

ATL 230 Course Outline as of Fall 2024**CATALOG INFORMATION**

Dept and Nbr: ATL 230 Title: MHT DRIVETRAIN

Full Title: Medium Heavy Truck Drivetrain

Last Reviewed: 12/4/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.50	17.5	Lecture Scheduled	43.75
Minimum	3.00	Lab Scheduled	1.50	8	Lab Scheduled	26.25
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 87.50

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

Catalog Description:

Students will learn the theory, operation, diagnosis, service and overhaul of clutches, manual transmissions, and rear axle assemblies. Course prepares students to pass the Automotive Service Excellence (ASE) T3 Drive Train certification test.

Prerequisites/Corequisites:

Course Completion of ATL 101 and Concurrent Enrollment in ATL 161

Recommended Preparation:

Eligibility for ENGL 1A or equivalent and MATH 25 or equivalent

Limits on Enrollment:**Schedule of Classes Information:**

Description: Students will learn the theory, operation, diagnosis, service and overhaul of clutches, manual transmissions, and rear axle assemblies. Course prepares students to pass the Automotive Service Excellence (ASE) T3 Drive Train certification test. (Grade Only)

Prerequisites/Corequisites: Course Completion of ATL 101 and Concurrent Enrollment in ATL 161

Recommended: Eligibility for ENGL 1A or equivalent and MATH 25 or equivalent

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: **Area** Effective: Inactive:

CSU GE: **Transfer Area** Effective: Inactive:

IGETC: **Transfer Area** Effective: Inactive:

CSU Transfer: Effective: Inactive:

UC Transfer: Effective: Inactive:

CID:

Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Inspect, diagnose, and repair heavy duty drivetrain components
2. Interpret and understand repair manuals for repair of drivetrain components

Objectives:

At the conclusion of this course, the student should be able to:

1. Evaluate, perform repairs on, and explain the following components:
 - A. Clutches
 - B. Manual transmissions
 - C. Automatic transmissions
 - D. Drivelines
 - E. Differentials and final drives
 - F. Electronic transmission controls
2. Use technical references properly, including repair and parts manuals
3. Discuss and apply personal, shop, and environmental safety procedures

Topics and Scope:

I. Power Transmission

- A. Power transmission theory
- B. System operation
- C. System components

II. Clutches

- A. Single disc clutches
- B. Twin disc clutches
- C. Clutch controls
- D. Torque converters

III. Manual Transmissions

- A. Gear identification
 - B. Gear ratios
 - C. Single countershaft transmissions
 - D. Twin countershaft transmissions
- IV. Automatic Transmissions
- A. Torque converters
 - B. Operation principles
 - C. Shift control
- V. Driveshaft Assemblies
- A. Universal joints
 - B. Drive shafts
 - C. Drive line angles
- VI. Differentials and Final Drives
- A. Single speed differentials
 - B. Multi-speed differentials
 - C. Differential locking devices
 - D. Simple and planetary final drives
- VII. Electronically Controlled Transmissions
- VIII. Power Train Service, Diagnosis, and Repair
- A. Repair and parts manuals
 - B. Technical service bulletins
- IX. Safety
- A. Personal
 - B. Shop
 - C. Environmental

All topics are covered in both the lecture and lab parts of the course.

Assignment:

Lecture-Related Assignments:

1. Weekly reading (25-75 pages)
2. Weekly chapter tests
3. Final exam

Lab-Related Assignments:

1. Drivetrain related lab projects
2. ASE Education Foundation recommended task sheets
3. Daily work logs (work assigned, work completed) if assigned by instructor

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Daily work logs

Writing 0 - 20%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

ASE task sheets

Problem solving
10 - 25%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Drivetrain related lab projects

Skill Demonstrations
10 - 25%

Exams: All forms of formal testing, other than skill performance exams.

Chapter tests; final exam

Exams
30 - 50%

Other: Includes any assessment tools that do not logically fit into the above categories.

None

Other Category
0 - 0%

Representative Textbooks and Materials:

Fundamentals of Medium/Heavy Duty Commercial Vehicle Systems. 2nd ed. Duffy, Owen and Wright, Gus. Jones and Bartlett. 2020.

Fundamentals of Mobile Heavy Equipment. Wright, Gus and Duffy, Owen and Heard, Scott. Jones and Bartlett. 2019 (classic)

Instructor prepared materials