**Course Syllabus - Automotive Technology 121- Principles of Automotive Electricity and Electronics**

**- Spring 2013**

**Course Times:**

Monday - 8:30am - 11:30am **AND** Wednesday - 8:30am - 11:30am

**Instructor:**

Assistant Professor, Dan Reed

Automotive Technology

(267) 299-5874 (crummy unreliable voicemail)

(856) 438-0263 (text messages, and voicemail)

[dreed@ccp.edu](mailto:dreed@ccp.edu) (I will always reply to your e-mail, if you did not get a reply, I did not get it!)

Office Hours: - (For tutoring or additional help please contact me)

Room 155 - WPRC ATC

8am to 8:30am and 3:30pm to 4pm Monday and Wednesday

10am to 12am Tuesday and Thursday, Friday by appointment only.

[**http://faculty.ccp.edu/faculty/dreed/**](http://faculty.ccp.edu/faculty/dreed/) **- Contains notes, labs, and links for all classes this semester**

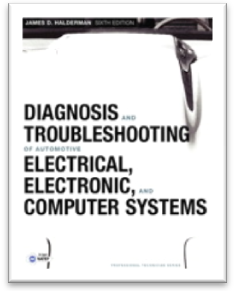
**Description:**

This course is a study of the fundamental theory and applications of electrical and electronic principles in the automotive industry. Emphasis is placed on subject matter recommended by the industry through the National Automotive Technicians Educational Foundation (NATEF). This course, in conjunction with AT 221 is designed to help prepare students for the Automotive Service Excellence (ASE) exam in group 6: "Electrical and Electronic Systems," and incorporates substantial hands-on training with both demonstrator units and customer vehicles utilizing state-of-the-art electronic text equipment in the Automotive Technology Center. AT 121 incorporates substantial “hands on” training. Students will inspect, diagnose, and repair automotive starting, charging, and basic electrical circuits. This syllabus may be subject to change if needed due to time constraints of the semester. All students will be made aware of the change, if it occurs VIA the college e-mail system.

**Course Outline:**

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| --- | --- |
| Jan 14 | Course Introduction Chapter 3 - Basic theory electrical theory |
| Jan 16 | Chapter 3 - Basic theory electrical theory **-** |
| Jan 23 | Chapter 4/5/6 Ohms Law and Electrical Circuits |
| Jan 28 | Chapters 4/5/6/7 Ohms Law and Electrical Circuits |
| Jan 30 | Chapters 4/5/6/7 Ohms Law and Electrical Circuits |
| Feb 4 | **Unit Test 1 (Chapter 3, 4, 5, 6, and 7)** |
| Feb 6 | Chapter 8 - Test Equipment |
| Feb 11 | Chapter 8 |
| Feb 13 | Chapter 11 - Schematics and Troubleshooting |
| Feb 18 | Chapter 11 - Schematics and Troubleshooting |
| Feb 20 | Chapter 11 - Schematics and Troubleshooting |
| Feb 25 | Chapter 11 - Schematics and Troubleshooting |
| Feb 27 | Chapter 11 - Schematics and Troubleshooting |
| Mar 4 | ***SPRING BREAK! NO CLASS!*** |
| Mar 6 | ***SPRING BREAK! NO CLASS!*** |
| Mar 11 | Chapter 13 - Magnetism and Electromagnetism |
| Mar 13 | Chapter 10 - Automotive Wiring Repair |
| Mar 18 | Chapter 10 - Automotive Wiring Repair |
| Mar 20 | **Unit Test 2 (Chapters 8, 10, 11, and 13)** |
| Mar 25 | Chapter 17 and 18 - Automotive Batteries |
| Mar 27 | Chapter 17 and 18 - Automotive Batteries |
| Apr 1 | Chapter 17 and 18 - Automotive Batteries |
| Apr 3 | Chapter 19 and 20 Cranking Systems |
| Apr 8 | Chapter 19 and 20 Cranking Systems |
| Apr 10 | Chapter 19 and 20 Cranking Systems |
| Apr 15 | Chapter 21 and 22 Charging Systems |
| Apr 17 | Chapter 21 and 22 Charging Systems |
| Apr 29 | **Final Exam Chapter 17, 18, 19, 20, 21, and 22** |

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| **Best Practices - Everyday in class part of your grade you will be expected to;**  **Come to class on time.**  **Wear safety classes at all times while in the shop, lab areas or while using ANY tools.**  **Use fender covers on vehicles.**  **Clean up all garbage and put all used tools for that lab back in the proper place - or where they came from.** |



**Required Student Texts:**

Diagnosis and Troubleshooting of Automotive Electrical, Electronic, and Computer Systems with NATEF Correlated Task Sheets, 6/E  
ISBN-13:  9780132802215

