DET 188 Course Outline as of Fall 2014

CATALOG INFORMATION

Dept and Nbr: DET 188 Title: HEAVY-DUTY POWER TRAIN
Full Title: Heavy-Duty Power Train
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 88

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:
Eligibility for ENGL 100 or ESL 100 and Course Completion or Concurrent Enrollment in DET 179

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: Eligibility for ENGL 100 or ESL 100 and Course Completion or Concurrent Enrollment in DET 179
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

Outcomes and Objectives:
Upon successful completion of this course students will be able to:
1. Explain the operation of, evaluate and perform 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. Use technical references properly, including repair and parts manuals.
3. 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. single disc clutches
    b. twin disc clutches
    c. clutch controls
    d. torque converters
3. Manual 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
   a. Repari and parts manuals
8. Safety
   a. personal
   b. shop
   c. environmental

Assignment:

1. Read 40 pages a week
2. Inspect and adjust clutch assemblies
3. Disassemble, inspect and reassemble a single counter shaft transmission and complete a written report
4. Disassemble, inspect and reassemble a twin counter shaft transmission and complete a written report
5. Disassemble, inspect and adjust a final drive assembly and complete a written report
6. 3-5 exams

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.

Transmission and final drive reports	Writing 0 - 20%

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

Transmission inspection and assembly	Problem solving 20 - 35%

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

Clutch inspection, Final drive adjustments	Skill Demonstrations 20 - 35%

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

Exams	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, Delmar Learning. 5th edition, 2011