Honesty, Integrity and Confidentiality

ENGR 482
ETHICS and ENGINEERING

Required reading...

- Harris, et. al, Engineering Ethics -- Concepts and Cases, Ch. 6, “Honesty, Integrity and Reliability”.
- Recommended reading: “B.F. Goodrich Air Force A7-D Brake Problem Case and The Whistleblowing Debate, a case on the CD accompanying the above textbook.”

From the Codes of Ethics: the Engineer Should...

- be “... objective and truthful...”
- be “honest and realistic in stating claims...”
- “... offer honest criticism...”
- be “... honest and impartial...”
- be “... objective and truthful...”
- participate in “... none but honest enterprise...”
- “...avoid deceptive acts...”

How Important Is “Honesty” to Industry?

- Ethics Officers Association (EOA)
  - Currently 354 Total EOA Members
    - from Fortune 500 list of companies
    - $1,000/year membership dues
  - 148 Engineering Firms
    - CEO’s actively involved
    - Reflects reality of the business world

Business Ethics Policy and Agreement for Domestic Consultants by Company X:

- When acting on behalf of X, Consultant and its employees and agents shall comply with all applicable legal requirements and the highest ethical standards of the United States and each foreign country in which business is conducted.
- No payment on behalf of X shall be approved without adequate supporting documentation, or made with the intention or understanding that any part of such payment is to be used for any purpose other than that described by the documents supporting the payment.

Sample Ethics Policy (cont’d)

- It is X’s policy to comply fully with all applicable laws and governmental rules and regulations, and to conduct its business honorably and with due regard to ethics and propriety, as well as law. Accordingly, the Company desires not only to avoid actual impropriety, but also the appearance of impropriety. X’s relationship with all governmental agencies and their officials and personnel in the United States and in each foreign country in which business is conducted shall be, in all respects, such that public disclosure of full details thereof will not impugn or jeopardize X’s integrity or reputation.
Sample ethics policy (cont’d.)

It is the policy of X to report to the proper authorities any corroborated instance where a federal, state or local public official attempts to obtain money or property from X by the wrongful use of his official position or as a condition to perform certain duties he is normally obligated to perform. All such incidents should be immediately reported in full detail to the appropriate X official. Under no circumstances may Consultant agree on behalf of X to any extortion or solicitation of a bribe or kickback.

Sample Ethics Policy (cont’d)

Consultant may not pay or give anything of value to any public official that could be construed as consideration to influence the official in his action, vote or discharge of duties in any public or official capacity. The primary emphasis of the prohibition relates to extending to pay, paying or causing to be paid, either directly or indirectly, anything of value to an official with the intent and in order to influence him concerning the outcome of a public matter presently before him which directly and immediately affects X. The foregoing prohibition applies to the use of corporate as well as personal funds and assets. It also applies to indirect contributions or payments made in any form, such as those made through consultants, advisors, suppliers, customers or other third parties.

Sample Ethics Policy (cont’d)

Consultant, while acting on behalf of X, is strictly forbidden from making any payment of money or giving anything of value to any public official, or to any other person whom the Consultant knows, or has reason to believe, will pass on all or part of such payment or thing of value to a public official.

Consultant, while acting on behalf of X, shall not enter into any transactions with a government official or employee to perform any services, including consulting services, related, in any way, to any matter within the scope of his official duties or the duties and responsibilities of the governmental body of which he is an official, or by which he is employed.

Sample Ethics Policy (cont’d)

No payment or transfer of anything of value shall be made to any agent or employee of a competitor, customer or supplier with the intent of influencing the recipient to cause his employer to take any action, or omit to take any action, when such gift or transfer is undisclosed to his employer, or otherwise would be considered by Consultant to be unlawful or inappropriate.

Honesty in Research Issues

- Plagiarism -- use of another’s intellectual property without permission or credit.
  - Generally...
    - Short quotes with attribution— OK
    - Long passages without attribution— not OK

Honesty in Research (cont’d.)

Trimming: smoothing irregularities in data

Example diagram showing smoothing of data points by disregarding outliers.
Honesty in research (cont’d.)

