Course Description

Discusses the major components that contribute to an effective process safety management program. Topics include methods to measuring performance, facilitating metrics, integrating regulatory requirements, and establishing and maintaining a safety culture.

Course Textbook


Course Learning Outcomes

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

1. Discuss the relationship of process safety to an organization’s overall accident prevention efforts.
2. Explain the purpose of OSHA’s Process Safety Management (PSM) Standard.
3. Identify the 14 elements required by the PSM Standard.
4. Identify hazards and risks commonly found in the process industry.
5. Select effective control measures for identified process industry hazards.
6. Explain the various methodologies used to develop a process hazard analysis.
7. Describe the components necessary for an effective emergency response plan.
8. Use an accident scenario to assess compliance with the PSM Standard and industry best practices.

Credits

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

Course Structure

1. **Unit Learning Outcomes:** Each unit contains Learning Outcomes that specify the measurable skills and knowledge students should gain upon completion of the unit.
2. **Unit Lessons:** Each unit contains a Unit Lesson, which discusses unit material.
3. **Reading Assignments:** Each unit contains Reading Assignments from one or more chapters from the textbook or from online sources. Suggested Readings are listed in the unit study guides to aid students in their course of study. The readings themselves may or may not be provided in the course, but students are encouraged to read the resources listed if the opportunity arises as they have valuable information that expands upon the lesson material. Students will not be tested on their knowledge of the Suggested Readings.
4. **Learning Activities (Non-Graded):** These non-graded Learning Activities are provided in Units I-VI and VIII to aid students in their course of study.
5. **Discussion Boards:** Discussion Boards are a part of all CSU term courses. Information and specifications regarding these assignments are provided in the Academic Policies listed in the Course Menu bar.
6. **Unit Assessments:** This course contains eight Unit Assessments, one to be completed at the end of each unit. Assessments are composed of multiple-choice and matching questions and/or written response questions.
7. **Unit Assignments:** Students are required to submit for grading Unit Assignments in Units III, VI, and VII. 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.

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**CSU Online Library**

There is a virtual library with resources, including both journals and ebooks, to support your program and your course at Columbia Southern University. eResources are accessible 24 hours a day/7 days a week from the CSU Online Library gateway page. To access the library, log into myCSU, and then click on CSU Online Library. Resources are organized in the library by title, but if you click on Research Guides, you will find eResources arranged by subject.

The Library Reference service is available 7 days a week; you can reach CSU’s virtual librarians by emailing thevirtuallibrarian@columbiasouthern.edu. These professional librarians will be glad to help you develop your research plan or to assist you in any way in finding relevant, appropriate, and timely information.

Librarian responses may occur within minutes or hours, but it will never take more than 24 hours for a librarian to send a response to the email address you have provided. Replies to reference requests may include customized keyword search strategies, links to videos, research guides, screen captures, attachments, a phone call, live screen sharing, and meeting room appointments, as well as other forms of instruction.

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**Unit Assignments**

**Unit III Case Study**

Read the Chemical Safety Board’s case study, *The Explosion at Concept Sciences: Hazards of Hydroxylamine*, regarding the February, 1999 hydroxylamine explosion at the Concept Sciences facility in Pennsylvania. Click [here](#) to access that case study. Then write a report that includes the following:

- summary of the incident,
- discussion of causal factors,
- discussion of how inadequate process safety information contributed to the incident, and
- recommendations for improvements to the process safety management program at the facility.

Your response should be a minimum of two pages in length, double-spaced. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations, and cited per APA guidelines.

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

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**Unit VI Article Critique**

Locate the following article in the Business Source Complete database in the CSU Online Library:


Read the article and write a critique that includes the following elements:

- a brief introduction to the article,
- summary of the key points in the article,
- discussion of how the article supports the Management of Change requirements in OSHA’s PSM Standard, and
- summary of the article’s conclusions and your own opinions.

Your critique should be a minimum of two pages in length, double-spaced, excluding the cover and reference pages. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations, and cited per APA guidelines.

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

Search through the investigation reports on the U.S. Chemical Safety Board website (www.csb.gov) and select one that you find interesting. Be sure the report has enough detail for you to be able to complete the assignment. Prepare a case study that includes the following elements:

- a summary of the incident,
- identification of five Process Safety Management elements that were likely deficient and may have contributed to the incident (Include evidence from the investigation report to support the selection of each deficient element.),
- proposed corrective actions for each of the deficient elements (Discuss how your proposed actions will help to prevent a recurrence.), and
- summary and conclusions.

Your response should be a minimum of four pages in length, double-spaced. All sources used, including the textbook, must be referenced; paraphrased and quoted material must have accompanying citations, and cited per APA guidelines.

