Course:        AUMT 2313.  Automotive Drive Train and Axles

Course Description and Intellectual Competencies: A study of automotive clutches, clutch operation devices, manual transmissions/transaxles, and differentials with emphasis on the diagnosis and repair of transmissions/transaxles and drive lines. May be taught with manufacturer specific instructions. (2 Lec, 4 Lab) (SCANS) Students will learn to manage time, work in teams, work with different cultures, interpret/communicate data, select equipment and tools, maintain/troubleshoot technologies, read, write, arithmetic/mathematics, speaking, listen, think logically, problem solving and show individual responsibility.

Prerequisites: AUMT 1305 completed with a C or better

Required Textbooks and materials
1.  Fundamentals of Automotive Technology  
   ISBN 978-1-4496-2411-8  
   Student work book  
   Tasksheet Manual for NATEF Proficiency  

2.  Electude log in

3.  Uniform shirt consisting of button down, knit, or t-shirt.

4.  Headphones

Educational Objectives and Learning Outcomes: Utilize appropriate safety procedures; determine driveline problems by operating the vehicle; diagnose and service clutches, transmissions/transaxles, and differentials; service constant velocity joints and universal joints.

Starting day: 3/20/17        End:    4/14/17

Class day          Lecture          Time          Lab        M-F  1:00pm-2:30pm  
M-F  2:40pm-5:40pm

Class location:  T-building, Career Technologies Rm. T112
Tools: Eastfield College provides all necessary tools for your class work. Students who check out tools from the tool room will be financially responsible for their return.

**ATTENDANCE & PUNCTUALITY:** You are expected to attend all classes and are fully responsible for your attendance and punctuality. Attendance is calculated on a point system. Every tardy and/or leave early is worth 25 points; every absence is worth full day points (50pts). If the student accrues 150 points their final grade will be reduced by one letter grade: an A becomes a B, B becomes a C, and C becomes an F. If the student accrues 200 or more points they fail the class regardless of class grade average. An excused absence is still counted as an absence and your grade will reflect the days missed. Students are responsible to coordinate any arrangement for makeup assignments. Not all assignments can be made up. Quizzes, exams, and finals cannot be made up.

If you are tardy or absent, it is your responsibility to obtain assignments, handouts, or other class information that you may have missed. Get another student’s email address and or phone number to get information handouts when you miss class.

The following items will also be counted as attendance points:

1. Failure to wear uniform shirt will count as a late.
2. Every instance of not wearing safety glasses in shop for will result in 10 points.
3. Playing with cell phone during class will count as 25 points per occurrence.
4. Placing head on desk/sleeping will count as 25 points per occurrence.
5. Smoking, vaping, or any other tobacco use on campus will count as one day attendance point.

Daily Grading Criteria

**Grading Criteria/ Scale:** In keeping with the policy and goals of the Dallas County Community College, 20% of each student’s grade will be determined based on class participation, attitude, and behaviors. Students are expected to show professionalism and respect to the instructors and each other. All assigned work must be turned in on time. Late work will not be accepted.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>22.00</td>
</tr>
<tr>
<td>Quizzes/Test</td>
<td>25.00</td>
</tr>
<tr>
<td>Labs</td>
<td>30.00</td>
</tr>
<tr>
<td>Final</td>
<td>23.00</td>
</tr>
</tbody>
</table>

**Grading:**

- 90-100 = A
- 80-89 = B
- 70-79 = C
- 0-69 = F
This is the grading rubric used in accessing student performance in the lab end course evaluation. The percentages apply to the points for each activity. Example: if an exercise is worth 20 points and the student performed at 80% then they would receive 16 points.

