Course Description

Supports a foundation of theoretical knowledge in order to understand the use of water in fire protection. Students learn how to apply hydraulic principles to analyze and solve water supply problems.

Course Textbook


Course Learning Outcomes

Upon completion of this course, students should be able to:

1. Apply the laws of mathematics and physics to the movement of water in fire suppression activities.
2. Identify design principles of fire service pumping apparatus.
3. Analyze criteria for community fire flow demand.
4. Evaluate forces that affect water at rest and in motion.
5. Analyze types of water distribution systems.
6. Examine various types of fire pumps.

Credits

Upon completion of this course, the students will earn three (3) hours of college credit.

Course Structure

1. **Study Guide**: Each unit contains a Study Guide that provides students with the learning outcomes, unit lesson, required reading assignments, and supplemental resources.
2. **Learning Outcomes**: Each unit contains Learning Outcomes that specify the measurable skills and knowledge students should gain upon completion of the unit.
3. **Unit Lesson**: Each unit contains a Unit Lesson, which discusses lesson material.
4. **Reading Assignments**: Each unit contains Reading Assignments from one or more chapters from the textbook and/or outside resources.
5. **Discussion Boards**: Discussion Boards are part of all CSU term courses. More information and specifications can be found in the Student Resources link listed in the Course Menu bar.
6. **Unit Quizzes**: This course contains one Unit Quiz, which is to be completed at the end of Unit IV. Quizzes are used to give students quick feedback on their understanding of the unit material and are composed of multiple-choice questions.
7. **Unit Assignments**: Students are required to submit for grading Unit Assignments in Units I-VIII. Specific information and instructions regarding these assignments are provided below. Grading rubrics are included with each assignment. Specific information about accessing these rubrics is provided below.
8. **Ask the Professor**: This communication forum provides you with an opportunity to ask your professor general or course content related questions.
9. **Student Break Room**: This communication forum allows for casual conversation with your classmates.
CSU Online Library

The CSU Online Library is available to support your courses and programs. The online library includes databases, journals, e-books, and research guides. These resources are always accessible and can be reached through the library webpage. To access the library, log into the myCSU Student Portal, and click on “CSU Online Library.” You can also access the CSU Online Library from the “My Library” button on the course menu for each course in Blackboard.

The CSU Online Library offers several reference services. E-mail (library@columbiasouthern.edu) and telephone (1.877.268.8046) assistance is available Monday – Thursday from 8 am to 5 pm and Friday from 8 am to 3 pm. The library’s chat reference service, Ask a Librarian, is available 24/7; look for the chat box on the online library page.

Librarians can help you develop your research plan or assist you in finding relevant, appropriate, and timely information. Reference requests can include customized keyword search strategies, links to articles, database help, and other services.

Unit Assignments

Unit I PowerPoint Presentation

Develop a PowerPoint presentation that (1) explains the forces that affect water and (2) identifies the importance of having a solid knowledge base about water distribution systems. The target audience for your presentation is citizens who are attending a fire academy class. In other words, you are educating members of the public on the forces that affect water at rest and in motion. Your presentation must be at least 10 slides in length (not including title and reference slides). Be sure that your presentation addresses at least each of the following:

- Why is water an effective extinguishing agent?
- Briefly describe at least three forces that affect water at rest.
- Briefly describe at least three forces that affect water in motion.
- What components make up a water distribution system?
- Why is it important to have a working understanding of water’s effectiveness and water supply systems in general?

Use your creativity to format your presentation; however, be sure that it is both professional and also legible. Use at least your textbook as a reference, and make certain to include in-text citations and reference citations, formatted according to APA guidelines. For some guidance on preparing presentations in PowerPoint, click here to access a video with helpful tips.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit II Essay

Write a one-page essay about the following topic:

First, compare the design principles of a centrifugal pump to a pump of your choice. Then, determine which type of pump would best suit your community, and explain how you reached your conclusion.

Your response must be at least one page in length. Your essay should be double-spaced with one-inch margins, and 12 point Times New Roman font should be used. You are not required to include a title page or a reference page.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.
Unit III PowerPoint Presentation

Develop a PowerPoint presentation that explains the details of the discharge side of a water distribution system. The target audience for your presentation is citizens who are attending a fire academy class. In other words, you are educating members of the public on the discharge side of a water distribution system. Your presentation should be at least 10 slides in length (not including title and reference slides). Be sure your presentation addresses each of the following:

- the use and purpose of a fire hose,
- the use and purpose of at least two types of appliances, and
- the uses and differences between fog nozzles and smoothbore nozzles.

