

ATL 290 Course Outline as of Fall 2024**CATALOG INFORMATION**

Dept and Nbr: ATL 290 Title: MOBILE HYDRAULIC SYSTEMS

Full Title: Mobile Hydraulic Systems

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 study the theory, application, and component parts of hydraulic systems. This course emphasizes fundamentals in inspection, troubleshooting, and repair of hydraulic components commonly used in agricultural and construction equipment.

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 study the theory, application, and component parts of hydraulic systems. This course emphasizes fundamentals in inspection, troubleshooting, and repair of hydraulic components commonly used in agricultural and construction equipment. (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

- IV. Hydraulic Pumps
 - A. Gear pumps
 - B. Vane pumps
 - C. Piston pumps
 - D. Diagnosis and common causes of failure
- V. Hydraulic Valves
- VI. Hydraulic Actuators
- VII. Hydraulic Fluids and Conditioners
- VIII. Hydraulic Conductors and Connectors
 - A. Hydraulic lines
 - B. Hydraulic hoses
 - C. Hydraulic connectors and quick couplers
- IX. Hydraulic Accumulators and Accessories
 - A. Accumulators
 - B. Oil coolers
 - C. Oil Heaters
- X. Hydrostatic Drives
- XI. Advanced Hydraulics
 - A. Open center systems
 - B. Closed center systems
 - C. Variable displacement pump controls
 - D. Load sensing pumps
 - E. Pressure and flow compensated systems
 - F. Hydraulic pilot control systems
 - G. Electronically managed systems
- XII. Graphic Symbols and Schematics
- XIII. Preventive Maintenance
- XIV. Troubleshooting and Diagnostics
- XV. 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. Hydraulic system related lab projects
2. Industry-based 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.

Industry-based task sheets

Problem solving
10 - 30%

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

Hydraulic system related lab projects

Skill Demonstrations
10 - 30%

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

Chapter tests; final exam

Exams
40 - 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 Mobile Heavy Equipment. 2nd ed. Wright, Gus, and Duffy, Owen and Heard, Scott. Jones and Bartlett. 2023.

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

Instructor prepared materials