100 %- Can perform this skill without supervision and with initiative and adaptability to problem situations
80% - Can perform this skill satisfactorily without assistance
70% - Can perform this skill satisfactorily but requires some assistance and/or supervision
50% - Can perform parts of this skill satisfactorily, but requires considerable assistance and/or supervision
0% - Unable to perform the skill

*You must make a minimum of 70% average between the end course written and the lab practical final. Failure to make the minimum average will result in a course failure

The following may also affect your lecture and lab grade. Your Instructor will evaluate you on the following: Ability to take constructive feedback; Flexibility/adaptability; Ability to work as a team; Attitude; Respect for self and others; Safety concern; Professional appearance/dress code

Vehicle Work Guidelines

The following guidelines will be observed in order to work on student vehicles during lab.

1. Only an AUMT registered student may work on their vehicle in the lab.
2. The student must have a valid paid work order ($25) before starting work on the vehicle.
3. The vehicles should not be older than 1985 model. Discuss with your instructor.
4. The work being performed must be related directly to the class and in line with the curriculum.
5. Work must be able to be completed during that lab session. No heavy line work.
6. All vehicles will leave the compound at the end of the lab session. Any vehicle left in the lab or compound, even with a work order, will be towed at the owner’s expense without notice.
7. The tool room will not supply any consumable products for use on personally owned vehicles. Example: no cleaners, no silicones or sealers, no parts, no oil, no ATF, no anti-freeze, no sand paper, etc.
8. Any infractions will result in the instructor losing the privilege of their class being able to work on their vehicles for the remainder of the semester.

CODE of CONDUCT

Failure to abide by this code may result in disciplinary action up to and including suspension, expulsion, and criminal prosecution.

1. Theft will not be tolerated under any circumstances. Any and all cases of theft will be prosecuted to the fullest extent of the law.
2. The lab computer is for Identifix, TIS & Mitchell on Demand use ONLY. Any other use will result in removal from class and a attendance point will be earned.
3. **Profane, Vulgar, or Offensive language** will not be tolerated. Use of such language will result in removal from class and a grade of zero being issued for that class period.

4. **The Speed Limit in the Compound is 5mph.**

5. Students will not work in the lab until the instructor has completed a safety orientation.

6. Students will not enter the lab unless an instructor or lab assistant is present.

7. Students will conduct themselves in a professional manner at all times. Running and horseplay in the lab or classroom is dangerous, and will not be tolerated.

8. **Absolutely no use of cellular telephones will be permitted during class (see above under attendance).** If a phone call must be answered please quietly leave the class room and return quietly when completed.

9. Destruction of school property will not be tolerated and will be prosecuted to the fullest extent of the law.

10. Students must be appropriately dressed. No loose clothing. No open shoes (sandals). Jewelry must be removed before operating equipment or working on vehicles.

11. **SAFETY GLASSES** must be worn at all times in the lab. Safety glasses must be **Z87 rated** or better. **Dark tinted** safety glasses are not acceptable. If you fail to bring them to class you will not be allowed to participate, and will be counted absent for that day. Do not ask the instructor for safety glasses. You are expected to have your safety glasses with everyday.

   **THE TOOL ROOM DOES NOT CHECK OUT SAFETY GLASSES!!!!**

12. Do not lift more than 50 lbs. without assistance 13. Know the location and proper use of fire extinguishers.

14. Report all unusual or unsafe conditions.

15. Do not use any tool that is not in good working condition, or for any purpose other than that for which it was designed.

16. Report all injuries to the instructor immediately.

17. Do not attempt to operate any equipment until properly trained and authorized to do so.

18. Use drain pans for leaks and to catch drained fluids. **Clean Up Spills Immediately!!!**

19. All combustibles and flammables must be properly stored.

20. Welding, painting and other operations requiring specialized safety and gear will not be done without using proper gear and in designated areas.

21. No tobacco use (includes chewing or snuff products) is allowed in classroom or lab area. Eastfield College is a smoke free campus. Smoking is allowed only in a student’s own vehicle.

22. All materials will be disposed of in proper receptacles, in accordance with EPA, state, and local mandates. Anyone violating mandates is subject to disciplinary action.