Cooking—disregarding data points that do not fit the theory

Integrity in Research—
the A-7 D Brake Certification Case

In 1967 B. F. Goodrich won a contract to develop brakes for the A-7 D aircraft, proposing to use their lightweight, newly developed but unproven 4-rotor braking system.

The contract required that the brakes pass a series of 50-stop qualification tests.

In-house bench tests indicated the brakes would not pass the required 50-stop tests, but the test engineers were directed to nurse the brakes through the tests to completion, with the help of cooling fans.

A-7 D Brake Certification Case (cont’d)

Despite repeated problems with bench test results, Goodrich engineer Vandivier is directed to write report Q-6031 certifying that the brake has passed the simulated 50-stop tests. Vandivier objects, but is told that it is “not lying”, just a case of “engineering rationalization or judgement”.

Goodrich submits report Q-6031 certifying that the brake passed the bench tests.

A-7 D Brake Certification Case (cont’d)

Flight testing begins, and several incidents related to poor braking are noted by test pilots.

Vandivier hires an attorney, and meets with FBI.

USAF raises questions about the brake certification report Q-6031.

Vandivier writes letter of resignation citing misconduct by Goodrich. He is dismissed immediately.

Sen. Proxmire holds hearings on the scandal.

Goodrich agrees to retrofit improved brakes.

A-7 D Brake Certification Case Questions Raised:

Was report Q-6031 a “lie”? (Is this a factual, application, or conceptual question?)

Did Vandivier’s actions constitute whistleblowing?

If so, was Vandivier justified in whistleblowing?

What could have been done differently so that this incident might have had a better ending?

Note: Unknown to Vandiver, Goodrich had another team preparing a 5-rotor design for the A-7 D.

Confidentiality
Client-Professional Confidentiality
- Medicine--A patient has a right to expect that his/her medical records will not be released without permission.
- Law--A client has a right to expect that his legal situation will be kept private.
- Engineering--?

Two Forms of Abuse of Client-Professional Confidentiality
- Breaking confidentiality without justification.
- Refusing to break confidentiality when a higher obligation to the public warrants it.

Abuse of Client-Professional Confidentiality
- Note a difference between the interpretation of client-professional confidentiality in the case of medicine and engineering. A physician cannot release an AIDS diagnosis to anyone but the individual in question, even though he/she may put others at risk. Exceptions are very rare.
- Sometimes an engineer must violate client-professional confidentiality in the interests of protecting the public, because the violation of personal privacy is usually not as great, and the potential for public harm is often greater.

Abuse of Client-Professional Confidentiality
- It appears that the RP approach gives the “correct” analysis of to the Client-Professional relationship between physicians and patients, but fails in the analysis of the relationship between engineers and clients.
- Conversely, the Utilitarian approach could fail in an analysis of the physician/patient relationship.

Client-Professional Confidentiality
- In the Citicorp case, William LeMessurier realized that a design error, compounded with a construction change, had imposed an unacceptable risk on the public around the Citicorp building.
- He first contacted the owner, his client, and got their cooperation to put a fix in place.
- What should he have done if the owner had declined to cooperate?

Expert Witnesses
- Engineers are often hired in legal cases requiring technical knowledge (i.e., accidents, structural defects, patent infringements, defective products).
- For example, in a case involving a defective product, the expert witness must show:
  - defect is recognizable
  - defect could have been corrected
  - correction is affordable and does not compromise the product’s function.
Rules for Expert Witnesses
- Reserve adequate time to prepare case
- Explain technical details to lawyer (client)
  - Determine your opinion, advise your client, and be prepared to defend it.
- Be open to new information
- Testify honestly (same for plaintiff as for defendant)
- Be objective, unbiased, and even tempered

Honesty and Failure to Inform Public
- Failure to pass critical information to decision makers

Honesty sometimes requires public disclosure of problems
- DC-10 cargo hatch case: Convair didn’t pass their concerns along (to McDonnell-Douglas). Result: loss of plane with 346 deaths.
- