**Course:** DIES 231 Power Train Systems 2

**Department:** Diesel Technology

**Course Description:**

This course is the continuation of Power Train Systems 1, which provides the student with an in-depth study of heavy equipment power trains and supporting systems. Topics covered include: the operating platform and HVAC, powershift and automatic transmission theory, hydrodynamic drives, undercarriages, track and wheeled steering systems and hybrid electric drives. An applied approach is used in comprehension of system functions and diagnostics.

**Two lecture hours and two laboratory hours each week**

| **COURSE OUTCOMES** | **SAMPLE OUTCOMES ACTIVITIES** | **SAMPLE ASSESSMENT TOOLS** |
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| Upon successful completion of this course students should: | To achieve these outcomes students may engage in the following activities: | Student learning may be assessed by: |
| 1. Identify various components used in heavy equipment power trains; (WC, IL and CCT) | • Textbook readings<br>• On-line demonstration<br>• Video presentations<br>• Classroom discussions | • Tests, quizzes<br>• Mechanical drawings<br>• Homework assignments |
| 2. Follow safety guidelines specific to the operation and repair of heavy equipment; (CCT, WC, and IL) | • Textbook and on-line readings<br>• Video presentations<br>• Classroom discussions<br>• Laboratory demonstrations | • Tests & Quizzes<br>• In-class conversations<br>• Laboratory evaluations |
| 3. Evaluate power train components by inspecting and testing; (WC, CCT, and IL) | • Textbook and on-line readings<br>• Video presentations<br>• Classroom demonstrations<br>• Laboratory demonstrations | • Tests, quizzes<br>• Classroom discussion<br>• Laboratory work |

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| 4. Perform diagnostic tests using specialized tooling and interpret results (CCT, WC and IL) | • Textbook readings<br>• Video presentations<br>• Classroom collaborative learning<br>• Classroom discussions | • Test quizzes<br>• Homework assignments<br>• Laboratory assignments |
| 5. Perform diagnostic tests using specialized tooling and interpret results (CCT, WC and IL) | • Textbook readings<br>• Video presentations<br>• Classroom collaborative learning<br>• Classroom discussions | • Test quizzes<br>• Homework assignments<br>• Laboratory assignments |
| 6. Understand power flow, power shifting, and gearing theory; (WC, IL, and CCT) | • Textbook readings<br>• Video presentations<br>• Classroom collaborative learning<br>• Classroom discussions<br>• Laboratory demonstrations | • Test quizzes<br>• Homework assignments<br>• Laboratory assignments |
| 7. Correctly disassemble, inspect, repair and reassemble power train components; (CCT, IL) | • Textbook and on-line readings<br>• Classroom presentations | • Tests, quizzes<br>• Written assignments<br>• Homework assignments |

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| | • Laboratory demonstrations<br>• Class and Laboratory discussions | • Laboratory assignments |

This course includes the following core competencies: Critical and Creative Thinking (CCT), Information Literacy (IL), and Written Communication (WC).