REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: MET 3185 Crosslisted With*: 

Course Title: Fluid Mechanics

Banner course title (15 characters): Fluid Mechanics

Check All That Apply: Required for Major: X Required for Minor: Specified Elective: 

Required for Concentration: Elective: Service Course: 

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

1. one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or
2. at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (2+2)

Face-to-Face or Equivalent Hours per course:

Lecture 30 Lab 30 Internship Practicum Other (please specify type and hours): 

Additional Student Work Hours per course: 90

Schedule Type: Grade Mode: 

Variable topics umbrella course: No X Yes If Yes, number of credit hours allowed 

Specified repeatable course: No X Yes 

APPROVED:

[Signature]

Department Chair OR Program Director Date: 01/29/14

[Signature]

Dean OR Associate Dean Date: 1/30/14

[Signature]

Associate VP, Academic and Student Affairs Date: 03/3/14

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: MET 3185

Prerequisite(s): MET 3160 with grade “C” or better or permission of instructor

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s): MET 3160 with grade “C” or better
Corequisite(s): _____
Prerequisite(s) or Corequisite(s): _____

Registration restrictions: Level _____ Class _____ Program/Major _____ Student attribute _____

Catalog Course Description:
In this course, the following topics will be covered: physical properties of fluids, hydrostatics, kinematics, energy considerations, momentum, incompressible flow in pipes, compressible internal flow, pneumatic systems, flow-loss calculations and flow measurement methods. Laboratory work will include calibration and use of equipment to measure hydrostatic forces on objects, verification of Bernoulli Equation, losses in piping system, flow profiles and other fluid systems.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

Required Reading and Other Materials will be equivalent to:

Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:
1. Demonstrate an understanding of the fundamentals of fluid statics,
2. Practice problems that illustrate fluid kinematics
3. Analyze fluid dynamics problems,
4. Apply learned principles to solve practical mechanical engineering problems.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

I. Fluid Properties
   A. Gasses
   B. Liquids

II. Fluid Statics
   A. Equilibrium
   B. Buoyancy
   C. Submerged Surfaces

III. Energy Equations
   A. Continuity
   B. Bernoulli
   C. Impulse-Momentum

IV. Steady Flow
   A. Streamline
   B. Incompressible Flow

V. Forces and Momentum in fluid flow
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VI. Incompressible Pipe flow  
   A. Friction  
   B. Reynold's Number  
   C. Moody Diagram  

VII. Open Channel Flow

VIII. Dimensional Parameters

IX. Pneumatics  
   A. Flow Losses  
   B. Components  
   C. Open And Closed Loop Flow

X. Laboratory Exercises

**Evaluation of Student Performance:**  
1. Homework  
2. Tests  
3. Laboratory Assignments  
4. Reports