FIRT 1311 FIRE SERVICE HYDRAULICS
Syllabus
El Centro College

Instructor Information
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Course Information
Course Title: Fire Service Hydraulics
Course Number: 1311
Section Number: 51202
Semester/Year: 2020FA
Credit Hours: 3
Class Meeting Time/Location: 2nd 8 weeks. M,TW,R,F,S (10/19/20-12/10/20) Internet only course.
Certification Date: 10/24/2020
Last Day to Withdraw: 11/25/2020

Course Prerequisites
Admittance to college.

Course Description
This course provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and solve water supply problems.

Course Objectives:
Students will:
• Explain the basic extinguishing properties of water that makes it useful for firefighting operations.
• List the common advantages and disadvantages of water as a fire extinguishing agent.
• Explain how the Law of Specific Heat and the Law Latent Heat of Vaporization relates to water as a fire extinguishing agent.
• Describe how the surface area of water affects its ability to extinguish a fire.
• Explain the basic principles of fluid pressure as they apply to water for fire protection.
• Explain the relationship between height and density and head pressure.
• Explain the importance of relevance of potential energy on water in fire protection concerns.
• Explain the importance and relevance of kinetic energy on water in fire protection concerns.
• Describe the principles of Conservation of Energy and Conservation of Matter.
• Define terms and explain their relevance of fire protection hydraulics.
• List and explain the four principles of friction loss.
• List the sources of water used to supply water supply systems.
• Describe the function of water treatment facilities in a water supply system.
• List and describe the three basic mechanisms for moving water through a water supply system.
• Describe the piping system used to distribute water throughout a water supply system.
• Explain the importance of conducting water supply testing on the water supply system.
• List and demonstrate the operation of equipment used to test a water supply system.
• Demonstrate the procedures for determining the flow pressure and volume from a fire hydrant.
• Explain the effect of the discharge opening on the flow testing process.
• Perform a flow test on the water supply system.
• Demonstrate the ability to compute flow test results obtained during water supply testing.
• Explain and utilize the three common formulas used to calculate required fire flow rates for manual fire fighting operations.
• List the fire flow requirements for automatic sprinkler and standpipe systems.
• Explain the characteristics of solid streams, including their flow and reach characteristics.
• Explain the characteristics of fog stream, including their volume, stream velocity, reach, and water particle size characteristics.
• Explain the characteristics of broken streams, including their flow and water particle size characteristics and their various special uses.
STUDENT LEARNING OUTCOMES:
UPON COMPLETION OF THE FIRT 1311, STUDENTS WILL BE ABLE TO:

- Apply the application of mathematics and physics to the movement of water in fire suppression activities.
- Identify the design principles of fire service pumping apparatus.
- Analyze community fire flow demands criteria.
- Demonstrate, through problem solving, a thorough understanding of the principles of force that affect water at rest and, in motion.
- List and describe the various types of water distribution systems.
- Discuss the various types of fire pumps.

Required Course Materials

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

“Important: Students who are part of the IncludED program do not need to purchase any learning materials unless directed by the instructor.”

Description of Graded Work
Method of Evaluation

Tests, homework assignments, class participation and individual activities. Learning activities include discussions, lectures, in-class research. There will be chapter tests as well as Internet research assignments, online program completions and research assignments. Tests will be done in class and/or via eCampus.

Final Grade

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<th>Percentages</th>
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<tr>
<td>90-100%</td>
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<td>80-89%</td>
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<td>0-59%</td>
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**Make Up/ Late work Policy**

Students are expected to complete all assignments and tests. If they are absent, they must consult their instructor about completion of assignments and tests. Grade deductions will be made for late submissions.

**Institutional Policies**

Institutional Policies relating to this course can be accessed using the link below. These policies include information about tutoring, Disabilities Services, class drop and repeat options, Title IX, and more.

[El Centro Institutional Policies](http://www.elcentrocollege.edu/syllabipolicies)

**Disclaimer:** The provisions contained in this syllabus do not constitute a contract between the student and El Centro College. These provisions may be changed at the discretion of the Coordinator/Instructor. When necessary, appropriate notice of such changes will be given to the student.