

## Master Syllabus

### MET 2401 - Machine Design

**Division:** Science, Mathematics and Engineering

**Department:** Mechanical Engineering Technology

**Credit Hour Total:** 3.0

**Lecture Hrs:** 2.0 **Lab Hrs:** 3.0

**Prerequisite(s):** MET 2251 AND PHY 1131

**Date Revised:** July 2016

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### Course Description:

Design and evaluation of machine elements, design for safety, strength, stability and wear. Analysis and design of gears, shafts, drive systems, mechanical fasteners, permanent connections, roller and journal bearings and springs. A design project including an oral presentation and written report is required. Two classroom, three lab hours per week.

### General Education Outcomes:

- ❑ Oral Communication Competency
- ❑ Written Communication Competency
- ❑ Critical Thinking/Problem Solving Competency
- ❑ Computer Literacy Competency
- ❑ Information Literacy Competency

### Course Outcomes:

#### Specifications

Prepare written, graphic and quality specifications for a finished design.

**Assessment Method:** Portfolios

**Performance Criteria:** 70% or more of available points

#### Project presentation

Present the project concepts, design parameters and results in a small group setting.

**Assessment Method:** Portfolios

**Performance Criteria:** 70% or more of available points

#### Mechanical system design

Determine the design, manufacturing and quality requirements for a basic mechanical system.

**Assessment Method:** Portfolios

**Performance Criteria:** 70% or more of available points on assignments

#### Mechanical component design

Identify and design various mechanical components.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 70% or more of available points on exams

#### Components

Separate components into "select" or "design" categories.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 70% or more of available points on exams

### Outline:

Design philosophy  
Design considerations  
Procedures in machine design  
Connections  
Fasteners  
Bearings  
Shaft design