Publisher:  Prentice Hall

Copyright:  2012 Format: Kit/Package/ShrinkWrap

Published:  04/17/2011

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| **What is class participation?**  **Engaged learning! Heads on desks, texting in class, standing in a corner not working in the group, never asking questions, or not having homework done when we review are all examples of what NOT to do in this class!** |

**WHAT YOU NEED TO BRING WITH YOU - TO TAKE THIS CLASS:**

**Classroom Text w/ website access**

**Simple Calculator (You many not use a cellphone, smartphone, or networked device)**

**Pen or Pencil**

**Notebook w/folder pocket**

**Safety Glasses**

**Work boots or leather shoes with an oil resistant sole.**

**Student Evaluation:**

In terms of learning outcomes, student evaluation will be based on the following:

Unit Exams (60%) (Unit Test 1, 2, Final Exam)

Labs, Attendance, Classroom participation and shop evaluation (20%)

Homework (20%)

GradeCourse Numerical Average “Real Life”

A 90-100 Outstanding, “You’re going places!”

B 80-89 A very good worker.

C 70-79 You do what needs to get done.

D 60-69 Passed up for raises, and promotions.

F 59 and below “Your FIRED!”

There are a total of 500 points for the class. Each test is 100 (3 of them), homework, labs, class participation is 100, and attendance is 100. Totaling 500 points.

Example – Student “A” Has 100% for all of their tests, homework and quizzes. However they missed 4 days of class – they highest grade they can get for the class is an 88% ( B+ ).

Student “B” Has 80% for all of their tests, homework and quizzes. However they missed 4 days of class – they highest grade they can get for the class is a 73% - That is a ( C- ) .

Student “C” Has 70% for all of their tests, homework and quizzes. However they missed 4 days of class – they highest grade they can get for the class is a 63% - That is a ( D- ).

Student “D” Has 70% for all of their tests, But did no homework. However they missed 3 days of class, and came in late once – they highest grade they can get for the class is a 54% - That is an ( F ).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test 1 | Test 2 | Test 3 | HW 1 | HW2 | HW 3 | ATTN | Total Points | Student Average | Letter Grade |
| **100** | **100** | **100** | **33** | **33** | **33** | **100** |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

(Sum of Total Student Points / Total Possible Points (500)) X 100 = Your Final Grade

**Laboratory and Homework Assignments:**

Students will be required to complete at least one lab and homework assignment for each section of study. Students must do their own work; copying or plagiarism will not be tolerated and will result in ejection from the course. Based on the time constraints of some of the labs, missed labs may or may NOT be able to be made up by a student. Homework is to be completed online using the text’s website. In order to complete the homework it must:

Be done and graded online;

Be completed by the due date given by the instructor;

While you can take the online homework (chapter quiz) multiple times, I will only accept the first grade from the first time you take the quiz;

Late homework will not be graded or accepted, it will be averaged in as a zero (0) into your homework grade.

Incomplete or not participating in a lab will be ten 10 (out of 30) points off of that day’s attendance grade.

Poor class participation will be ten 10 (out of 30) points per class infraction.

In order to access the homework, you must buy the textbook and have access to the website. All homework is “open book” and all of the homework when averaged together is worth the same as a test grade. Please make every effort to complete the homework as explained above.

**In order to gain credit for a lab, you MUST come to class on time, and participate in the lab for the ENTIRE class period!**

**Exams:**

The exams will evaluate what the students have completed in the classroom and the lab. They will consist of short answer questions based on ASE-related test material and sample questions. Students will also have to perform hands-on based testing and demonstrate to the instructor lab-learned skills. **Students caught cheating on exams, test, or quizzes will receive a zero (0) test grade for that test. Missed tests or quizzes are subject to a written (essay) test. If a student has a total of four (4) absences, there will be no makeup test given or offered.**

**Attendance and Preparation:**

Students will be encouraged to treat the educational process like gainful employment with compensation being a comparable grade. Attendance is mandatory. Just because you missed class, does not mean you are excused from the missed work. If the missed work is not completed it will not be graded, and count against your grade. Only an excused absence can be made up at a later time. If it is deemed that the student is abusing the use of excused absences, this privilege will be revoked. If you are unable to attend a class or will be late, please contact me. *The Community College of Philadelphia states that missing four (4) classes is worth two weeks of missed work. The student SHOULD DROP from this course at that time*.

Roll will be taken every day at the start of class time. Absences will be marked as 30 (out of 30) points off of the student’s attendance grade. This equates to 3 points off your final grade. Lateness means, coming into class after it has started. If you are late, it will be 10 (out of 30) points off the students’ attendance grade.

Lockers and changing areas are available to students in the rest rooms of the Automotive Technology Center. It is strongly advised that students bring a change of "work clothes" for lab periods and wear appropriate "shop-durable," closed-toed footwear. A student wearing inappropriate clothing and/or footwear will NOT be able to participate in a lab. This is done for the safety of the student. Please lock up all valuables while in the Auto Tech Center in your locker, use common sense with personal items.

