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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](mailto: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

From the video clip below create a seven- to ten-slide presentation on the enthalpy regarding the fire and smoke. You may use various sources, including your textbook and other scholarly material. Since you will not be presenting this PowerPoint to your instructor in person, you may need to add written explanation for the contents of your slides. If this becomes necessary, you may use the PowerPoint slide "notes" function to provide brief explanations.

You will need to emphasize key points taken from this unit to fully discuss enthalpy and how it relates to the video clip of the thick black smoke pulsing from the warehouse.



Click [here](#) to access the video clip.

Visual emphasis, such as bold, italicized, or underlined text, should be used sparingly in order to maximize the prominence of key points. Each slide should address a single concept, and slides should follow a logical progression, each building on the other.

Treat your PowerPoint slides like you would any research paper—provide in-text citations and a reference slide for any outside sources, including direct quotations, paraphrased words or ideas, tables and data, and images. The title and reference slides are not included in the required slide count.

Click [here](#) for a PowerPoint tutorial if you need guidance in creating effective PowerPoint presentations.

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

### Unit III Project

For this assignment, conduct research on modern fires and legacy fires.

From your research and from concepts in the textbook, compare and contrast a modern fire and a legacy fire. Search for videos of each type of fire. Include in your discussion a response to the following questions in regard to both the modern and legacy fire.

- When is oxidation not combustion?
- When is combustion not oxidation?
- What is the basic mechanism of fire spread?

Summarize your responses in a document that is two pages in length.

To supplement your discussion and support your conclusions, you may use information from reputable, reliable journal articles, case studies, scholarly papers, and other sources that you feel are pertinent. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations in proper APA style.

The purpose of this assignment is for you to apply the concepts and knowledge you learned in this unit on the surveillance of the stages of fire in the video. Also, this provides you with the opportunity to use your skills, expertise, and experience to enrich your response.

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

#### **Unit IV Research Paper Topic**

*With this assignment, you will begin working on your research paper, which will be due in Unit VIII. See Unit VIII assignment instructions for more details about the final requirements for the Research Paper.*

Please select one of the topics below and prepare a well-organized and thoughtful summary for your research paper. The topic chosen should expand on what you are learning during this course. Show how you understand the issues with life experiences from the fire service. A title page and reference page are required, but are not included in the research paper required page count.

Topics from which you may choose include:

- 
- Smoke movement in buildings
- Fire movement in buildings
- The importance of measurement in understanding fire behavior
- Chemical elements that are especially important in fires
- Fuel-lean, stoichiometric, and fuel-rich combustion
- The three states of matter
- The components of fire
- The physical and chemical properties of fire
- The chemistry and dynamics of fire
- Materials and their relationship to fires as fuel
- The characteristics of water as a fire suppression agent
- Suppression agent strategies, methods and techniques of fire extinguishment

NOTE: If you have a different topic you would like to research, submit your topic proposal to your instructor and have it approved before writing your summary outline.

Your summary should be 200 to 300 words in length. Also, you must list at least one of the sources that you will be utilizing for the research paper. You are required to use your textbook as one of the source materials for your final paper. You should also use a minimum of three sources total. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations.

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

#### **Unit IV Case Study**

For this assignment, you are to watch the video below. The video illustrates a flashover in the mid-80s. Although it is an older video, it shows a narrow wood-frame structure where a salamander kerosene heater in the hallway started a fire that developed from ignition to a fully-developed fire after a flashover. Please do not critique the tactics or the protective clothing worn in that era. However, focus on the combustion as an exothermic chemical reaction between a fuel (wood frame structure with wood bead board interior and kerosene) and an oxidizer, resulting in the generation of substantive heat that lead to a flashover.

