A** = 90-100%

**B** = 80-89%

 **C** = 70-79%

 **D** = 60-69%

 **F** = 59% or lower

# Assignments:

**All assignments are due on the assigned date**. Assignments will not be accepted late, unless the instructor has granted prior permission. One letter grade may be subtracted if the assignment is accepted late. No work over two weeks late will be accepted.

**Writing Assignments:**

Electrical circuit diagnostic analysis reports will be graded following the Pittsburg State Rubric for Writing Mastery which includes the following six areas:

**Focus** – The purpose or main ideal is clearly indicated and supported by the content of the paper.

**Development** – Claims or observations are supported with appropriate evidence, valid reasoning and correct application of testing procedures.

**Organization** – Ideas are organized into paragraphs and presented in a logical sequence.

**Use of Sources** – Outside sources or data support the main idea; sources are identified and clearly distinguished from the writer’s own ideas. Proper electrical terms and procedures are applied correctly.

**Style** – Sentences are clear well structured. Effective use of content area vocabulary is consistent throughout the paper.

**Editing** – The written work is nearly free of errors in spelling, grammar, punctuation, and word choice.

**Lab Activities Grade:**

Half the lab grade is based upon class participation, cooperation, initiative, ability to follow directions, cleanup at the end of your lab, safety, attitude, not being absent or tardy, and completion of assigned work. You will earn credits for each lab that you actively participate in.

**Professionalism / Class Participation Grade:**

Students are expected to demonstrate the attributes of an automotive professional (See Attributes of an Automotive Professional Handout). This grade is based upon student demonstrated professionalism and class participation. Specifically the grade is given for cooperation, initiative, and ability to follow directions, attitude, not being absent or tardy, and completion of assigned work. You will earn credits for each class that you actively participate in. Daily professionalism / participation points, quizzes, or assignments may not be made up unless the instructor has granted prior permission. You will not receive this daily grade score if you missed or were tardy to that day’s class even though you completed the assignment. You will not receive your professionalism / participation points if you attend class but did not complete the assignment. You must complete the assignment, be attentive and participate in class to receive the professionalism / participation credits.

**Quizzes:**

Most quizzes will be administrated on-line using CANVAS. The student will be required to take these quizzes outside the classroom before midnight of the assigned due date. There will a time limit set for each quiz. The quizzes cannot be made up if missed. The student can take each quiz early if necessary and will have only one chance to complete each quiz once started. It is the students’ responsibility to remember to complete the quiz before the posted deadline.

**Exams:**

Students must take the exam the day the test is given. If students miss the test the instructor will determine if the student may take the test late. If a student is allowed to take the test late, he or she will automatically have **10 points** subtracted from their score (**15 points on the Final Exam**), regardless of the reason for missing the test. Therefore, if a student knows that they must miss a test day, they should ask the instructor if it is possible to take the test prior to test day, in order to be allowed to earn the full credit for the test. The instructor may allow students to take an exam early for exceptional reasons or cases.

# CLASS ATTENDANCE:

Each student should be aware of the Class Attendance Policy found in the PSU General Catalog (2013-2014). http://catalog.pittstate.edu/contentm/blueprints/blueprint\_display.php?bp\_listing\_id=162&blueprint\_id=138&sid=1&menu\_id=8593

The following statement is quoted from the policy statement:

“Students at Pittsburg State University are expected to attend class regularly and participate fully in the activities of that class under the guidance of a University instructor. The instructor is responsible for setting and communicating to the students the attendance requirements for each class.”

Class & group participation is dependent upon attendance by the student. Absences are classified as **excessive** when they reach: three in a class that meets three or more times a week, or two in a class that meets once or twice a week. Attendance and tardiness will be recorded for all class meetings and will be reflected in the final course grade. Note: Tardy more than 20 minutes results in an absence even if you stay in the class. **All absences must be documented on the appropriate form (found at the end of this document) if not preapproved by the instructor**. The instructor will determine if an absence is to be excused or not. Make sure that you include proper documentation as to where you were and why you were absent. Example: Note from the doctor or job interview. **You may be dropped from the class if you have 4 unexcused absences.** Note: This determination is based on each individual case, and will be discussed as needed with the instructor.  **It is your responsibility to drop yourself from the class if you decide not to continue with the class before the end of the semester.**

**Tardiness:**

2 late arrival’s (tardy) = 1 absence

If a student is tardy, it is his/her responsibly to see the instructor after class to confirm he/she was not marked absent.

