

CATALOG INFORMATION

Dept and Nbr: DET 88

Title: HEAVY-DUTY POWER TRAINS

Full Title: Heavy-Duty Power Transmissions

Last Reviewed: 1/22/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	4.00	17	Lecture Scheduled	68.00
Minimum	3.00	Lab Scheduled	8.00	8	Lab Scheduled	136.00
		Contact DHR	0		Contact DHR	0
		Contact Total	12.00		Contact Total	204.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 136.00

Total Student Learning Hours: 340.00

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: DET 66

Catalog Description:
The study of the transmission of power from the power source to the end function as related to heavy agricultural and industrial machinery and transportation vehicles. Lab activities include the disassembly, assessment, and reassembly of power train components.

Prerequisites/Corequisites:
Course Completion or Current Enrollment in DET 179 (or DET 80 or DET 60)

Recommended Preparation:
Completion of DET 60

Limits on Enrollment:

Schedule of Classes Information:
Description: The study of the transmission of power from the power source to the end function as related to heavy agricultural and industrial machinery and transportation vehicles. Lab activities include the disassembly, assessment, and reassembly of power train components.
(Grade Only)
Prerequisites/Corequisites: Course Completion or Current Enrollment in DET 179 (or DET 80 or DET 60)

Recommended: Completion of DET 60

Limits on Enrollment:

Transfer Credit: CSU;

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:	Transferable	Effective: Fall 1981	Inactive: Fall 2014
UC Transfer:		Effective:	Inactive:

CID:

Certificate/Major Applicable:

Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:

Upon successful completion of this course students will be able to:

1. Explain the operation of and be able to perform basic repairs on the following components:
 - clutches and hydraulic drives
 - mechanical transmissions
 - hydraulic assist transmissions
 - automatic transmissions
 - propeller shafts
 - differentials and final drives
 2. Demonstrate methods and procedural practices in servicing, diagnosis, and repair.
 3. Evaluate malfunctions and recommend remedies.
 4. Use technical references properly, including repair and parts manuals.
 5. Discuss and apply personal, shop, and environmental safety procedures.
- [Outcomes and objectives meet or exceed NATEF Applied Academic & Workplace Skills for Medium/Heavy Truck Technicians (Reference Standard 6.5, ASE Program Certification Standards manual, 1998).]

Topics and Scope:

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Unit 1: Power Transmission

- power transmission theory
- system operation
- system components
- system fluids

Unit 2: Clutches and Hydraulic Drives

- mechanical clutches
- hydraulic assist clutches
- fluid couplings
- torque converters
- hydraulic retarders
- Unit 3: Mechanical Transmissions
 - gear identification
 - gear ratios
 - single countershaft transmissions
 - twin countershaft transmissions
- Unit 4: Hydraulic Assist Transmissions
 - countershaft powershift transmissions
 - planetary powershift transmissions
- Unit 5: Automatic Transmissions
 - truck applications
 - coach applications
 - equipment applications
- Unit 6: Propeller shafts
 - universal joints
 - drive shafts
 - drive line angles
- Unit 7: Differentials and Final Drives
 - single speed differentials
 - multi-speed differentials
 - differential locking devices
 - simple and planetary final drives
- Unit 8: Power train service, diagnosis, and repair
- Unit 9: Safety
 - personal
 - shop
 - environmental

Assignment:

Students will:

1. Study various types of power train systems and components
2. Perform work on power train components
3. Research and report on a specific power train component
4. Study and practice maintenance procedures
5. Complete all assigned projects

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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing
0 - 0%

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

Lab reports, Quizzes

Problem solving
10 - 25%

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

STRUCTURED LAB EXERCISES

Skill Demonstrations
30 - 50%

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

Multiple choice

Exams
30 - 50%

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

Attendance and participation.

Other Category
10 - 20%

Representative Textbooks and Materials:

Heavy Duty Trucks, Robert N. Brady, Prentice Hall Pub. 1st Ed., 1997.

Heavy-Duty Truck Systems. Norman, Corinshock, Bennett, Del Mar Publishers, 2001.