## Background

It was a cold winter night with temperatures dropping in the low 30s. The homeowner was using a salamander kerosene heater, which was common for that time, to stay warm. During the morning he turned off the heat and filled the heater with more kerosene. As he filled the heater, some kerosene spilled on the wood floor. The heat from the heater burning all night cause the fuel to vaporize more than usual on a cold day, and when he lit the heater it flashed, igniting the spilled kerosene. Within three minutes from time of dispatch, the Orlando Fire Department was on the scene with an engine company and a truck company. The truck company split into two crews (inside and outside) to perform truck functions. The engine crews were just making entry into the structure (about 2 feet inside the front door) when the flashover occurred.

Click [here](#) to access the video clip.

Apply what you learned from the video using concepts from Chapters 7, 8, and 12 to describe the fire. Discuss what led to the flashover. For example, was there enough heat generated by the combustion (oxidation) process to ignite other materials. If so, at what point? Was there fire plume under the ceiling? Was there filling of the fire compartment by smoke? What was the smoke flow from the compartment regarding any opening? What was the smoke movement?

Summarize your responses in a minimum of two pages in length.

To supplement your discussion and support your conclusions, you may use information from reputable, reliable journal articles, case studies, scholarly papers, and other sources that you feel are pertinent. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations in proper APA style.

The purpose of this assignment is for you to apply the concepts and knowledge you learned in this unit on the surveillance of the stages of fire in the video. Also, this provides you with the opportunity to use your skills, expertise, and experience to enrich your response.

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

## Unit V PowerPoint Presentation

Create an 18- to 20-slide presentation on one of the topics below. You may use various sources, including your textbook or other scholarly material. Since you will not be presenting this PowerPoint to your instructor or classmates in person, you may need to add written explanation for the contents of your slides. If this becomes necessary, you may use the PowerPoint slide notes function to provide brief explanations. Once completed upload the assignment to Blackboard.

Pick one of the four topics:

- Describe the differences between the burning of a solid fuel and the burning of gaseous and liquid fuels.
- Describe the thermal and chemical processes that result in the ignition of, and during the burning of a solid.
- Describe the hazards to people and property from fire.
- Describe the most important toxic gases in smoke.
- Describe the concept of limiting hazards and its role in fire protection.

Visual emphasis such as bold, italicized, or underlined text should be used sparingly in order to maximize the prominence of key points. Each slide should address a single concept, and slides should follow a logical progression, each building on the other.

Treat your PowerPoint slides like you would any research paper—provide in-text citations and a reference slide for any outside sources, including direct quotations, paraphrased words or ideas, tables and data, and images. The title and reference slides are not included in the required slide count.

Click [here](#) for a PowerPoint tutorial if you need guidance in creating effective PowerPoint presentations.

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

## Unit VI Case Study

The purpose of this assignment is for you to apply the concepts and information you learned in this unit about combustion products. Also, this assignment provides you with the opportunity to use your skills, expertise, and experience to enrich your response.

The case study is the "Administrative Report Public Health Service/CDC/NIOSH/DSR FACE 98-03." Locate the report by going to the Centers of Disease Control and Prevention website and typing the report information in the search engine. If you cannot locate the article please contact your professor.

This is a brief background from the report to the Director of the National Institute of Occupational Safety and Health (NIOSH) on January 20, 1998 from the Division of Safety Research, NIOSH:

### Two Fire Fighters Die of Smoke and Soot Inhalation in Residential Fire - Pennsylvania

On October 27, 1997, two male fire fighters died of smoke and soot inhalation while fighting a residential fire. An Engine Company comprised of four fighters was responding to a 911 call of a downed power line in a residential neighborhood when one of the fire fighters noticed smoke emitting from the basement area of a nearby residence. Without notifying fire dispatch of the change in conditions (smoke coming from the residence), three fire fighters entered the residence to assist the residents out, and to survey the conditions and location of the fire. The fire fighters then exited the residence to don their self-contained breathing apparatus. Two of the fire fighters reentered the residence with a charged 3/4-inch booster line and proceeded to the basement (location of the fire) to attack the fire. This was the last time either fire fighter was seen alive. NIOSH investigators concluded that, to prevent similar occurrences, fire departments should: (1) ensure that fire fighters advise dispatch of any change in conditions that would warrant a change in the status of unit(s) responding to a specific condition (2) ensure that fire fighters wear and use PASS devices when involved in firefighting, rescue, and other hazardous duties.

