Auto Service Fundamentals

Syllabus

Instructor Information

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Instructor Office Information

Campus	Horizon Center for Transportation Technology
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Class Information

Title	602-107-1H11
Number of Weeks	2
Meeting Times/Location	HCTT 111 TWTHF 05:00PM-09:30PM 06/03/10-06/18/10

Course Description

This automotive course focuses on developing skills in professionalism, safety and the use of basic hand and power tools in accordance with industry standards. Students are introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services.

Prerequisites

1 602-122 Auto IT for Transportation

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Textbooks

1. Erjavec. *AUTOMOTIVE TECNOLOGY A SYTEMS APPROACH.* Edition: 5. Publisher: Cengage Learning. Year: 2005. ISBN: 9780538493123. Required. Comments: E Text Book

2. Christopher Hadfield. *Automotive Service Job Sheets for NATEF Task Mastery.* Edition: 1st. Publisher: Thompson Delmar Learning. Year: 2008. ISBN: 139781418073022. Required. Comments: E Textbook

Supplies

1. 1 Tablet PC. Manufacturer: Various. Source: Various. Required

2. 1 pr Safety Glasses. Manufacturer: Various. Source: Various. Required

3. 1 SnapOn / Gateway Shop Shirt. Source: Follett Bookstore. Required

Exit Learning Outcomes Addressed In This Course

External Standards

1 ENGINE REPAIR

For every task in Engine Repair, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

1.A General Engine Diagnosis; Removal and Reinstallation (R & R)

1.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

1.A.3 Research applicable vehicle and service information, such as internal engine operation, vehicle service history, service precautions, and technical service bulletins. P-1

1.D Lubrication and Cooling Systems Diagnosis and Repair

1.D.4 Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and

belt alignment. P-1

1.D.13 Perform oil and filter change. P-1

2 AUTOMATIC TRANSMISSION AND TRANSAXLE

For every task in Automatic Transmission and Transaxle, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

2.A General Transmission and Transaxle Diagnosis

2.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

2.A.3 Research applicable vehicle and service information, such as transmission/transaxle system operation, fluid type, vehicle service history, service precautions, and technical service bulletins. P-1

2.B In-Vehicle Transmission/Transaxle Maintenance and Repair

2.B.6 Service transmission; perform visual inspection; replace fluids and filters. P-1

3 MANUAL DRIVE TRAIN AND AXLES

For every task in Manual Drive Train and Axles, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

3.A General Drive Train Diagnosis

3.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

3.A.3 Research applicable vehicle and service information, such as drive train system operation, fluid type, vehicle service history, service precautions, and technical service bulletins. P-1

3.A.6 Drain and fill manual transmission/transaxle and final drive unit. P-1

4 SUSPENSION AND STEERING

For every task in Suspension and Steering, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

4.A General Suspension and Steering Systems Diagnosis

4.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

4.A.3 Research applicable vehicle and service information, such as suspension and

steering system operation, vehicle service history, service precautions, and technical service bulletins. P-1

4.F Wheel and Tire Diagnosis and Repair

4.F.1 Inspect tire condition; identify tire wear patterns, check and adjust air pressure; determine necessary action. P-1

4.F.3 Rotate tires according to manufacturer's recommendations. P-1

4.F.6 Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic). P-1

4.F.7 Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor. P-2

4.F.8 Reinstall wheel; torque lug nuts. P-1

4.F.9 Inspect tire and wheel assembly for air loss; perform necessary action. P-1

4.F.10 Repair tire using internal patch. P-1

5 BRAKES

For every task in Brakes, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

5.A General Brake Systems Diagnosis

5.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

5.A.3 Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins. P-1

6 ELECTRICAL/ELECTRONIC SYSTEMS

For every task in Electrical/Electronic Systems, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

6.A General Electrical System Diagnosis

6.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

6.A.3 Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins. P-1

6.B Battery Diagnosis and Service

6.B.5 Perform battery charge. P-1

6.E Lighting Systems Diagnosis and Repair

6.E.2 Inspect, replace, and aim headlights and bulbs. P-2

7 HEATING AND AIR CONDITIONING

For every task in Heating and Air Conditioning, the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

