

**Department:**

Automotive Technology

**Course Description:**

Manual Drive Trains and Axles is a lecture course designed to give students an in-depth study of torque delivery. Topic areas include clutches, drivelines, drive axles, transfer case, manual transmissions and transaxles

**Course Competencies:**

Upon completion of the course, the student should be able to:

1. Determine the general drive train diagnosis procedures.
2. Explore the fundamentals of clutch operation.
3. Explore the fundamentals of clutch removal, inspection and repair.
4. Determine the power flow of the manual transmission and transaxle.
5. Perform fundamental manual transmission and transaxle inspection and repair according to service specifications.
6. Perform fundamental differential inspection and repair according to service specifications.
7. Perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components.
8. Perform fundamental diagnosis, inspection, adjustment and repair of four-and-all-wheel drive components.
9. Diagnose drive train issues.
10. Diagnose clutch concerns.
11. Perform the removal, inspection and/or repair of the clutch and its components.
12. Conduct a transmission and transaxle inspection and repair according to service specifications.
13. Conduct a differential inspection and repair according to service specifications.
14. Conduct the diagnosis, inspection, and replacement of drive axle shafts and supporting components.
15. Conduct the diagnosis, inspection, adjustment and repair of four-and-all-wheel drive components.

**Course Content:**

- A. Manual Drive train and Axles
  1. Clutches
  2. Manual Transmissions/Transaxles
  3. Drive Axle Shafts and CV Joints
  4. Drive Axle Shaft and CV Joint Service
  5. Differentials
  6. Four-Wheel Drive and All-wheel Drive

**Learning Assessments:**

Assessments may include: Quizzes, tests, project work, demonstrated competence, instructor observation, weekly assignments and/or written papers.

## Instructional Materials:

Textbook: Halderman, J. (2020). *Automotive Technology: Principles, Diagnosis, and Service* (6<sup>th</sup> ed.). Pearson. ISBN-13: 978-0135257272

Lab Manual: Halderman, J. (2020). *ASE Correlated Task Sheets for Automotive Technology* (6<sup>th</sup> ed.). Pearson. ISBN-13: 978-0135257418

### **Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition**

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the “Disabilities Self-Identification Form” on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

### **A Note on Harassment, Discrimination and Sexual Misconduct**

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).