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Discussion Boards (8 @ 2%)</td>
<td>= 16%</td>
</tr>
<tr>
<td>Assessments (8 @ 7%)</td>
<td>= 56%</td>
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<tr>
<td>Unit III Case Study</td>
<td>= 8%</td>
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<tr>
<td>Unit VI Article Critique</td>
<td>= 8%</td>
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<tr>
<td>Unit VII Case Study</td>
<td>= 12%</td>
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<tr>
<td><strong>Total</strong></td>
<td>= 100%</td>
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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.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Introduction to Process Safety</th>
</tr>
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</table>
| Review: | Unit Study Guide  
Learning Activities (Non-Graded): See Study Guide |
| Read: | Chapter 1: The Process Employee’s Role in Safety, Health, and Environment  
Chapter 2: History of the Safety and Health Movement  
Chapter 3: Accidents and Human Error  
Suggested Reading: See Study Guide |
| Discuss: | Discussion Board Response: Submit your response to the Discussion Board question by Saturday, 11:59 p.m (Central Time) |
| Submit: | Assessment by Tuesday, 11:59 p.m (Central Time) |

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<thead>
<tr>
<th>Unit</th>
<th>OSHA’s Process Safety Management Standard</th>
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</table>
| Review: | Unit Study Guide  
Learning Activities (Non-Graded): See Study Guide |
| Read: | Chapter 16: Process Safety Management  
Additional Reading Assignment(s): See Study Guide  
Suggested Reading: See Study Guide |
| 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: | Assessment by Tuesday, 11:59 p.m (Central Time) |

Notes/Goals:
<table>
<thead>
<tr>
<th>Unit III</th>
<th><strong>Process Safety Information: Hazard Recognition I</strong></th>
</tr>
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</table>
| **Review:** | - Unit Study Guide  
- **Learning Activities (Non-Graded):** See Study Guide |
| **Read:** | - Chapter 4: Hazard Recognition  
- Chapter 5: Toxic Hazards and Blood-Borne Pathogens  
- Chapter 6: Fire and Fire Hazards  
- **Additional Reading Assignment(s):** See Study Guide  
- **Suggested Reading:** See Study Guide |
| **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:** | - **Assessment** by Tuesday, 11:59 p.m. (Central Time)  
- **Case Study** by Tuesday, 11:59 p.m. (Central Time) |

<table>
<thead>
<tr>
<th>Unit IV</th>
<th><strong>Process Safety Information: Hazard Recognition II</strong></th>
</tr>
</thead>
</table>
| **Review:** | - Unit Study Guide  
- **Learning Activities (Non-Graded):** See Study Guide |
| **Read:** | - Chapter 7: Hazards of Pressure, Steam, and Electricity  
- Chapter 8: Noise and Vibration Hazards  
- Chapter 9: Hazards of Temperature  
- Chapter 10: Hazards of Process Sampling  
- **Additional Reading Assignment(s):** See Study Guide  
- **Suggested Reading:** See Study Guide |
| **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:** | - **Assessment** by Tuesday, 11:59 p.m. (Central Time) |

Notes/Goals:
### Unit V: Process Hazard Analysis and Hazard Control

**Review:**
- Unit Study Guide
- **Learning Activities (Non-Graded):** See Study Guide

**Read:**
- Chapter 11: Engineering Control of Hazards
- Chapter 12: Administrative Control of Hazards
- Chapter 13: Personal Protective Equipment (PPE)
- Chapter 15: Respiratory Protection
- **Additional Reading Assignment(s):** See Study Guide
- **Suggested Reading:** See Study Guide

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

### Notes/Goals:

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### Unit VI: Permit Systems and Management of Change

**Review:**
- Unit Study Guide
- **Learning Activities (Non-Graded):** See Study Guide

**Read:**
- Chapter 17: Permit Systems
- **Additional Reading Assignment(s):** See Study Guide
- **Suggested Reading:** See Study Guide

**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:**
- **Assessment** by Tuesday, 11:59 p.m (Central Time)
- **Article Critique** by Tuesday, 11:59 p.m (Central Time)

### Notes/Goals:
### Unit VII: Hazard Communication and Emergency Response

**Review:**
- Unit Study Guide

**Read:**
- Chapter 18: Hazardous Waste Operations (HAZWOPER)
- Chapter 22: Hurricanes, Plant Security
- Additional Reading Assignment(s): See Study Guide
- Suggested Reading: See Study Guide

**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:**
- Assessment by Tuesday, 11:59 p.m (Central Time)
- Case Study by Tuesday, 11:59 p.m (Central Time)

**Notes/Goals:**

### Unit VIII: Process Safety Auditing and Metrics

**Review:**
- Unit Study Guide
- Learning Activities (Non-Graded): See Study Guide

**Read:**
- Additional Reading Assignment(s): See Study Guide
- Suggested Reading: See Study Guide

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

**Notes/Goals:**