7.A A/C System Diagnosis and Repair

7.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

7.A.3 Research applicable vehicle and service information, such as heating and air conditioning system operation, vehicle service history, service precautions, and technical service bulletins. P-1

8 ENGINE PERFORMANCE

For every task in Engine Performance the following safety requirement must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

8.A General Engine Diagnosis

8.A.1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1

8.A.3 Research applicable vehicle and service information, such as engine management system operation, vehicle service history, service precautions, and technical service bulletins. P-1

8.F Engine Related Service

8.F.5 Perform common fastener and thread repairs to include: remove broken bolt, restore internal and external threads, and repair internal threads with a threaded insert. P-1

8.F.6 Perform engine oil and filter change. P-1

Program Outcomes

A. Demonstrate professionalism appropriate for the auto service industry

B. Perform diagnosis, service, and repair of automotive internal combustion engines

C. Perform diagnosis, service, and repair of automotive automatic transmission/transaxle systems

D. Perform diagnosis, service, and repair of automotive manual drive train and axles systems

E. Perform diagnosis, service, and repair of automotive steering and suspension steering systems

F. Perform diagnosis, service, and repair of automotive brake systems

G. Perform diagnosis, service, and repair of automotive electrical/electronic systems

H. Perform diagnosis, service, and repair of automotive heating and air conditioning systems

I. Perform diagnosis, service, and repair of automotive engine performance systems

Course Level Learning Outcomes - Competencies

1. Demonstrate professionalism appropriate for the auto service industry
2. Complete mechanical safety and pollution prevention training
3. Use basic hand tools, power tools, shop and test equipment
4. Select appropriate fasteners and hardware for repair applications
5. Complete work order to include all necessary information
6. Research all applicable vehicle service information
7. Explain basic service maintenance procedures
8. Perform basic service maintenance procedures
9. Explain Lubrication and Cooling Systems service
10. Perform Lubrication and Cooling Systems service
11. Explain General Transmission and Transaxle service
12. Perform General Transmission and Transaxle service
13. Explain General Drive Train service
14. Perform General Drive Train service
15. Explain General Suspension and Steering Systems service
16. Perform General Suspension and Steering Systems service
17. Explain Wheel and Tire service
18. Perform Wheel and Tire service
19. Explain General Brake Systems service
20. Perform General Brake Systems service
21. Explain Lighting Systems service
22. Perform Lighting Systems service

Grading Information

Grading Rationale

All assignments must be completed to receive a final grade.

Tests. For your final grade, all tests are weighted at 30%. If a test has 25 questions on it, your total possible score is 100. If we divide 100 by 25 we find that each correct question is worth 4 points. All tests will be totaled and divided by the number of tests for your test average. Most of the testing will be ASE type. That is, Mechanic A, Mechanic B type questions. Some questions may be true/false others may be multiple choice. There may be a "Final Test" at the end of the course related to all the units of the course.

Quizzes. For your final grade, quizzes will be weighted at 20%. Some LJ Class Campus and LJ CAI (Launcher) will be considered assignments, while most will be considered quizzes.. The grades are tabulated and stored online where I will access them for your final grade. Like your tests, I will add your scores, divide them by the assigned assignments for your average and post it toward your final grade.

Lab Assignments. For your final grade, lab assignments will be weighted at 50%. The Labs are rated according to the scale below. NATEF (National Automotive Technicians Education Foundation) has determined the tasks you need to complete and has assigned a priority rating for them.

NATEF Lab Tasks (Labs)

P-1 Rating 100% must be completed

P-2 Rating 80% must be completed

P-3 Rating 50% must be completed

Rating Scale and Rating Definition for Labs

4 - Skilled - can perform job independently with no additional training

3 - Moderately Skilled - has performed job independently during the training program, limited additional training may be required

2 - Limited Practice - has practiced job during training program, additional training is required to develop skill.

1 - Exposure Only - general information provided with no practice time, close supervision needed and additional training required.

0 - No Exposure - no information or practice provided during training program, complete training required

Grading Scale

A	94-100
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D+	67-69
D	64-66
D-	60-63
F	0-59

Guidelines and Information

Academic Honesty 3

Academic honesty is a core principle of learning and scholarship. When you violate this principle, you cheat yourself of the confidence that comes from knowing you have mastered the targeted skills and knowledge. You also hurt all members of the learning community by falsely presenting yourself as having command of competencies with which you are credited, thus degrading the credibility of the college, the program, and your fellow learners who hold the same credential.