Consider these requirements for your assignment:

- Discuss the case study thoroughly relating to smoke or fire effluent.
- Analyze the aerosols (soot particles and liquid droplets) and gases that could be related to the deaths. Why, or why not?
  - Explain how the smoke components, as well as the smoke itself, could have contributed to the death.
  - Did the light haze visible in the living room contain aerosol droplets that resulted from condensation of gases that cool as they leave the vicinity of the flames? Why, or why not?
  - Did the smoke, soot, and aerosols reduce the ability to see in the dining room? Why, or why not?
  - Could the moderate smoke and poor visibility that the firefighters encountered affect their ability to orient themselves and constructively identify a path to safety? Why, or why not?
  - Is there anything you think the first firefighters should have or could have done differently? Support your answer.

Provide your responses in a document. The completed assignment must be a minimum of three pages in length, not including the title page and reference list. To supplement your discussion, you may use journal articles, other case studies, scholarly papers, and other sites you may find pertinent.

You must use APA style guidelines when writing your paper. You need to utilize at least two sources and you will need to cite these sources in-text and at the end of your essay in a "References" section. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations.

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

## Unit VII Scholarly Activity

For this assignment, you are to research ONE of the following situations. Discuss it thoroughly using the course learning outcomes for this unit as a foundation to discuss the concepts.

- Research an incident involving fire suppressant(s). Compare the fire suppressant(s) listed in the incident to others listed in scholarly sources and the textbook. Describe the suppressant, give real life experiences involving the suppressant, and briefly compare and contrast which other fire suppressants would be effective for the same incident. Discuss the chemical phase, the mechanism of action, the mode of application, and the application system.

- Research an incident involving a gasoline fire and briefly describe the incident. Discuss the best aqueous foam(s) for fighting the fire. Explain the principal mode of application of the aqueous foam agent. Was the aqueous foam effective? Why, or why not?
- Research an incident involving inert gases used to prevent, quench, or interfere with the chain propagating and chain branching chemistry of the flames. Explain why the uses of chemically active agents are limited by their environmental impacts and health hazards. Do you agree with or disagree with their environmental impacts and health hazards? Why, or why not?
- Research emergency response for fires that use water delivery enhanced with chemical additives for extinguishment. Briefly describe an incident and highlight some of the primary types of chemical additives and their effectiveness. Did the water have high heat of vaporization or gasify readily with the additives? Did the additives form any toxic products after the extinguishment of the fire?

The purpose of this assignment is for you to apply the concepts and knowledge you learned within this unit. Also, this provides you with the opportunity to use your skills, expertise, and experience to enrich your response. Since you are offered the choice of which assignment to complete, you should provide a thorough discussion on the concepts and explain how it could relate to your field or career choice. To supplement your discussion, you may use journal articles, case studies, scholarly papers, and other sites you may find pertinent.

Your response should be at least three pages of content, double spaced and appropriately cited using APA style writing. Any material that is directly quoted is required to have the necessary citation. Your paper should have a title page and reference page meeting APA format. This should be original work that demonstrates a higher level of learning. The use of material from other scholarly sources is appropriate to show that you can analyze the information and apply it to other situations by building on the knowledge of others as it applies to your exploratory assignment.

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

## Research Paper

### Unit VIII Research Paper

Please use the topic you selected in Unit IV and prepare a well-organized and thoughtful five- to seven-page research paper. The paper should expand on what you learned during this course. Show that you understand the issues using life experiences. This paper should demonstrate a higher level of learning with examples to show that you can analyze the information and apply it to other situations. A title page and reference page are required but not included as part of the paper length. CSU requires that students use the outside sources. All sources used, including the textbook, must have accompanying citations, and may include Internet sources, books and professional journals, or resources related to the course. Your research paper must contain at least three references.