23. **All students are responsible for cleaning their work areas in the classroom and the lab. FAILURE TO DO SO WILL NEGATIVELY AFFECT YOUR GRADE.**

This code is in addition to, not a replacement for the DCCCD code of conduct printed in the college catalog. [https://www1.dcccd.edu/cat0304/ss/code.cfm](https://www1.dcccd.edu/cat0304/ss/code.cfm)

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The Code of Student Conduct, Student Grievance Procedure, Computer Use Policy, Computer Software Policy, Firearms Policy and Communicable Disease Policy are common to all the colleges of the Dallas County Community College District. Certain words in the policies and procedures have been changed to reflect a college perspective; for instance, "District" may have been changed to "college." A complete listing of policies and procedures may be found in the DCCCD Policies and Procedures Manual in the college president's Office.

**RELIGIOUS HOLIDAYS/OBSERVANCES:**

Students who will be absent from class for the observance of a religious holiday must notify the instructor in advance. Please refer to the college catalog section on Student Responsibilities.

**FINANCIAL AID STUDENTS:**
If you are receiving Financial Aid grants or loans, you must begin attendance in all classes. Do not drop or stop attending any class without consulting the Financial Aid Office. Changes in your enrollment level and failing grades may require that you repay financial aid funds. Failure to contact the instructor will result in your name being submitted to the Financial Aid Office as a “non-attendee.” Financial Aid Statement Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate after the drop date are also subject to this policy.

**Attendance Verification for Financial Aid**

Attendance is based on your participation in this class. Failure to participate may result in your financial aid award being reduced or eliminated. You are responsible for confirming the accuracy of your attendance record.

**STUDENT E-MAIL:**

Legal privacy issues prevent your instructor from discussing your work or your grades on commercial e-mail accounts. If you wish to send your papers as attachments to an e-mail (and the instructor permits it), or if you have a question about your grade, you must open a student e-mail account. The account is free. You may set it up by going to [www.dcccd.edu](http://www.dcccd.edu) and click on email. All students receiving financial aid must open a student email account. The student is responsible for ensuring that their student record reflects a working email. [https://www.dcccd.edu/SS/OnlineSvs/Pages/MSOffice.aspx](https://www.dcccd.edu/SS/OnlineSvs/Pages/MSOffice.aspx)

**REPEATABILITY ISSUE:**

Pending legislative action and DCCCD Board approval, effective for Fall Semester 2005, the Dallas County Community Colleges will charge a higher tuition rate to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in higher tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any of the Dallas County Community Colleges since the Fall 2002 semester. For complete information and updates, go to: [http://www.dcccd.edu/ThirdCourseAttempt/](http://www.dcccd.edu/ThirdCourseAttempt/).

**Dropping A Class: (Drop Date: check your fee receipt)**

If you are unable to complete this course, it is your responsibility to withdraw formally. Each course has a specific drop date. For this class, the withdrawal request must be received in the Registrar’s Office by (see your fee receipt). Failure to do so will result in your receiving a performance grade, usually an “F.” If you drop a class or withdraw from the college before the official drop/withdrawal deadline, you will receive a “W” (Withdraw) in each class dropped.

*A withdrawal from an automotive class will also necessitate a withdrawal from the English class.*

For complete information on the drop requirements, policies and procedures, refer to the current online college catalog at [www.dcccd.edu](http://www.dcccd.edu) at the following link
[https://www1.dcccd.edu/catalog/ss/oep/dw.cfm?use_nav=acad_info&loc=econ](https://www1.dcccd.edu/catalog/ss/oep/dw.cfm?use_nav=acad_info&loc=econ)

If at any time you wish to withdraw from this course with a grade of “W”, you must initiate that action yourself by going in person to Admissions, Counseling, or the Division Office and filling out the required forms. INSTRUCTORS CANNOT AND WILL NOT DROP A STUDENT
FROM A CLASS. Failure to drop a class by this date will result in a performance grade based on the criteria contained in this syllabus.