All members of the learning community share an interest in protecting the value, integrity, and credibility of the outcomes of this learning experience. We also have the responsibility to censor behaviors that interfere with this effort. The following behaviors will be subject to disciplinary action:

Plagiarism - presenting someone else's words, ideas, or data as your own work.

Fabrication - using invented information or the falsifying research or other findings.

Cheating - misleading others to believe you have mastered competencies or other learning outcomes that you have not mastered. Examples include, but are not limited to:

1. Copying from another learner's work
2. Allowing another learner to copy from your work
3. Using resource materials or information to complete an assessment without permission from your instructor
4. Collaborating on an assessment (graded assignment or test) without permission from the instructor
6. Taking a test for someone else or permitting someone else to take a test for you

Academic Misconduct - other academically dishonest acts such as tampering with grades, taking part in obtaining or distributing any part of an assessment, or selling or buying products such as papers, research, projects or other artifacts that document achievement of learning outcomes.

Safety Statement

The Automotive Service Industry, by its very nature is inherently dangerous. As technicians service vehicles, they expose themselves, their co-workers, the vehicle, the service facility and the environment to numerous hazards.

At any given moment equipment and tools could fail injuring you the technician. Improper observance of safety procedures is the leading cause of work related death and injuries in this country. These are immediate injuries. Some injuries don't reveal themselves for some period of time, like those that come from exposure to certain chemicals or compounds. These injuries may result in lung cancer, kidney and liver damage or many other internal illnesses.

To help you understand these hazards, how to avoid them, what the laws are and what your responsibilities are, you will be trained about Mechanical Safety and Mechanical Pollution Prevention. It is included as part of course 602-107 Auto Service Fundamentals

We refer to the training as S/P2 (Safety and Pollution Prevention). It is an industry approved web based training program. You are assigned two of the four courses, 1.) Mechanical Safety and 2.) Mechanical Pollution Prevention. Within each of the courses are smaller modules or "chunks" of information about that course with several quizzes during the course. At the end of each of the two training courses, is a final test. You must read the training material, take each quiz, and pass the two final tests. You will not be allowed to start any hands on/manipulative lab

assignments (sometimes called tasks or NATEF assignments) until you have passed both of the final tests. The program automatically allows you to retake the test up to five times. Once you have satisfactorily passed each test, you can e-print a copy of the certificate and forward to your instructor. You can also print hard copies for yourself and your employer. If the test cannot be passed by you in five attempts, you will not be able to complete any hands on/manipulative lab assignments, resulting in a failing grade.

If you cannot complete the requirements of web based training S/P2 (Safety and Pollution Prevention) and course 602-107 Auto Service Fundamentals and Auto Service References you will not be allowed to move to the next class or enroll in another class since 602-107 Auto Service Fundamentals is a pre-requisite to every other course in the program.

The S/P2 Mechanical Safety and Mechanical Pollution Prevention tests must be retaken annually. If you are currently enrolled in an automotive technology course, and your training is more than a year old, you will be required to take the training again and present a new certificate indicating you have recently passed the S/P2 Mechanical Safety and Mechanical Pollution Prevention final tests. Please remember that the information located in the training program is changed frequently as laws and procedures change.

Core Abilities

Core Abilities are broad outcomes or skills that every graduate of a Gateway Technical College Automotive Technology program is expected to achieve. These skills go beyond the context of a specific course or program and are the skills employers tell us they expect employees to have. Gateway Technical College has identified nine Core Abilities that are important in every area of learning. All of these core abilities have been identified as important in this course:

These Core abilities are:

Act responsibly

Communicate clearly and effectively

Demonstrate essential computer skills

Demonstrate essential mathematical skills

Develop job-seeking skills

Respect self and others as members of a diverse society

Think critically and creatively

Work cooperatively

Value learning

Sequencing of assignments, tests and quizzes

Later you'll learn that this education is performance based. It's also sequential, requiring a foundation of learning. As your Instructors, we have created this course in the sequence we feel will allow you to better learn the subject matter content and master the material.

