
Course Prefix/No:	MET 211
Course Title:	STRENGTH OF MATERIALS
Lecture Hrs/Wk:	3.0
Lab Hrs/Wk:	3.0
Credit Hrs/Semester:	4.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course covers externally applied forces and internally induced stresses in structural members and machine components. Materials selection and sizing components to meet requirements are included.

COURSE COMPETENCIES

Upon successful completion of this course, the student will be competent to perform the following tasks:

Module 1

1. Define stress and resulting strain (deformation) in structures due to external loads.
2. Define the following mechanical properties of materials: stiffness, strength, elasticity, ductility, hardness, malleability, toughness and resilience
3. Define Hooke's law and solve problems involving normal and shear stresses
4. Define Poisson's ratio
5. Demonstrate knowledge of biaxial stresses, stress concentration, thermal stress, and stresses on oblique planes by solving related problems.

Module 2

1. Demonstrate knowledge of torsional stress by solving related problems.
2. Design circular solid and hollow shafts for power transfer based on allowable horsepower, shear strength, and angle of twist.

Module 3

1. Draw shear force and bending moment diagrams for simple and cantilever beams with concentrated and distributed loads.
2. Design simple beams to carry bending loads using flexure formula, and perform shear checks using general shear formula and average web shear formula.

Module 4

1. Design simple mechanical joints for structural and mechanical engineering applications.
2. Calculate bearing, shearing, and tensile stresses for bolted connections by solving related problems.
3. Design simple mechanical joints.

MINIMAL STANDARDS

Students must complete all modules and achieve a 60% average on all exams, lab reports, projects or any other required assignments. Assignments and attendance must be completed as designated in "Evaluation Strategies/Grading."

COURSE REQUIREMENTS

There will be a minimum of four tests and a weekly lab grade. Students are expected to take notes in class, read assignments, and do homework. Homework will be collected on a regular basis during each class meeting. Students are expected to keep a "loose-leaf" homework notebook for this purpose.

ATTENDANCE

During the semester student may miss only 10% of the total classes to be attended. However, absences beyond 10% may result in withdrawal prior to the midterm with a grade of "W" and a grade of "F" after the midterm. Refer to the York Technical College Catalog & Handbook for attendance.

Missing Class

In case a student does miss a class, he/she is responsible for obtaining the material that was covered during the absence. If a student is aware that he/she will miss a class, then the student should notify the instructor at the earliest possible date.

Missing Lab

In case a student does miss a lab, he/she is responsible for completing the lab as soon as possible (preferably before the test covering the lab material). The lab will have to be made up on the students own time.

Missing a Test

If a student misses a test because of illness or an emergency, he/she should notify the instructor prior to the class period, or at the earliest possible time. At that time a new date for the makeup test will be scheduled. However, the student is responsible to ensure that arrangement is made with the instructor for a makeup test.

STUDENT CONDUCT

York Technical College adheres to the South Carolina TECH Student Code and Grievance Procedure, approved by the State Board for Technical and Comprehensive Education on November 13, 2003. (Copies of this *Student Code and Grievance Procedure* are available in the College Library, the Industrial & Engineering Technologies Division Offices in Building C and D, the Business, Computer, Arts & Sciences Division Office in Building A, the Health & Human Services Division Office in Building A, the Student Government Association Office in the Student Center, in the Student Services Building., and on the College's website.) It is the policy of York Technical College that the *Student Code and Grievance Procedure* shall govern conduct and guarantee due process for students enrolled at the College. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

PARTICIPATION IN CLASS

Students will be expected to participate in class discussions, demonstrate problem-solving techniques, and complete tests, homework, lab experiments, lab reports, and other assigned work.

LAB REQUIREMENTS

During laboratory experiments, the students may work in teams of two or three as the space permits. Students must demonstrate to the instructor that the equipment used is working properly before they leave. All assigned lab work must be completed before the student leaves the lab unless prior arrangements are made with the lab instructor.

ACADEMIC HONESTY

The policy found in the current College Student Handbook will be enforced in this class. York Technical College adheres to the South Carolina TECH Student Code, approved by the State Board for Technical and Comprehensive Education on March 13, 1974 (revised last April 25, 1984). Copies of this code are available in the Library and from Student Services. "Any student caught cheating or involved in any other academic dishonesty will be given a grade of zero and will be subject to further disciplinary action."

NO BEEPERS OR CELL PHONES WILL BE ALLOWED IN THE CLASSROOM.

METHODS OF INSTRUCTION

Traditional lecture and problem solving sessions will be used to accomplish course competencies. Other media such as internet, CD-ROM, DVD, or videos may be used if the instructor deems appropriate for certain topics.

EVALUATION STRATEGIES/GRADING

Each module will comprise 25% of the final grade. No final exam will be given; students may request a retest for grades below 70%. Maximum retest will be 80%. Missed tests will result in a grade of "zero" and cannot be made up except in dire situations. The grading scale follows:

GRADE	POINTS
A	90 - 100
B	80 - 89
C	70 - 79
D	60 - 69
F	0 - 59

Evaluation Method	Total Points
Tests (four minimum, 1 per module)	60%
Lab report	20%
Homework	10%
Work Ethics	10%
Distributed evenly among:	
Attendance	
Team Work	
Safety	
Class participation	
Ethical behavior	
Respect for others	
Timeliness	
Quality	
Perseverance	
Cooperation	

ENTRY LEVEL SKILLS

An understanding of the basic principles of physics and mathematics.

PREREQUISITE: EGR 190 or EGR 260

CO-REQUISITES: None

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.