**Community College of Philadelphia's Early Alert Initiative**

The system positively intervenes in Community College of Philadelphia's students' academic paths early and appropriately by effectively communicating current performance and supplying information beneficial to academic success. Faculty members have the opportunity to complete Early Alert reports at 20% and 50% reporting periods during the semester. Students will be assessed on the following items: attendance, punctuality, meeting assignment deadlines, classroom behavior, classroom participation and other factors pivotal to student success. Should you receive an Early Alert letter, you should follow up on the suggested intervention strategy as soon as possible.

**Cell phones:**

Cell phones **must** be turned off while class is in session for both lab and theory sessions. If a cell phone "goes off" you **must** answer the call. A cell phone that generates noise interrupts the learning process for all students and the instructor. **Texting in class while lecture or tests are in session are not permitted!**  Please be respectful of other students and the instructor by placing your phone on silent or vibrate mode.

**Special Needs**

Students who are registered with the Center on Disabilities must inform the instructor by the end of the first week of classes if special accommodations are requested.

Upon completion of this course students will be able to:

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| Outcome | Assessment |
| 1. Explain Ohm’s law and use it to solve basic electrical circuit problems | Written Ohm’s law problems. Students find solution. |
| 1. Explain Watt’s law and use it to solve basic electrical circuit problems | Written Watt’s law problems. Students find solution. |
| 1. Name basic electrical schematic components. | Identification or pictorial identification using a wire diagram. |
| 1. List the basic parts of an electrical circuit. | Written assessment. |
| 1. Describe how to test a circuit for voltage, current, and resistance using a digital volt ohm meter. | Physical demonstration and oral or written assessment. |
| 1. Explain how to test automotive fuses. | Physical demonstration and oral or written assessment. |
| 1. Explain how to test an automotive battery. | Physical demonstration and oral or written assessment. |
| 1. Describe how an automotive battery works. | Oral or written assessment. |
| 1. Explain how to test a vehicle starter motor. | Physical demonstration and oral or written assessment. |
| 1. Describe specific starter operation and circuit controls. | Identification or pictorial identification with written assessment. |
| 1. Explain how to test an automotive generator (alternator). | Physical demonstration and oral or written assessment. |
| 1. Describe diode functions and purpose in an automotive generator (alternator). | Oral or written assessment. |

**Failure to follow these general shop safety rules can lead to personal injury, loss of property or life.**

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| EYES **Appropriate eye protection must be worn at all times in the shop and lab area.** Eye protection must be worn in this building where an eye danger is present. When welding or cutting with a torch use welding goggles or facemask to protect against flash. FEET Appropriate footwear must be worn in the shop and lab areas. Appropriate footwear must have an oil resistant sole. Leather boots or shoes with steel toes are preferred. Open toe footwear (sandals), sneakers, or heels are not permitted in the shop or lab areas. CLOTHING Appropriate clothing must be worn in the shop and lab areas at all times. Long pants must be worn. Any loose clothing must be tied back or secured (long shirts, ties, or jackets). HANDS Chemical resistant gloves must be worn when handling acid, solvent, or any other chemical the poses an exposure health threat. Please see the MSDS chart for more information. Leather gloves should be used for welding or handling hot items. HAIR - Long hair must be tied back and tucked into a shirt collar. | EARS Use hearing protection while using air tools or near loud equipment. FIRE/FIRST AID Know the location of fire extinguishers and first aid station. SMOKING is NOT permitted anywhere in the building at all times. Beware of open flame, sparks or other ignition sources. EXHAUST If a car is running make sure exhaust vent system is hooked up and operational. DRIVING You must have a valid drivers license and the supervision of either an instructor or the instructional aid to move a vehicle in the shop. This includes test-drives and moving vehicles on and off the lifts. Vehicles MUST be driven in a safe courteous manor.  **TOOLS**  Do NOT leave hand tools on floors or near machinery. ALWAYS use the right tool for the job. |

A Syllabus is a contract between the student (You) and the instructor (Mr. Reed) of the course functions.

Syllabus Agreement Form

I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (*Please Print Name Clearly*)   
have received the syllabus for AT 121. I have read and I agree to the standards, goals, grading, and objectives listed in the AT 121 Syllabus. I have read and my signature indicates my agreement and understanding of class safety guidelines as reviewed in the syllabus.

Signature:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

AT 181 (Engines) and AT 261 (Engine Performance)

You need – The Book, NATEF Sheets, and Online Access

Homework - <http://www.myautomotivekit.com/>

Buy online - <http://tinyurl.com/engines181>

Buy online - <http://tinyurl.com/at261-reed>

Homework (quizzes) is done VIA the MyAutomoitveKit.Com website. You must use a computer.