Please, follow and complete the assignments in the order they are listed in Blackboard. It could be embarrassing if you attempt a worksheet and the training information was presented in the three previous LJ ClassCampus assignments that you did not complete.

Performance-Based - It's about Learning!

Your success is the main goal of any learning experience. In performance-based learning, we carefully identify what you need to be able to do as a result of a learning experience. Next we determine how you can show that you have learned these skills. Finally, we plan learning activities that will help you develop the target skills, knowledge, and attitudes.

Benefits for you:

1) You will learn skills and knowledge that you can apply, rather than outlines of information.

2) We tell you right up front WHAT you will learn, how we expect you to show WHEN you have learned, and HOW you may go about learning. This helps you plan how to invest your time and energy.

3) You know the standards for evaluation before the assessment. You earn a grade according to how well you perform the skills rather than according to how well others in the class perform. You are not graded on a curve.

4) You are actively involved in the learning. We design learning activities and assignments that teach you to solve problems and to learn on your own.

5) When you complete a learning experience, you have documentation showing the skills and knowledge you have learned. You can use this information when you seek employment, admission to further education, advanced standing or transfer of credit.

Basic Terminology:

Core Ability - A broad capability that you will develop throughout a course, program, or major, rather than in one specific lesson. Core abilities include skills that everyone needs to succeed, such as problem solving and communication.

Competency - A major skill, knowledge, or attitude that you will learn as a result of a given learning experience.

Criteria - Specifications that describe a successful performance.

Conditions - Descriptions of how you will show that you have achieved a competency.

Learning Objectives - Supporting skills that you will learn as a step toward mastering a specific competency.

Learning Activities -Statements that describe strategies for learning skills, knowledge, and attitudes. (You might think of them as learning assignments.)

Assessment Activities - Statements that describe what you must do to get feedback on your performance or earn credit for your achievements.

Performance Assessment Task - Directions for completing a required assignment and a scoring guide telling you how your performance of a skill or the product you create will be evaluated.

Guidelines for Mutual Respect

The Automotive Technology rogram is designed for collaboration rather than competition. That means that each member of the class supports the others in their efforts to succeed. Be sure to come to each class prepared to:

1. Listen with respect.
2. Speak with respect.

3. Contribute actively to the work of your team.

College Policies

Learners with questions regarding affirmative action, equal opportunity, harassment, or information about any other college policies may refer to the current college catalog or student handbook available provided upon registartion or at the Gateway Technical College web site, www.gtc.edu

How To Get The Most Out Of This Learning Experience

Take charge of your own learning. Raise questions, probe, explore, go after what you need.

Be open. Use your imagination, consider new possibilities, and create something new for yourself.

Give as well as receive. Give liberally to co-learners and be prepared to receive a great deal from them.

Have fun. Plan to thoroughly enjoy this opportunity to learn and to grow in your professional competence and satisfaction.

External Standards

External Standards are credentialing requirements established by external organizations such as professional associations, regulatory agencies, consumer groups, hiring organizations, accreditation organizations, or government agencies to create shared expectations for quality. The standards for the Automotive Technology Program have been set by NATEF. By constructing the Automotive Technology Program so that it meets the NATEF we increase the credibility of all its graduates.

Independent Work

Periodically throughout the program you will be asked to participate in independent activities, which may take several different forms, such as independent study, interactive instruction, laboratory exercises, research, internet exploration, and job shadowing. These activities are an integral part of the total curriculum, but will have minimal instructor involvement. They provide

you with the opportunity to demonstrate your ability to work independently to meet a designated goal as well as to show development in the various core abilities associated with the program.

Special Needs Statement

If you have any special educational needs or concerns, please contact your classroom instructor or the Special Needs Instructor on your campus.

Kenosha: Special Needs Department Room A121

Dawn Kaiser (262)564-2570

(kaiserd@gtc.edu)

Tammi Summers (262)564-2448

(summerst@gtc.edu)

Attendance 3

Responsible Attendance

As an adult learner you most likely have multiple roles and commitments to juggle. In addition to being a student, you may be an employee, a parent, a community leader, or a caregiver to a family member. If you are a full-time student, you are working to learn a wide variety of new skills and to meet the expectations for multiple courses. As your teacher, I too have many responsibilities and multiple roles. Therefore, we need to work together to accomplish the intended learning outcomes for this course.

