



## APPLIED FAILURE ANALYSIS — HCEM 1150

### A. Course Description

- **Credits:** 2.00
- **Lecture Hours/Week:** 2.00
- **Lab Hours/Week:** 0.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

The student will study Applied Failure Analysis. The course will include basic metallurgy, principles of fractures and principles of wear. The course will discuss how these factors affect the failure of parts as related to the engines, hydraulics and powertrain components used in the heavy equipment industry. We will do case studies from actual part failures from machines used in the industry. The emphasis of this course is to find the root cause of the failure and prevent the failure from occurring again. This course is required by both the diploma and the A.A.S. student.

### B. Course Effective Dates: 8/24/15 – Present

### C. Outline of Major Content Areas

As noted on course syllabus

### D. Learning Outcomes

1. Develop a plan to prevent the failure from happening again
2. Develop and demonstrate ability to explain the root cause of the failure to the customer
3. Identify and analyze 3 fracture major fracture types
4. Identify and analyze the 7 most common wear types
5. Identify metal irregularities that can cause part failures
6. Identify the root cause of part failures
7. Understand Basic Metallurgy and how it applies to part failures

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

### F. Learner Outcomes Assessment

As noted on course syllabus

**G. Special Information**

None noted