

**DET 88 Course Outline as of Spring 2009****CATALOG INFORMATION**

Dept and Nbr: DET 88 Title: HEAVY-DUTY POWER TRANS  
 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	2.25	17.5	Lecture Scheduled	39.38
Minimum	3.00	Lab Scheduled	2.25	8	Lab Scheduled	39.38
		Contact DHR	0		Contact DHR	0
		Contact Total	4.50		Contact Total	78.75
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 78.75

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: AGMEC 88

Formerly: DET 66

**Catalog Description:**

In depth study of heavy duty drivetrain. Course covers theory, operation, diagnosis, service and overhaul of clutches, manual transmissions and rear axle assemblies.

**Prerequisites/Corequisites:****Recommended Preparation:**

Completion of or Concurrent Enrollment in DET80 and Eligibility for ENGL100 or ESL100

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

Description: In depth study of heavy duty drivetrain. Course covers theory, operation, diagnosis, service and overhaul of clutches, manual transmissions and rear axle assemblies. (Grade Only)

Prerequisites/Corequisites:

Recommended: Completion of or Concurrent Enrollment in DET80 and Eligibility for ENGL100 or ESL100

Limits on Enrollment:

Transfer Credit: CSU;

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

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		Effective:	Inactive:	
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:	
<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:	
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:	Fall 2014
<b>UC Transfer:</b>		Effective:		Inactive:	

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

**Outcomes and Objectives:**

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

1. Explain the operation of, evaluate and perform basic repairs on the following components:
  - a. clutches
  - b. manual transmissions
  - c. automatic transmissions
  - d. drivelines
  - e. differentials and final drives
  - f. electronic transmission controls
2. Demonstrate methods and procedural practices in servicing, diagnosis, and repair.
3. Evaluate malfunctions and propose remedies.
4. Use technical references properly, including repair and parts manuals.
5. Discuss and apply personal, shop, and environmental safety procedures.

**Topics and Scope:**

1. Power Transmission
  - a. power transmission theory
  - b. system operation
  - c. system components
2. Clutches
  - a. mechanical clutches
  - b. hydraulic assist clutches
  - c. fluid couplings
  - d. torque converters
  - e. hydraulic retarders
3. Mechanical Transmissions
  - a. gear identification
  - b. gear ratios
  - c. single countershaft transmissions
  - d. twin countershaft transmissions

4. Automatic Transmissions
  - a. torque converters
  - b. operation principles
  - c. shift control
5. Driveshaft Assemblies
  - a. universal joints
  - b. drive shafts
  - c. drive line angles
6. Differentials and Final Drives
  - a. single speed differentials
  - b. multi-speed differentials
  - c. differential locking devices
  - d. simple and planetary final drives
7. Power train service, diagnosis, and repair
8. Safety
  - a. personal
  - b. shop
  - c. environmental

**Assignment:**

Students will:

1. Work on power train components
2. Reading - 40 pages a week
3. Study and practice maintenance procedures
4. Lab reports
5. Assigned projects.
6. 3-5 multiple choice tests.

**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 and projects

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.

Tests, multiple choice

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:**

Heavy Duty Truck Systems, Sean Bennett, Ian Andrew Norman, Thompson Delmar Learning. 4th edition, 2006