For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: [https://www1.dcccd.edu/coursedrops](https://www1.dcccd.edu/coursedrops).

**EMERGENCY/INCLEMENT WEATHER PROCEDURE:**
In the event of inclement weather, be sure to check your email and/or the campus website. Also, register to receive emergency alerts via text messaging and/or email. Lastly, familiarize yourself with the campus emergency operations plan. (Video best watched in Internet Explorer).

**PRINTING ON CAMPUS:** Printing in the Computer Lab (L-108), Library, and Academic Skills Center will cost 10 cents a page. Students must bring a $1.00, $5.00, $10.00, or $20.00 bill to the lab to create an account. Accounts must be created before attempting to print. No change is made in the lab. Once the money is in the bill acceptor, it cannot be retrieved. Cash refunds are not possible. Accounts stay active as long as the account has value.

**INCOMPLETES:** Due to the high percentage of grade based on lab experiences and the supervision required thereof incompletes will not be given. If situation warrants a grade change to a “W” will be given. Student is responsible for making arrangements with instructor.

**OBTAINING YOUR GRADES AT THE END OF THE SEMESTER:**
Grade reports are no longer mailed. Convenient access is available online. Just use your student identification number when you log in to e-Connect. Web site address: [http://econnect.dcccd.edu/](http://econnect.dcccd.edu/).

**CLASSROOM ENVIRONMENT:**
“Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to assure that all students have the opportunity to gain from time spent in class, unless otherwise approved by the instructor; students are prohibited from engaging in any other form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class.”

To be successful in this class, the student will to do the following among other things:

1. Be prepared each and every day. You may be asked to leave the classroom if unprepared
2. Ask questions. If you are not asking questions then you are not learning.
3. Learn from your mistakes
4. Attend all class periods and be punctual.
5. Be alert and attentive in class. No sleeping.
6. Be respectful of others. Do not talk during lecture, demonstrations, and videos.
7. Take notes during lecture, demonstrations, and videos.
8. Read the chapters assigned in the book and handouts.
9. Turn in assignments on or before due date. (Chapter questions, job sheets, worksheets)
11. Ask questions about subjects that you are having trouble with.
12. During Lab times do assigned work. Work with others effectively. (NO sleeping in vehicles).
13. Clean work area before leaving for the day.
14. Do not leave before being dismissed. Doing so will result in a 0 for that class period.
15. Remember to ask questions. If you are not asking questions then you are not learning.

The above items are to help the student be successful, it is not a complete list; other items can be found in the Student handbook.

INSTITUTIONAL EQUITY

The Office of Institutional Equity, in coordination with DCCCD colleges, has the primary responsibility for reviewing, updating and implementing compliance policies and procedures. The Institutional Equity and Compliance Officer and the Office of Institutional Equity will ensure compliance with College District policies, federal and state laws related to sexual assault, Title IX, Title II (Americans with Disabilities Act) and the Military Veterans Full Employment Act to support diversity and inclusion.

Students with Disabilities
If you are a student with a disability and/or special needs, or if you think you may have a disability, please contact the college Disability Services Office (DSO). Please note that all communication with DSO is confidential. If you are eligible for accommodations, please provide or request that the DSO send your accommodation letter to me as soon as possible (students are encouraged to contact DSO at the beginning of the semester). For more information regarding the College Disability Services Office, please visit the Student Services website: https://www.dcccd.edu/SS/OnCampus/DisSvs/DisSvsOffices/Pages/default.aspx/ or contact DCCCD Office of Institutional Equity at (214) 378-1633.

College Disability Services Office 972-860-8348

A Note on Harassment, Discrimination and Sexual Misconduct
We are committed to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX and DCCCD policy prohibit harassment, discrimination and sexual misconduct. If you encounter harassment, sexual misconduct (sexual harassment, sexual assault, stalking, relationship violence, stalking), retaliation or discrimination based on race, color, religion, age, national origin, disability, sex, sexual orientation, gender identity, and/or gender expression, please contact your College Title IX Coordinator or the Office of Institutional Equity. We treat this information with the greatest degree of confidentiality possible while also ensuring student welfare and college safety.

