Attributes of an engineer

• Character (Virtues):
  – Honesty
  – Integrity
  – Responsible
  – Reliable

• Skills & knowledge:
  – Technical knowledge
  – Analytical skills
  – Computation skills
  – Communication skills
Definition of Responsible

1. Liable to be called on to answer; liable to legal review or in case of fault to penalties
2. Able to answer for one’s conduct and obligations; able to choose for oneself between right and wrong...

(Webster’s Dictionary)
Responsibilities of engineers

- Legal responsibilities:
  - Not to cause harm
  - To compensate when harm is caused
  - To practice in accord with Engineering Practices Act
- Moral responsibilities:
  - To recognize and discharge our duties and obligations
  - Understand and adhere to a Code of Ethics
Ways in which harm is caused

• Intentionally – Done with the advanced knowledge that harm would be cause.
• Recklessly -- Acting in a way that we recognize might cause harm.
• Negligently -- By failing to exercise due care.

Any of these might be considered cause for legal action and in some cases (e.g. intentionally) may be considered criminal.
Three models of responsibility

• Minimalist model
• Reasonable care model
• Good works model
Minimalist model of responsibility

• Engineers only have two duties:
  – to conform to accepted practice,
  – fulfill basic duties prescribed by terms of employment.

• Those who would follow this model might be most concerned with not doing anything “wrong”.
  – “That’s not my responsibility, someone else will take care of that.”
Reasonable Care model of responsibility:

• Adhere to accepted standards of practice
• Take reasonable care to ensure that mistakes are prevented and the public welfare is protected
• Exercise and apply skill, ability and judgement reasonably and without neglect
  – keep abreast of evolving changes in knowledge and practice
  – recognize when minimal standards of practice might not be sufficient to prevent a harm, and take additional actions to prevent such a harm in those cases
Characteristics of the Reasonable Care model

- Concern for preventing harm, rather than just trying not to cause harm
- Oriented towards the future, toward avoiding problems and protecting the public
- Attitude of concern or caring
Good Works model of responsibility:

- “…above and beyond the call of duty.”

- Example: A local engineer offers to design and assemble a local area network for a school at her cost, with no charge for her own time.
Where do our responsibilities lie?

• The reasonable care model may actually be the minimal standard for an engineer.

• Engineering codes of ethics demand it:
  – accept responsibility in making engineering decisions consistent with the safety, health and welfare of the public, and to disclose promptly factors that might endanger the public or the environment --IEEE Code of Ethics

• Public expects it
  – Principle of Proportional Care: When people have a greater ability to harm, they have a greater obligation to prevent harm.
Some impediments to responsibility

- Self-interest
- Fear
- Self-deception
- Ignorance
- Egocentric tendencies
- Microscopic vision
- Uncritical acceptance of authority
- Antagonism toward outside regulation
- “Groupthink”
- Cumbersome business organizations