Responsible attendance means that you will plan your schedule so that you can be present for scheduled class sessions and manage your time so that you can complete your assignments and assessments on or before the date they are due.

For my part, I have provided learning plans and a syllabus with a schedule listing class sessions and due dates for assignments and assessments. I will work to keep the course on the published schedule. If I make adjustments in the schedule, I will provide written a notice explaining the change.

If you miss a class session unexpectedly:

1 You are responsible for identifying what you have missed and for obtaining handouts or other learning materials that were distributed during your absence.

2 If the learning plan indicates that you missed interactive, applied, or group learning activities, discuss alternative learning activities with me. (I prefer that you propose an alternative.)

3 Contact me in person, via email, or via voicemail message, explaining how you intend to

make up missed work.

4 In order to receive full credit for work missed during your absence, you must complete it within two weeks of your return. Late make-up work will be eligible for a maximum grade of "C" or the equivalent.

If you know you will miss a class session:

1 Plan ahead to submit assignments or complete assessments that will be due during your absence prior to your absence. (Refer to the learning plans and the syllabus schedule.)

2 Notify me in person, via email, or via voicemail message prior to your absence, explaining how you intend to make up missed work.

3 Items 1, 2, and 4 above also apply.

Digital Courtesy

Many students like to tape lectures but it is important to obtain the instructor's permission before doing so. If you obtain permission to tape, you should do so in an unobtrusive manner to avoid distracting your classmates. Copyrighted material cannot be taped, eg videotapes, etc.

If you carry a cell phone to class, convert it to vibration mode or turn it off for the duration of the class. This is especially critical during tests.

Pandemic Emergency

Pandemic

SICK POLICY: In Case of a pandemic emergency.

Should there be a public health pandemic emergency, the student is responsible for:

Being prepared and able to adapt if there is an unplanned absence (pandemic emergency); be present when classes are in session and manage your time so that you can complete your assignments and assessments on or before the date they are due.

Complete work missed due to an absence within the time frame determined by the instructor.

Participate in alternative delivery method of instruction as determined by the instructor. The alternative delivery method that will be used for this course is Internet - Blackboard

· Potential modifications may be implemented to promote completion of the coursework. The modifications may include Completion of chapter questions

· Paper/Essay

· Use of policy for an incomplete grade

The instructor will utilize a variety of strategies to support student success and mastery of the course competencies. In the event of an incomplete grade, the instructor will provide an opportunity to complete the coursework prior to the start of the next semester.

If the college is closed for 14 days or more, the college may extend the semester. All staff and students will be notified.

Social Networking Warning

WARNING: The Internet and social networking sites, including but not limited to Twitter, YouTube, Face book, MySpace or 2nd Life, are not controlled by Gateway Technical College. While there can be educational value to these sites, there is potential for offensive language, adult content and situations.

If you have concerns, please talk with your instructor

Schedule

Session	Environment	Time	Length	Location	Learning Plan	Learning Activities	Assessment Activities	Notes
06/03/2010				Demonstrate professionalism appropriate for the auto service industry Complete				

				mechanical safety and pollution prevention training Complete work order to include all necessary information				
06/04/2010				Use basic hand tools, power tools, shop and test equipment Select appropriate fasteners and hardware for repair applications				
06/08/2010				Research all applicable vehicle service information Explain basic service maintenance procedures				
06/09/2010				Explain basic service maintenance procedures				

				Perform basic service maintenance procedures Explain Lighting Systems service Perform Lighting Systems service				
06/10/2010				Explain Lubrication and Cooling Systems service Perform Lubrication and Cooling Systems service				
06/11/2010				Explain General Transmission and Transaxle service Perform General Transmission and Transaxle service				
06/15/2010				Explain General Drive Train service Perform General Drive Train service				
06/16/201				Explain				

0				General Suspension and Steering Systems service Perform General Suspension and Steering Systems service				
06/17/2010				Explain Wheel and Tire service Perform Wheel and Tire service				
06/18/2010				Explain General Brake Systems service Perform General Brake Systems service				