**Flu:**

Given the high transmission rate of the H1N1 virus, I have special instructions regarding flu symptoms this semester.  If you have flu symptoms, I do not want you coming to class and spreading the flu!  Flu symptoms include fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills and fatigue. Some people also experience diarrhea and vomiting. If you have these symptoms, please see your doctor or go to the health center.  If caught early, you might be given a medication to mediate the symptoms, and those who have been exposed to it might be given a medication as a preventative measure.  If you do this and share a note from the doctor, I will give you an alternate means of getting participation credit.

**SAFETY:**

Kansas state law requires students to wear approved safety glasses in automotive lab classes. Students who fail to have and wear adequate safety glasses during lab activities will be required to leave the lab area and **will be counted as absent for that class period**. Students are also expected to dress appropriately for lab classes. No open toe shoes will be allowed during lab activities, and loose clothing is not recommended. Safety principles and concepts are appropriately noted and emphasized during class lectures. Text and other instructional aides also stress safety.

1. During all demonstrations and skill exercises the student is expected to act and think in a safe manner.

2. The student is required to observe all safety rules and wear all appropriate safety equipment.

**Students will NOT be allowed to participate in lab if they: (a) have no safety glasses, (b) are wearing shorts, or (c) are wearing sandals or slippers**

**METHODS OF ACHIEVING SUCCESS:**

Achieving success in this course will require a time commitment outside of class. It is vital that you read textbook assignments prior to their being covered in class, and actively participate in class discussion, activities, and review. The student needs to be in class every day on time! The automotive industry will not tolerate employees who are excessively absent or tardy. These negative habits can start in college and will not be tolerated in this class. **Attending class every day, being an automotive professional with a positive attitude and completing assignments on time will help ensure you are successful in this class.**

**CERTIFICATION:**

You are strongly encouraged to take the ASE A6 Electrical/Electronic System test during the semester you are taking this class. ASE certification is an important achievement that potential employers are looking for in the automotive industry. This certification can set you apart from your competition in the job market. ASE certification is not a requirement for this course, but you can earn a higher letter grade if you pass the A6 ASE test while enrolled in this class. Additionally, students passing the ASE A6 exam prior to the final exam date are exempted from taking the final exam. More information about the ASE test will be presented during the course.

**OTHER CONCERNS:**

 **Laptops may not be used during class unless authorized by the instructor.**

 **Use of ANY tobacco product within the building is strictly prohibited**.

 **Cell phones must set on quiet and put away.**

**SPECIAL CONCERNS:**

Any student, who has a disabling condition and may require some special arrangements to meet course requirements, should contact the instructor as soon as possible to make the necessary accommodations. Additional information regarding important dates, policies and procedures can be found at the following link: http://www.pittstate.edu/dotAsset/9e421c72-1f34-441c-8c7f-2f68fd510e80.pdf

**PITTSBURG STATE UNIVERSITY EQUAL OPPORTUNITY STATEMENT:**

Pittsburg State University is committed to a policy of educational equity. Accordingly, the University admits students, grants financial aid and scholarships, conducts all educational programs, activities, and employment practices without regard to race, color, religion, sex, national origin, sexual orientation, age, marital status, ancestry or disabilities.

**ACADEMIC DISHONESTY**

Academic dishonesty is taken very seriously in this class.  Please review the following link: <http://www.pittstate.edu/audiences/current-students/policies/rights-and-responsibilities/academic-misconduct.dot>

It states that "it includes, but is not limited to:
(a) giving or receiving unauthorized aid on examinations,
(b) giving or receiving unauthorized aid in the preparation of notebooks, themes, reports, papers or any other assignments,
(c) submitting the same work for more than one course without the instructor's permission, and,
(d) plagiarism.  Plagiarism is defined as using ideas or copying any material directly (be it the work of other students, professors, or colleagues) or copying information from print or electronic sources (including the internet) without explicitly acknowledging the true source of the material is plagiarism.  Plagiarism also includes paraphrasing other individuals' ideas or concepts without acknowledging their work, or contribution.  To avoid charges of plagiarism, students should follow the citation directions provided by the instructor and/or department in which the class is offered."