Use your creativity to format your presentation; however, be sure that it is both professional and also legible. Use at least your textbook as a reference, and make certain to include in-text citations and a reference citation, formatted according to APA guidelines.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit IV Problem Solving

This assignment involves applying the laws of mathematics and physics to the movement of water in fire suppression activities by asking you to complete a series of problems. First, practice solving the formulas through the interactive lesson and the Unit Quiz. Then, download the worksheet for this assignment and solve the problems (formulas) by showing your work within the worksheet. Finally, save all of your work within the worksheet before submitting it in Blackboard for grading. Click here to access the worksheet.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit V PowerPoint Presentation

Develop a PowerPoint presentation that demonstrates how to set up a drafting system to support a water shuttle operation. The target audience for your presentation is a group of aspiring pump operators. Your presentation should be at least 10 slides in length (not including title and reference slides). Be sure that your presentation addresses at least each of the following:

- How do drafting and water shuttle operations relate to analyzing criteria for community fire flow demand?
- What types of forces affect water during a drafting operation?
- Why is drafting and water shuttle operations considered an alternative type of water distribution system?

Use your creativity to format your presentation; however, be sure that it is both professional and also legible. Use at least your textbook as a reference, and make certain to include in-text citations and a reference citation, formatted according to APA guidelines.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

Unit VI Essay

Write a one-page essay about the following topic:

Describe when and how a relay operation would be utilized. Also, what would be required to successfully complete a relay operation over a distance of 0.5 miles?

Your response must be at least one page in length. Your essay should be double-spaced with one-inch margins, and 12 point Times New Roman font should be used. You are not required to include a title page or a reference page.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.
**Unit VII Essay**

Write a one-page essay about the following topic:

Describe class A and class B high expansion foams, the uses, the limitations, and how they are delivered (e.g., generated and pumped).

Your response must be at least one page in length. Your essay should be double-spaced with one-inch margins, and 12 point Times New Roman font should be used. You are not required to include a title page or a reference page.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit VII Article Review**

This assignment provides you with an opportunity to explore the literature that pertains to analyzing criteria for community fire flow demand by demonstrating your information-literacy skills (using the CSU Online Library). From within the online library, select any credible, scholarly article as long as it addresses a topic that impacts a community’s fire flow demand. After locating an article and reading the article critically, write an essay addressing at least each of the following:

- What is the main message (premise) the author is communicating?
- How does this article relate to community fire flow demand?
- What type of community would benefit from this article (the majority of communities, some communities, or very few communities)? Be specific.
- How does the article’s topic(s) relate to a pump operator’s skills?
- How has this article benefited you academically or professionally?
- Would you recommend this article to a professional? Why, or why not?

Your response must be at least two pages in length. Your essay should be double-spaced with one-inch margins, and 12 point Times New Roman font should be used. You are not required to include a title page; however, a reference page should be included, and the reference citation for your chosen article should be listed.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**Unit VIII Essay**

Write a one-page essay about the following topic:

Describe the tactical priorities of an aerial device. Also, determine if an aerial device equipped with a pump is considered a tactical advantage or disadvantage.

Your response must be at least one page in length. Your essay should be double-spaced with one-inch margins, and 12 point Times New Roman font should be used. You are not required to include a title page or a reference page.

Information about accessing the Blackboard Grading Rubric for this assignment is provided below.

**APA Guidelines**

The application of the APA writing style shall be practical, functional, and appropriate to each academic level, with the primary purpose being the documentation (citation) of sources. CSU requires that students use APA style for certain papers and projects. Students should always carefully read and follow assignment directions and review the associated grading rubric when available. Students can find CSU’s Citation Guide by clicking [here](#). This document includes examples and sample papers and provides information on how to contact the CSU Success Center.
Grading Rubrics

This course utilizes analytic grading rubrics as tools for your professor in assigning grades for all learning activities. Each rubric serves as a guide that communicates the expectations of the learning activity and describes the criteria for each level of achievement. In addition, a rubric is a reference tool that lists evaluation criteria and can help you organize your efforts to meet the requirements of that learning activity. It is imperative for you to familiarize yourself with these rubrics because these are the primary tools your professor uses for assessing learning activities.

Rubric categories include: (1) Discussion Board, (2) Assessment (Written Response), and (3) Assignment. However, it is possible that not all of the listed rubric types will be used in a single course (e.g., some courses may not have Assessments).

