<table>
<thead>
<tr>
<th>Week</th>
<th>Online Course Unit</th>
<th>Suggestions for In-Class Discussion/Activities</th>
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</table>
| 1    | Unit 1: From Rules to Risk  
      Unit 2: OSHA and EPA Regulations for Laboratories |  
      - Show the Introduction slide.  
      - Differentiate between risk and hazard.  
      (Slide: Risk vs Hazard)  
      - Discuss the hazard assessment for the experiment using the RAMP framework.  
      (This could be incorporated into the procedure section.) (Slide: RAMP)  
      - Discuss reasons why regulations are needed. |
| 2    | Unit 3: Communicating Hazards – GHS and the SDS  
      Unit 4: Communicating Hazards – NFPA |  
      - Distribute copies of an SDS for a substance being used. Discuss the information in each of the sections.  
      - Show the GHS symbols.  
      - Discuss how the GHS differs from the NFPA system.  
      - Discuss the limitations of the NFPA system.  
      - Discussion of DOT symbols should be limited, because this system is for transportation. |
| 3    | Unit 5: Recognizing Hazards – Toxicity |  
      - Using an SDS, find the toxicity information for a substance.  
      - Discuss target organs and the potential effects of toxic substances on them.  
      - Discuss the significance of LD<sub>50</sub> information. |
| 4    | Unit 6: Recognizing Hazards – Flammability |  
      - Discuss characteristics of flammable substances.  
      - Show the video about flame jetting, and discuss how risks can be minimized.  
      - Discuss the fire tetrahedron and the fire triangle. |
| 5    | Unit 7: Recognizing Hazards – Corrosivity |  
      - Ask for examples of corrosive substances.  
      - Discuss the reasons why caustics present a risk to tissue, especially the eyes. (If available, obtain a bovine or sheep eyeball from a butcher. Place it in a sodium hydroxide solution. Observe.) |
| 6    | Unit 8: Recognizing Hazards – Reactivity |  
      - Ask for examples of reactive substances. |
| 7    | Unit 9: Recognizing Hazards – Physical and Biological Hazards |  
      - Ask students to identify physical hazards in the laboratory, their home or apartment, and a business. Ask them to suggest methods to eliminate or minimize those hazards.  
      - Discuss biological hazards found in the laboratory. Ask students whether these hazards, or others, are present at their home or apartment or business. |
| 8    | Unit 10: Assessing Risk – Laboratory Operations |  
      - Discuss safe practices for various laboratory operations. (Note: Focus on |
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<th>Unit</th>
<th>Topic</th>
<th>Activity/Description</th>
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<tr>
<td>9</td>
<td>Unit 11: Assessing Risk – Hazard and Risk Assessments</td>
<td>- Select an experiment that has been conducted recently, and perform a hazard and risk assessment as a class activity.</td>
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| 10    | Unit 12: Minimizing Risk – Chemical Storage | - Give a tour of the chemical stockroom, and point out the chemical storage arrangement.  
- Give students a list of chemicals, and ask them to organize the chemicals into appropriate storage locations. (Desk/class activity) |
| 11    | Unit 13: Minimizing Risk – Hazardous Waste  | - Discuss how hazardous waste is handled in the laboratory and in the institution. Invite a guest speaker (safety professional) from the EHS group.                                                                  |
| 12    | Unit 14: Minimizing Risk – Elimination, Administrative and Engineering Controls | - Ask students to identify the various engineering controls found in the laboratory.  
- Ask students to identify the various administrative controls that affect the laboratory.  
- Discuss the effectiveness of the various controls. |
| 13    | Unit 15: Minimizing Risk – Personal Protective Equipment | - Provide students with a glove selection chart. Ask them to select an appropriate glove to use with a certain chemical or an operation.                                                                             |
| 14    | Unit 16: Preparing for and Responding to Emergencies | - Show students the department’s Chemical Hygiene Plan. Highlight the areas regarding emergency planning.  
- Discuss the conditions when emergency responders should be contacted. |
| 15    | Course Review                              | - Capstone exercise: Stage a laboratory station for an experiment performed during the semester. Create several items that would be considered unsafe or hazardous. Include a fume hood, waste disposal, PPE, various administrative controls, and housekeeping. Ask students to identify the unsafe practices and suggest possible corrective actions.  
- Use the ACS Exam CS 2019 as a comprehensive standardized final. |