We are concerned about the well-being and development of our students, and are available to discuss any concerns. There are both confidential and non-confidential resources and reporting options available to you. If students wish to keep the information confidential, please contact the college Counseling or Student Health Services. As required by DCCCD policy, incidents of discrimination and/or sexual misconduct shared with faculty will be reported to the College Title IX Coordinator or District Title IX Coordinator. The Title IX Coordinator will contact the student and determine if further investigation is needed. For more information about policies, resources or reporting options, please contact your college Title IX Coordinator or visit www.dcccd.edu/titleIX.

College Title IX Coordinator
Eastfield Rachel Wolf TitleIX-EFC@dcccd.edu
Family Educational Rights and Privacy Act of 1974 (FERPA)
In compliance with the Family Educational Rights and Privacy Act of 1974 (FERPA), the College may release information classified as “directory information” to the general public without the written consent of the student. Directory information includes: (1) student name, (2) student address, (3) telephone numbers, (4) date and place of birth, (5) weight and height of members of athletic teams, (6) participation in officially recognized activities and sports, (7) dates of attendance, (8) educational institution most recently attended, and (9) other similar information, including major field of student and degrees and awards received. Students may protect their directory information at any time during the academic year. If no request is filed, directory information is released upon written inquiry. No telephone inquiries are acknowledged. No transcript or academic record is released without written consent from the student, except as specified by law.

Academic Honesty Policy:
Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by college policies. Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism, and collusion. "Cheating on a test" shall include: a. Copying from another student's test paper.
b. Using test materials not authorized by the person administering the test.
c. All forms of academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion.
d. Collaborating with or seeking aid from another student during a test without permission from the test administrator.

Knowingly using, selling, stealing, or soliciting, in whole or in part, the contents of any test.

f. Substituting for another student, or permitting another student to substitute for one's self, to take a test.
g. Bribing another person to obtain an test or information about an test.
h. "Plagiarism" shall be defined as the appropriating, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own written work.

"Collusion" shall be defined as the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements.

I do not tolerate cheating in any form. If you plagiarize on homework’s, quizzes, or copy from another student or cheat on an exam once, that assignment will receive a "0." If you plagiarize copy or cheat the second time, you will receive an "F" in the course.

Discipline: Any student violating this policy shall be subject to disciplinary sanctions including suspension, in accordance with The Code of Student Conduct. A "violation" means an act or omission which is contrary to a published college regulation or policy. Sanctions for violations of prohibited conduct for (1) through (6) may result in expulsion; for (7) through (20) may result in sanctions other than expulsion or suspension. Repeated or aggravated violations of any provision of this code may also result in expulsion or suspension or in the imposition of such lesser penalties as are appropriate.

"Aggravated violation" means a violation which resulted or foreseeable could have resulted in significant damage to persons or property or which otherwise posed a substantial threat to the stability and continuance of normal
college or college-sponsored activities. (Source: https://www1.dcccd.edu/cat0203/ss/code.cfm) If you engage in academic dishonesty related to any class, you will receive a failing grade on the test or assignment and a failing grade in the course. In addition, the case will be referred to the Dean for appropriate disciplinary action.

American With Disabilities ACT (ADA) ADA SERVICES:
If you are a student with a disability and/or special needs, or if you think you may have a disability, please contact the college Disability Services Office (DSO). Please note that all communication with DSO is confidential. If you are eligible for accommodations, please provide or request that the DSO send your accommodation letter to me as soon as possible (students are encouraged to contact DSO at the beginning of the semester). For more information regarding the College Disability Services Office, please visit the Student Services website; dcccd.edu/DSO Offices or contact DCCCD Office of Institutional Equity at (214) 378-1633. Eastfield, 972-860-8348.

