

## Master Syllabus

### MET 2101 - Thermodynamics

**Division:** Science, Mathematics and Engineering

**Department:** Mechanical Engineering Technology

**Credit Hour Total:** 3.0

**Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

**Prerequisite(s):** PHY 1141OR PHY 2201AND MET 2201OR MEE 2101

**Date Revised:** January 2015

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### Course Description:

The laws and application of the principles of thermodynamics as they apply to internal combustion engines, steam cycles and refrigeration. Two classroom, two lab hours per week.

### General Education Outcomes:

- Critical Thinking/Problem Solving Competency
- Information Literacy Competency

### Course Outcomes:

#### Power cycle analysis

Analyze the Otto, Diesel, Rankine power cycles.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher correct score on exams

#### Properties of ideal gas mixtures

Use the ideal gas law to determine the properties and characteristics of a mixture of ideal gasses.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher correct score on exams

#### Psychrometric analysis

Apply basic equations of state to determine the thermodynamic properties of moist air. Plot these properties on a psychrometric chart and perform a graphic analysis of a psychrometric process.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher correct score on exams

#### Refrigeration cycle analysis

Analyze a single-stage refrigeration cycle.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher correct score on exams

#### Thermodynamic analysis based on the first and second laws

Apply the concepts of conservation of energy, reversible vs. irreversible systems (entropy), and thermal efficiency to analyze energy transfers.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher correct score on exams

### Outline:

Thermodynamic laws and concepts

Thermodynamic properties

Internal combustion engines

Steam cycles

Refrigeration

Mixtures