APA rules for formatting, quoting, paraphrasing, citing, and listing of sources are to be followed. A document titled "APA Guidelines Summary" is available for you to download from the APA Guide Link, found in the Learning Resources area of the myCSU Student Portal. It may also be accessed from the Student Resources link on the Course Menu. This document provides links to several internet sites that provide comprehensive information on APA formatting, including examples and sample papers.

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) Assessment (Written Response) and (2) 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 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 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.](#)

**Once you have completed Unit VIII, you MUST unsubscribe from the forum; otherwise, you will continue to receive e-mail updates from the forum. You will not be able to unsubscribe after your course end date.**

### 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

Unit Assessments (2 @ 5%)	= 10%
PowerPoint Presentations (2 @ 10%)	= 20%
Unit III Project	= 10%
Case Studies (2 @ 10%)	= 20%
Unit IV Research Paper Topic	= 5%
Unit VII Scholarly Activity	= 15%
Unit VIII Research Paper	= 20%
<b>Total</b>	<b>= 100%</b>

## 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.



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.

<b>Unit I</b>	<b>Concepts Associated with the Chemistry and Dynamics of Fire</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 1:</b> Fire Measurement and the SI System of Units <input type="checkbox"/> <b>Chapter 2:</b> Chemical Elements and Compounds: Atoms and Molecules <input type="checkbox"/> <b>Chapter 3:</b> Physical and Chemical Change <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Assessment</b> <input type="checkbox"/> <b>PowerPoint Presentation</b>
Notes/Goals:	

<b>Unit II</b>	<b>Physical Properties of the Three States of Matter: Part 1</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 3:</b> Physical and Chemical Change <input type="checkbox"/> <b>Chapter 4:</b> Flow of Fluids <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Assessment</b>
Notes/Goals:	

<b>Unit III</b>	<b>Physical Properties of the Three States of Matter: Part 2</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 5:</b> Heat Transfer <input type="checkbox"/> <b>Chapter 6:</b> Combustion, Fire, and Flammability <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Project</b>
Notes/Goals:	

<b>Unit IV</b>	<b>Physical and Chemical Properties of Fire</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 7:</b> Fire Characteristics: Gaseous Combustibles <input type="checkbox"/> <b>Chapter 8:</b> Fire Characteristics: Liquid Combustibles <input type="checkbox"/> <b>Chapter 12:</b> Movement of Fire Gases <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Research Paper Topic</b> <input type="checkbox"/> <b>Case Study</b>
Notes/Goals:	

<b>Unit V</b>	<b>Process of Burning</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 9:</b> Fire Characteristics: Solid Combustibles <input type="checkbox"/> <b>Chapter 11:</b> Smoke and Heat Hazards <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>PowerPoint Presentation</b>
Notes/Goals:	

<b>Unit VI</b>	<b>Various Materials and Their Relationship to Fire as Fuel</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 10:</b> Combustion Products <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Case Study</b>
Notes/Goals:	

<b>Unit VII</b>	<b>Characteristics of Water as a Fire Suppression Agent</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 13:</b> Fire Fighting Chemicals <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Scholarly Activity</b>
Notes/Goals:	

<b>Unit VIII</b>	<b>Other Suppression Strategies, Methods and Techniques of Fire Extinguishments</b>
<b>Review:</b>	<input type="checkbox"/> Unit Study Guide <input type="checkbox"/> <b>Learning Activities (Non-Graded):</b> See Study Guide
<b>Read:</b>	<input type="checkbox"/> <b>Chapter 14:</b> Computational Modeling of Fires <input type="checkbox"/> <b>Suggested Further Reading:</b> See Study Guide
<b>Submit:</b>	<input type="checkbox"/> <b>Research Paper</b>
Notes/Goals:	



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