

IE 380
The Responsible Engineer
**Class Discussion Questions for
Chapter 5, Commitment To Safety**

Martin, M.W. & R. Schinzinger. *Ethics in Engineering*, fourth edition. Boston: McGraw Hill, 2005.

Answer the following questions. Questions in **boldface** are required. Others are optional, but you might be called upon in class to answer them!

1. In your anticipated career as an engineer (or other professional), what are some ways in which your work may affect the safety of others. Be as specific as possible.
2. Drawing on what you have learned in this chapter and our previous discussions and, especially, on your own personal moral principles, explain and justify your responsibility, as a future engineer, with respect to public safety. That is, what are the ethical foundations (e.g., from codes, ethical systems, etc.) underlying the engineer's moral responsibility for public safety?
3. What does it mean to say that our "intricate machines and control systems" are "vulnerable"? (p. 118) In what ways are they vulnerable?
4. **What is safety?**
5. **What is risk?**
6. What are some factors that contribute to risk associated with engineered systems? Read the next question before answering this one.
7. What are some factors that contribute to one's *perception* of risk?
8. Explain how a *risk-benefit analysis* conducted prior to an engineering project might lead to a safer outcome.
9. What is the capability/duty definition of safety? What are some problems with that?
10. Explain Figure 5-2 (p. 128) in your own words, using an example.
11. Based on your own personal moral principles, answer the following question, found on page 129. "Under what conditions, if any, is someone in society entitled to impose a risk on someone else on behalf of a supposed benefit to others?"
12. Does engineering safety into a device or system ever create problems? Give an example.
13. **What are some circumstances/factors that contributed to the accident at Three Mile Island?**
14. **What are some circumstances/factors that contributed to the accident at Chernobyl?**
15. **What are some parallels between these two accidents?**
16. Give an example – besides one in the book – of a *safe exit*.