

## ABET Course Syllabus for MET 419: Mechanical Design II

1. Course number and name: MET 419: Mechanical Design II
2. Credits and contact hours: 4 credit hours, 4 hours per week
3. Instructor's Name: Charles Pringle, PE
4. Textbook, title, author, and year:
  - *Machine Elements in Mechanical Design, 6th ed.*, by Mott; Prentice Hall Publ., 2018.
- a. Other supplemental materials:
  - Software for Internet access,
  - Word processing,
  - Spreadsheet,
  - PDF.
5. Specific course information:
  - a. Brief description of the content of the course (catalog description): Fasteners, welds, machine frames, pressure vessels, hydraulic cylinders, electrical motors, and actuators. This course consists of four hours of lecture each week plus an associated lab for two hours per week.
  - b. Pre-requisites: MET 418 and MET 418LAB. Co-Requisite: MET 419LAB.
  - c. Required, elective, or selected elective (as per Table 5-1) course in the program: Required
6. Specific goals for the course:

The second course in mechanical design and device optimization are presented.

  - a. Specific outcomes of instruction:
    - Proceed from a design concept to a complete design including analysis, part drawings, and material specification in a lab setting.
    - Demonstrate the ability to complete shaft analysis.
    - Apply technical methodology in analyzing a complete design in terms of weight and cost estimates, as well as 'buy' decisions in a lab setting.
  - b. Criterion 3 student outcomes addressed by course:  
3 (2), (5)
7. Brief list of topics covered:
  - Math
  - Statics
  - Mechanics of Materials
  - Material Science
  - Electric Circuitry AC/DC

- Mechanical Design
- Optimization/Continuous improvement

## ABET Course Syllabus for MET 419: Mechanical Design II Laboratory

1. Course number and name: MET 419: Mechanical Design II Laboratory
2. Credits and contact hours: 1 credit hours, 2 hours per week
3. Instructor's Name: Charles Pringle, PE
4. Textbook, title, author, and year:
  - *Machine Elements in Mechanical Design, 6th ed.*, by Mott; Prentice Hall Publ., 2018.
- a. Other supplemental materials:
  - Software for Internet access,
  - Word processing,
  - Spreadsheet,
  - PDF.
5. Specific course information:
  - a. Brief description of the content of the course (catalog description): Practical application of mechanical design principles. Lab work includes mechanical design principles for optimization of energy conversion systems via machine and power elements.
  - b. Pre-requisites: MET 418 and MET 418LAB.
  - c. Required, elective, or selected elective (as per Table 5-1) course in the program: Required
6. Specific goals for the course: Applications in mechanical design and device optimization are presented.
  - a. Specific outcomes of instruction:
    - Proceed from a design concept to a complete design including analysis, part drawings, and material specification in a lab setting
    - Student will be able to function effectively as a member a technical team.
    - Apply technical methodology in analyzing a complete design in terms of weight and cost estimates, as well as 'buy' decisions in a lab setting.
  - b. Criterion 3 student outcomes addressed by course:  
3 (2), (5)
7. Brief list of topics covered:
  - Math
  - Statics
  - Mechanics of Materials
  - Material Science
  - Electric Circuitry AC/DC
  - Mechanical Design

- Optimization/Continuous improvement