Danville Community College

Workforce Services
Danville Community College

**COURSE SYLLABUS**

**DIVISION:** Workforce Services **Revised: January 2015**

**CURRICULUM IN WHICH COURSE IS TAUGHT:** Integrated Systems Technology

**COURSE NUMBER AND TITLE:** MEC 195, Applications in Fluid Mechanics

**CREDIT HOURS: 2** **HOURS/WEEK LECTURE: 2**

**HOURS/WEEK LAB: 0** **LECTURE/LAB COMBINATION: 2**

---

The OEE classes are self-paced study classes in which a student has 16 weeks to complete once enrolled. Students will complete all lab and bookwork before doing the end of chapter tests. All end of chapter tests and final exams are closed book. Upon completion of the lab, all tools, components, and supplies shall be returned to their proper location.

**I. CATALOG DESCRIPTION:** The course introduces the fundamental aspects of fluid motion, fluid properties, flow regimes, pressure variations, fluid kinematics, and methods of flow description and analysis. It presents the conservation laws in their integral and differential forms, and their use in analyzing and solving fluid flow problems.

**II. RELATIONSHIP OF THE COURSE TO CURRICULUM OBJECTIVES IN WHICH IT IS TAUGHT:**
To create a working knowledge of fluid mechanics as related to industrial maintenance.

**III. REQUIRED BACKGROUND:** No Prerequisites

**IV. COURSE CONTENT**

Properties of fluids and fluid flow
Bernoulli's theorem
Measuring devices
Viscosity and dimensional analysis
Fluid statics
Flow in pipes and channels, and pumps
Theory of hydraulic and pneumatic
Circuits including motors
Controls
Actuators
Valves
Plumbing
Accumulators

Reservoirs
Pumps
Compressors
Filters

| V. Learner Outcomes | VI. Evaluation |
|---|---|
| Determine distribution in fluids at rest and to calculate hydrostatic forces acting on plane and curved surfaces. | Class participation, homework, quizzes, and final exam |
| Determine pressure variation in a flowing fluid using Bernoulli's principle. | Class participation, homework, quizzes, and final exam |
| Determine velocity and acceleration of a fluid at a point. | Class participation, homework, quizzes, and final exam |
| Apply control volumes to solve fluid flow problems through the application of integral conservation laws of mass, momentum, and energy. | Class participation, homework, quizzes, and final exam |
| Apply the differential conservation equations of mass, momentum, and energy to fluid flow problems. | Class participation, homework, quizzes, and final exam |
| Apply basic fluid mechanics principles to the flow of viscous fluids in pipes and ducts. | Class participation, homework, quizzes, and final exam |

**VII. The course supports the following general education goals/objectives:**

DCC Educational Objectives

- Communication
- Critical Thinking
- Information Literacy
- Quantitative Reasoning