# ME 466 Introduction to Engineering Safety

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| *Course Description:* | Introduction to the Systems and Philosophies of Safety Design |
| *Duration of Course:* | Summer 2020 |
| *Course Coordinator:* | Jacob Leachman |
| *Textbook:* | Louis J. Gullo, Jack Dixon, Design for Safety, 2018, John Wiley & Sons, Ltd |
| *Course Objectives:* | 1. To understand the principles of engineering safety in a laboratory or work environment,<br>2. Design and implement a safety plan,<br>3. Utilize safety principles during the design process. |
| *Topics Covered:* | 1. Introduction and History of Safety Paradigms<br>2. System Safety Program Planning<br>3. Managing Requirements, Risks, and Product Liabilities<br>4. System Safety Hazard Analysis<br>5. Failure Modes, Effects, and Criticality Analysis for System Safety<br>6. Process Safety Management, Implementation, and Sustaining<br>7. Fault Tree Analysis for System Safety<br>8. Integrating Safety into the Design Process<br>9. Design for Reliability Integrated with System Safety<br>10. Design for Human Factors Integrated with System Safety |
| *Expected Outcomes:* | 1. Be able to apply the principles outlined in the text to an existing laboratory or work environment<br>2. Be able to present and explain the developed safety system |
| *Class Schedule:* | M,W,F 8:30-9:30 am |

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**Schedule:** *The class schedule is subject to change

| Day | | Lecture Topic | Readings |
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| May 18<br>May 20<br>May 22 | | 1. Review syllabus<br>2. Work/Need Specification<br>3. History of Safety Paradigms | <br><br>Chapter 1,2 |
| May 25<br>May 27<br>May 29 | | No Class<br>4. Safety Program Planning<br>5. Work on safety page for HYPER website | <br>Chapter 3 |
| June 1<br>June 3<br>June 5 | | 6. Work on safety page for HYPER website<br>7. Work on safety page for HYPER website<br>8. Risk and Liabilities | <br><br>Chapter 4 |
| June 8<br>June 10<br>June 12 | | No Class<br>10. Introduction to HAZOP<br>11. HAZOP applications | <br>Chapter 6,7 |
| June 15<br>June 17<br>June 19 | | 12. Risk Cube<br>13. Failure Modes and Effects Analysis 1<br>14. Failure Modes and Effects Analysis 2 | <br>Chapter 8 |
| June 22<br>June 24<br>June 26 | | 15. Emergency Plans<br>16. Checklists and Operating Procedures<br>17. Safety Plan Communication & Training | <br>Chapter 6<br>Chapter 11 |
| June 29<br>July 1<br>July 3 | | 18. Safety Plan Monitoring & Testing<br>19. Fault Tree Analysis<br>20. Fault Tree Application | Chapter 12<br>Chapter 9 |
| July 6<br>July 8<br>July 10 | | 21. System Safety Requirements<br>22. Complimentary Design Techniques<br>23. Integrating Safety across disciplines | Chapter 5<br>Chapter 10<br>Chapter 13 |
| July 13<br>July 15<br>July 17 | | 24. Design for Reliability with System Safety 1<br>25. Design for Reliability with System Safety 2<br>26. Design for Reliability with System Safety 3 | Chapter 14 |
| July 20<br>July 22<br>July 24 | | 27. Design for Human Factors 1<br>28. Design for Human Factors 2<br>29. Design for Human Factors 3 | Chapter 15 |

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| July 27<br>July 29<br>July 31 | | 30. Introduction to Software Safety<br>31. Project Workday<br>32. Project Presentation | Chapter 16 |
| | | **The following portion of this table represents the length of a fall or spring semester, rather than a summer semester. This may be helpful to keep in mind during the development of this course.* | |
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