Cheating will result in you receiving an "XF" for the course grade which indicates the result of academic dishonesty.  You should also know that cheating can result in you being dismissed from the entire university.

**CANVAS**

This class will use CANVAS for posting of grades, class discussions, and administration of quizzes, posting of homework assignments, distribution of PowerPoint presentations and class materials, and general communication to the class. It is very important that you log into CANVAS early in the semester to confirm access to this system. You should also regularly check your GUS mail account or forward messages to the e-mail account you regularly use as all course announcements will come through GUS e-mail.

**Student Support for CANVAS**

Student support for CANVAS LMS will be provided through the OIS Gorilla Geeks Help Center at 109 Whitesitt Hall, 620-235-4600 or geeks@pittstate.edu. Hours of operation are 8:00 a.m. through 4:30 p.m. Training options will be available for students through the Gorilla Geeks Help Center and through Freshman Experience courses. More information may be found at <http://www.pittstate.edu/geeks>.

**COURSE OUTLINE**

**SAFETY /TOOLS AND EQUIPMENT**

**ELECTRICal fundamentals**

1. Conventional & electron theories
2. Circuit layout and operation
	1. Series
	2. Parallel
	3. Series – Parallel
3. Circuit analysis &testing
4. Electronic component testing

**BATTERIES**

1. Testing procedures
2. Service procedures

**STARTING SYSTEMS**

1. Diagnosis & Service Procedures

**CHARGING SYSTEMS**

1. Diagnosis & Service Procedures

**LIGHTING SYSTEMS**

1. Diagnosis & Service Procedures

**DRIVER INFORMATION SYSTEMS**

1. Gauges – Types & Diagnosis
2. Warning lamps

**VEHICLE ACCESSORIES SERVICE**

1. Horns
2. Wipers
3. Audio Systems

**SAFETY RESTRAINT SYSTEMS**

1. Diagnosis & Service Procedures

**IGNITION SYSTEMS**

1. Diagnosis & Service Procedures

**HYBRID SAFETY CONSIDERATIONS**

**Attributes of an Automotive Professional**

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**.**Punctual, Persistent, Prioritizing, Proactive, Problem solver, Positive attitude

**.**Responsible, Reliable, Reasonable, Respectful

**.**Organized, Objective, Open to new ideas, Open to criticism

**.**Focused, Fervent about their industry, Friendly, Forgiving

**.**Educated, Engaged, Enthusiastic, Efficient, Effective, Expert, Expresses thanks

**.**Skilled technically, Strong work ethic, Skilled communicator, Seeks improvement

**.**Studious, Self-motivated, Sincere, Socially sensitive, Shows appreciation

**.**Intelligent, Innovative, Interpersonally skilled, Introspective of their skills

**.**Outgoing, Open minded, Overachieving beyond what is expected

**.**Not satisfied with mediocrity, Not afraid to fail, Non-judgmental

**.**Ambitious, Accountable, Adaptable, Authentic, Always thorough, Admits faults

**.**Leader, Logical, Loyal, Listens well, Life-long learner, Learns from their mistakes

**..Absence Report**

This report must be filed with the instructor at the end of the class session after the student returns to class. Professional absences must be filed before they occur in order to be excused from class without penalty. Make sure to include proper documentation with this report so that the instructor may determine if the absence should be excused or not. Note: You must complete this form for **each absence** that occurs, even if it is unexcused. It is your responsibility to make copies of this form to be turned in to the instructor. Do not ask for additional copies of this form.

**Student's Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Course Involved: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date of Absence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_**

 **Day of the Week Month Date**

**Date filed with instructor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circle One: Personal Absence Professional Absence**

**Reason for the absence:**

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**Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**