Computer Information

Please have a set of head phones that will plug into a computer.

Computer Lab is located in room L108

If you lose your syllabus you can get a copy from Blackboard.

http://ecampus9.dcccd.edu/webapps/portal/frameset.jsp

Ecampus will be used in this class. It will be imperative and the responsibility of the student to monitor Ecampus for assignments, quizzes and tests. There is also additional course material located in the e-campus course. Some work completed outside of the classroom will be turned in via Ecampus.

The student should keep in mind and prepare themselves accordingly, that some of the outlined material may not be covered in the classroom. The student will still be accountable for this material. You, the student must take charge of your learning. It is imperative that you are prepared for class on a daily basis.

Note: This syllabus could be modify anytime as per instructor discretion.
<table>
<thead>
<tr>
<th>WEEK</th>
<th>DAY</th>
<th>LECTURE/CHAPTER</th>
<th>CDX Tasksheet Number</th>
<th>NATEF 2013 Tasksheet Title</th>
<th>2013 MAST NATEF Reference number</th>
<th>Priority Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>22</td>
<td>C101</td>
<td>Identify and interpret drive train concerns; determine necessary action.</td>
<td>3A1</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C102</td>
<td>Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins.</td>
<td>3A2</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>22</td>
<td>C691</td>
<td>Check fluid condition; check for leaks; determine necessary action</td>
<td>3A3</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C105</td>
<td>Drain and refill manual transmission/transaxle and final drive unit.</td>
<td>3A4</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C106</td>
<td>Diagnose clutch noise, binding, slippage, pulsation, and chatter; determine necessary action.</td>
<td>3B1</td>
<td>P-1</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>22</td>
<td>C107</td>
<td>Inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; perform necessary action.</td>
<td>3B2</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C608</td>
<td>Inspect and replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing and linkage, and pilot bearing/bushing (as applicable).</td>
<td>3B3</td>
<td>P-1</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>22</td>
<td>C111</td>
<td>Bleed clutch hydraulic system.</td>
<td>3B4</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C938</td>
<td>Check and adjust clutch master cylinder fluid level; check for leaks.</td>
<td>3B5</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C847</td>
<td>Inspect flywheel and ring gear for wear and cracks; determine necessary action.</td>
<td>3B6</td>
<td>P-1</td>
</tr>
<tr>
<td>5</td>
<td>TEST</td>
<td></td>
<td>C848</td>
<td>Measure flywheel runout and crankshaft end play; determine necessary action.</td>
<td>3B7</td>
<td>P-2</td>
</tr>
<tr>
<td>WEEK</td>
<td>DAY</td>
<td>LECTURE/CHAPTER</td>
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<tr>
<td>1</td>
<td></td>
<td></td>
<td>C768</td>
<td>Inspect, adjust, and reinstall shift linkages, brackets, bushings, cables, pivots, and levers.</td>
<td>3C1</td>
<td>P-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C611</td>
<td>Describe the operational characteristics of an electronically controlled manual transmission/transaxle.</td>
<td>3C2</td>
<td>P-3</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td></td>
<td>C609</td>
<td>Diagnose noise concerns through the application of transmission/transaxle powerflow principles.</td>
<td>3C3</td>
<td>P-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C693</td>
<td>Diagnose hard shifting and jumping out of gear concerns; determine necessary action.</td>
<td>3C4</td>
<td>P-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C887</td>
<td>Diagnose transaxle final drive assembly noise and vibration concerns; determine necessary action.</td>
<td>3C5</td>
<td>P-3</td>
</tr>
<tr>
<td>3</td>
<td>23</td>
<td></td>
<td>C910</td>
<td>Disassemble, inspect, clean, and reassemble internal transmission/transaxle components.</td>
<td>3C6</td>
<td>P-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C132</td>
<td>Diagnose constant-velocity (CV) joint noise and vibration concerns; determine necessary action.</td>
<td>3D1</td>