AT 121 (Electrical)

You need – The Book, and NATEF Sheets, Online content is free for this course.

Homework - <http://wps.prenhall.com/chet_halderman_diagnosis_6/>

Buy online - <http://tinyurl.com/reedelectrical121>

Homework (quizzes) is done VIA the CCP Canvas system. You must use a computer.  
  
http://ccp.instructure.com/

For all homework (quizzes) only the FIRST attempt will be taken as a score that goes toward your grade.

Free web content for all classes -

<http://wps.prenhall.com/chet_automotive_supersite_1/>

Choose – Professional.

However no homework will be taken from this site.

Buying Options:

Buy book from bookstore, comes with NATEF sheets, and online access

Buy used book, and get website access for $35 from Pearson

Get e-book reader $46, and online access $35

You may NOT print out a copy of the e-book here at the college.

If you are using a bookstore credit, you must buy your book from the college bookstore please have your voucher ready when you plan to purchase.

West Philly bookstore – please note, the bookstore has limited hours and is only often open for no more then two weeks after the start of the semester. Once the store closes, the books are then transferred back to main campus. This process may take as LONG AS A MONTH for you to get your book at which point you’re far behind in the class, please, PLEASE do not wait.

Important Dates:

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| **March 2013** | |
| 4-9 | Monday-Saturday — Spring Break — College Closed |
| 18 | Monday — Deadline to submit application for financial aid reinstatement for Summer 2013 |
| **April 2013** | |
| 5 | Friday —Deadline to submit all required financial aid documents and resolve all financial issues to hold Summer 2013 classes |
| 15 | Monday — Priority deadline for Fall 2013 for financial aid |
| 22 | Monday — Professional Development Day — once-a-week evening classes will be held; no day classes (Potential Emergency Closing make-up day) |
| 23 | Tuesday — Final day of classes for Spring 2013 semester |
| 24 | Wednesday — Professional Development Day (Potential Emergency Closing make-up day) |
| 25 | Thursday — Professional Development Day/Study Day (Potential Emergency Closing make-up day) |
| 26-30 | Friday-Tuesday — Final examinations, Spring 2013 semester |

**Procedure for Moving Vehicles in/out of Shop**

When pulling cars out of shop and parking in Lot:

* Only one person (driver) in car.
* Someone watch street for traffic.

(*We stop for traffic. Do NOT stop the traffic!)*

* Park car in one spot (between lines) in lot

(NO STREET PARKING).

* All windows, sunroof, and/or convertible top closed.
* Doors locked.
* Battery disconnected.
* Keys in bin next to shop computer.

When pulling cars into shop:

* Only one person (driver) in car.
* Someone watch street for traffic.

(*We stop for traffic. Do NOT stop the traffic!)*

* Only one car leaves lot to pull into shop at a time. (No idling in street while waiting to pull in.)
* All twin post lifts must be stacked (1 car on lift/ 1 under).
* Driver’s window open.
* Doors unlocked.
* Key stays *IN IGNITION*.
* Battery disconnected – turn green knob only one turn.
* If car required jump start to pull in- put a battery charger on it.

**In the event that snow or other weather emergencies make it necessary for the College to close, the following steps will be taken to communicate with staff and students about the College closing:**

(1) An announcement indicating that the College is closed due to a weather emergency will be placed on both of the main switchboard numbers (215-751-8000 and 215-751-8010). The closing announcement will play if these numbers are called.

(2) A notice of the College closing will be placed on each of the individual phone extensions in the College. All staff can access voice messages from their home phone using the College’s voicemail message retrieval feature. (Dial 215-751-8999. You will be asked to enter your extension and your messages can be accessed.)

(3) A notice of the College closing will be placed on Cable Channel 53 which is accessible to most residents of the City.

(4) Media announcements will be made on KYW Radio and Channel 3 (CBS), Channel 10 (NBC), and Channel 29 (Fox) television. The KYW Radio closing number is 238 for day classes and 2238 for evening classes.

(5) The College closing numbers will be available on the KYW Web Page (www2.KYW1060.com).

(6) The notice of College closing will be placed on the College’s announcement page website, www.ccp.edu

(7) Sign Up for the https://www.e2campus.net/my/ccp/signup.htm program. This free site will allow you to get instant text messages about school weather closing events. This is not a spam site, they will not use or sell your personal information. Text messages are sent out before the information is released to local news outlets. You are the first to know about a school closing.

(8) Do NOT rely on the general "Philadelphia Public Schools are closed" to assume that CCP is closed. We are not part of the Philadelphia Public School system. Generally two events have to happen in order for CCP to close. 1 - The Mayor must declare a city emergency. 2 - SEPTA has to announce a suspension of service.

