

## Engineered Plumbing Systems Certificate of Accomplishment - Active

Department: Engineering & Technology

Approval: February 2016

Effective Semester: Fall 2016

This certificate includes instruction in the design and sizing of a wide variety of plumbing systems and the application of basic fluid flow principles. These skills are necessary in the design of domestic water, rainwater, sanitary drainage, fire protection, fuel gas, compressed air, hydronic and steam heating systems. Students completing this certificate program will be qualified to work alongside engineers as a plumbing systems designer.

### Learning Outcomes

Upon completion of this program, students will be able to:

- Apply basic principles of plumbing systems to the design of drain, waste, vent, hot water, cold water and fuel gas systems.
- Interpret plumbing codes and regulations and apply the codes in a practical way.
- Calculate system and equipment sizes based on engineering principles for plumbing systems, including building utilities, medical gas, compressed air, decorative pools, swimming pools water treatment, waste water treatment, automatic fire sprinklers.
- Propose solutions to problems dealing with basic principles of fluid flow, including the general energy equation, friction losses, pressure on submerged surfaces, buoyant forces, flow measurement, pump and fan performance characteristics and flow of real fluids in open and closed conduits.
- Employ standard practices in fire protection system design.

Students may obtain the Certificate of Accomplishment in Engineered Plumbing Systems by completing the following courses with a grade of "C" or higher. ET130, ET139A, ET139B, and CAD187 may be taken in any order. Students who have completed ET 139C under the previous program should speak to the instructor or department chair to determine the best course of academic study. Students with previous experience in this field may petition to waive or substitute requirements as approved the Department Chair.

The minimum time for completion of this certificate is 2 semesters. Completion time will vary based on student preparation and number of units completed per semester.

### Courses Required for the Certificate of Accomplishment in Engineered Plumbing Systems

Course	Units
<b>Required courses:</b>	
ET 130 - Applied Fluid Mechanics for Mechanical Engineering Technology	3.00
ET 139A - Engineering Plumbing Systems	3.00
ET 139B - Plumbing System Design Fundamentals	3.00
CAD 187 - Mechanical, Electrical, and Plumbing (MEP) Building Information Modeling (BIM) in Revit	2.50
Total:	11.50
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