The Discussion Board rubric can be found within Unit I’s Discussion Board submission instructions.

The Assessment (Written Response) rubric can be found embedded in a link within the directions for each Unit Assessment. However, these rubrics will only be used when written-response questions appear within the Assessment.

Each Assignment type (e.g., article critique, case study, research paper) will have its own rubric. The Assignment rubrics are built into Blackboard, allowing students to review them prior to beginning the Assignment and again once the Assignment has been scored. This rubric can be accessed via the Assignment link located within the unit where it is to be submitted. Students may also access the rubric through the course menu by selecting “Tools” and then “My Grades.”

Again, it is vitally important for you to become familiar with these rubrics because their application to your Discussion Boards, Assessments, and Assignments is the method by which your instructor assigns all grades.

Communication Forums

These are non-graded discussion forums that allow you to communicate with your professor and other students. Participation in these discussion forums is encouraged, but not required. You can access these forums with the buttons in the Course Menu. Instructions for subscribing/unsubscribing to these forums are provided below.

Click here for instructions on how to subscribe/unsubscribe and post to the Communication Forums.

Ask the Professor

This communication forum provides you with an opportunity to ask your professor general or course content questions. Questions may focus on Blackboard locations of online course components, textbook or course content elaboration, additional guidance on assessment requirements, or general advice from other students.

Questions that are specific in nature, such as inquiries regarding assessment/assignment grades or personal accommodation requests, are NOT to be posted on this forum. If you have questions, comments, or concerns of a non-public nature, please feel free to email your professor. Responses to your post will be addressed or emailed by the professor within 48 hours.

Before posting, please ensure that you have read all relevant course documentation, including the syllabus, assessment/assignment instructions, faculty feedback, and other important information.

Student Break Room

This communication forum allows for casual conversation with your classmates. Communication on this forum should always maintain a standard of appropriateness and respect for your fellow classmates. This forum should NOT be used to share assessment answers.
Grading

Discussion Boards (8 @ 2%) = 16%
PowerPoint Presentations (3 @ 9%) = 27%
Unit Essays (4 @ 9%) = 36%
Unit IV Quiz = 3%
Unit IV Problem Solving = 9%
Unit VII Article Review = 9%
Total = 100%

Course Schedule/Checklist (PLEASE PRINT)

The following pages contain a printable Course Schedule to assist you through this course. By following this schedule, you will be assured that you will complete the course within the time allotted.
FIR 3304, Fire Protection Hydraulics and Water Supply

### Course Schedule

By following this schedule, you will be assured that you will complete the course within the time allotted. Please keep this schedule for reference as you progress through your course.

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<th>Water and Its Properties</th>
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<td><strong>Review:</strong></td>
<td>- Unit Study Guide</td>
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<td><strong>Read:</strong></td>
<td>- Chapter 4: Water</td>
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</table>
| **Discuss:** | - **Discussion Board Response:** Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)  
- **Discussion Board Comment:** Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time) |
| **Submit:** | - **PowerPoint Presentation** by Tuesday, 11:59 p.m. (Central Time) |
| Notes/Goals: | |

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| **Read:** | - Chapter 1: Evolution of the Fire Apparatus  
- Chapter 5: The Fire Pump |
| **Discuss:** | - **Discussion Board Response:** Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)  
- **Discussion Board Comment:** Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time) |
| **Submit:** | - **Essay** by Tuesday, 11:59 p.m. (Central Time) |
| Notes/Goals: | |

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### Unit VII: Foam

**Review:**
- Unit Study Guide

**Read:**
- Chapter 14: Foam

**Discuss:**
- **Discussion Board Response:** Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)
- **Discussion Board Comment:** Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time)

**Submit:**
- Essay by Tuesday, 11:59 p.m. (Central Time)
- Article Review by Tuesday, 11:59 p.m. (Central Time)

**Notes/Goals:**

### Unit VIII: Apparatus Equipped with an Aerial Device

**Review:**
- Unit Study Guide

**Read:**
- Chapter 3: Types of Fire Apparatus
- Chapter 15: Apparatus Equipped with an Aerial Device

**Discuss:**
- **Discussion Board Response:** Submit your response to the Discussion Board question by Saturday, 11:59 p.m. (Central Time)
- **Discussion Board Comment:** Comment on another student’s Discussion Board response by Tuesday, 11:59 p.m. (Central Time)

**Submit:**
- Essay by Tuesday, 11:59 p.m. (Central Time)

**Notes/Goals:**