

ABET Course Syllabus for MET 426: Applications of Mechanics of Materials

1. Course number and name: MET 426: Applications of Mechanics of Materials
2. Credits and contact hours: 4 credit hours, 4 hours per week
3. Instructor's Name: Dennis Capovilla
4. Textbook, title, author, and year:
 - *Mark's Standard Handbook for Mechanical Engineers*, Avallone and Baumeister.
 - a. Other supplemental materials:
 - Software for Internet access,
 - Word processing,
 - Spreadsheet,
 - Graphing capability required.
5. Specific course information:
 - a. Brief description of the content of the course (catalog description): Topics support stress analysis and design. Laboratory activities include material strength, hardness, impact testing, strain gage technology, photoelasticity, ultrasonics, and eddy current. This course consists of four hours of lecture each week plus an associated lab for two hours per week.
 - b. Pre-requisites: (ETSC 312 with a grade of C+ or higher) and MET 351. Co-requisites: MET 426LAB.
 - c. Required, elective, or selected elective (as per Table 5-1) course in the program: Required
6. Specific goals for the course:

One purpose of this course is to introduce mechanical engineering technology students to some of the more advanced, but currently used methods of analysis, testing and compliance. The main objective is to have the student develop the confidence to use 'compliant' engineering methods and also use advanced stress analysis methods in an engineering environment.

 - a. Specific outcomes of instruction:
 - Apply 'compliant' engineering methodology.
 - Apply energy stress analysis methods.
 - Apply non-destructive evaluation techniques.
 - b. Criterion 3 student outcomes addressed by course:
3 (1), 3 (4), Mb, Mc, Mf, Mk
7. Brief list of topics covered:
 - Tensile Test
 - Stress Concentration

- Buckling
- Hardness
- Mohr's Failure
- Impact
- Energy Methods, Numerical Methods
- Validation / Compliance
- NDT
- Ultrasonics
- Strain gauges

ABET Course Syllabus for MET 426: Applications of Mechanics of Materials Lab

1. Course number and name: MET 426: Applications of Mechanics of Materials Lab
2. Credits and contact hours: 1 credit hours, 2 hours per week
3. Instructor's Name: Dennis Capovilla
4. Textbook, title, author, and year:
 - *Mark's Standard Handbook for Mechanical Engineers*, Avallone and Baumeister.
 - a. Other supplemental materials:
 - Software for Internet access,
 - Word processing,
 - Spreadsheet,
 - Graphing capability required.
5. Specific course information:
 - a. Brief description of the content of the course (catalog description): Topics support stress analysis and design. Laboratory activities include material strength, hardness, impact testing, strain gage technology, photoelasticity, ultrasonics, and eddy current. This course consists of two hours of lab each week plus an associated lecture for four hours per week.
 - b. Pre-requisites: (ETSC 312 with a grade of C+ or higher) and MET 351.
 - c. Required, elective, or selected elective (as per Table 5-1) course in the program: Required
6. Specific goals for the course:

One purpose of this course is to introduce mechanical engineering technology students to some of the more advanced, but currently used methods of analysis, testing and compliance. The main objective is to have the student develop the confidence to use 'compliant' engineering methods and also use advanced stress analysis methods in an engineering environment.

 - a. Specific outcomes of instruction:
 - Conduct material testing in compliance with standards
 - Apply nondestructive techniques to determine structural integrity
 - Critique material testing procedures for specific applications
 - b. Criterion 3 student outcomes addressed by course:
3 (1), 3 (4), Mb, Mc, Mf, Mk
7. Brief list of topics covered:
 - Tensile Test
 - Stress Concentration
 - Buckling

- Hardness
- Mohr's Failure
- Impact
- Energy Methods, Numerical Methods
- Validation / Compliance
- NDT
- Ultrasonics
- Strain gauges