<td>P-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C133</td>
<td>Diagnose universal joint noise and vibration concerns; perform necessary action.</td>
<td>3D2</td>
<td>P-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C134</td>
<td>Inspect, remove and replace front wheel drive (FWD) bearings, hubs, and seals.</td>
<td>3D3</td>
<td>P-1</td>
</tr>
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<td>4</td>
<td>23</td>
<td></td>
<td>C849</td>
<td>Inspect, service, and replace shafts, yokes, boots, and universal/CV joints.</td>
<td>3D4</td>
<td>P-1</td>
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<td>C779</td>
<td>Check shaft balance and phasing; measure shaft runout; measure and adjust driveline angles.</td>
<td>3D5</td>
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<td>24</td>
<td>C785 C911 C912</td>
<td>Clean and inspect differential housing; check for leaks; inspect housing vent. Check and adjust differential housing fluid level. Drain and refill differential housing.</td>
<td>3E1: 1 3E1: 2 3E1: 3</td>
<td>P-2 P-1 P-1</td>
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<td>3</td>
<td>24</td>
<td>C138 C889 C780</td>
<td>Diagnose noise and vibration concerns; determine necessary action. Inspect and replace companion flange and pinion seal; measure companion flange runout. Inspect ring gear and measure runout; determine necessary action.</td>
<td>3E1: 4 3E1: 5 3E1: 6</td>
<td>P-2 P-2 P-3</td>
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<td>4</td>
<td>24</td>
<td>C781 C145 C782 C783</td>
<td>Measure and adjust drive pinion depth. Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly (threaded cup or shim types). Measure and adjust drive pinion bearing preload. Check ring and pinion tooth contact patterns; perform necessary action.</td>
<td>3E1: 8 3E1: 10 3E1: 9 3E1:11</td>
<td>P-3 P-3 P-3 P-3</td>
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<td>TEST</td>
<td>C784 C786</td>
<td>Diagnose noise, slippage, and chatter concerns; determine necessary action. Measure rotating torque; determine necessary action.</td>
<td>3E2:1 3E2:2</td>
<td>P-3 P-3</td>
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<td>C154</td>
<td>Inspect and replace drive axle wheel studs.</td>
<td>3E3:1</td>
<td>P-1</td>
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<td>C155</td>
<td>Remove and replace drive axle shafts.</td>
<td>3E3:2</td>
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<td>C156</td>
<td>Inspect and replace drive axle shaft seals, bearings, and retainers.</td>
<td>3E3:3</td>
<td>P-2</td>
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<td>C850</td>
<td>Measure drive axle flange runout and shaft end play; determine necessary action.</td>
<td>3E3:4</td>
<td>P-2</td>
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<td>2</td>
<td>25</td>
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<td>C153</td>
<td>Diagnose drive axle shafts, bearings, and seals for noise, vibration, and fluid leakage concerns; determine necessary action.</td>
<td>3E3:5</td>
<td>P-2</td>
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<td>C788</td>
<td>Inspect, adjust, and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets.</td>
<td>3F1</td>
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<td>C876</td>
<td>Inspect front-wheel bearings and locking hubs; perform necessary action(s).</td>
<td>3F2</td>
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<td>3</td>
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<td>C914</td>
<td>Check for leaks at drive assembly seals; check vents; check lube level.</td>
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<td>C613</td>
<td>Identify concerns related to variations in tire circumference and/or final drive ratios.</td>
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<td>C787</td>
<td>Diagnose noise, vibration, and unusual steering concerns; determine necessary action.</td>
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<td>C878</td>
<td>Diagnose, test, adjust, and replace electrical/electronic components of four-wheel drive systems.</td>
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<td>C875</td>
<td>Disassemble, service, and reassemble transfer case and components.</td>
<td>3F7</td>
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<td>LAB TEST</td>
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