

## COURSE INFORMATION

COURSE PREFIX/NO:     **MET 214**  
COURSE TITLE:         **Fluid Mechanics**  
LEC HRS/WEEK:         2.0  
LAB HRS/WEEK:         3.0  
CREDIT HRS/SEMESTER: 3.0

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

## COURSE DESCRIPTION

This course is a study of the physical properties of fluids and includes hydrostatics, buoyancy, flow of incompressible fluids, orifices, venturis, and nozzles.

## COURSE COMPETENCIES

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

### Module 1

1. Define compressibility and bulk modulus of elasticity.
2. Define viscosity as it relates to different fluids.
3. Identify various Newtonian and non-Newtonian fluids and their applications.
4. Use simple tools to measure viscosity.
5. Demonstrate knowledge of hydrostatic pressure and its measurement by solving problems related to applications of pressure gauges and manometers.

### Module 2

1. Calculate resultant hydrostatic force and its location on submerged plane and curved surfaces using principles of statics.
2. Demonstrate knowledge of Archimedes' Principle dealing with buoyancy and floatation by solving problems and through lab exercises.
3. Determine the conditions of stability for both submerged and floating objects.

### Module 3

1. Apply Bernoulli's equation and general energy equation to solve problems relating to pipe flow, pumps, and turbines.
2. Determine efficiencies of pumps and turbines using general energy equation and continuity equation.

### Module 4

1. Determine laminar and turbulent flow characteristics employing Reynolds number and Moody's diagram, and determine the losses in pipes, valves, and fittings.
2. Analyze velocity profiles in circular and non-circular sections using concepts of hydraulic radius and wetted perimeter.

### Module 5

1. Analyze series pipeline systems, Class I, Class II, and Class III systems, and solve related problems.
2. Analyze parallel pipeline systems, systems with two, three or more branches, and solve related problems.

## **MINIMAL STANDARDS**

Student 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 20% of the total classes to be attended. However, absences beyond 20% will result in withdrawal prior to the midterm with a grade of "W" and a grade of "F" after the midterm. Students must attend 80% of the hours assigned to the class for a semester to receive the credit for the course.

### **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 student's 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 date. 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, to demonstrate problem-solving techniques, and to 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.

## EVALUATION STRATEGIES/GRADING

Each module will comprise 20% 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:** PHY 201 or PHY 221

**CO-REQUISITE:** EGR 190 or EGR 260

**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.

**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.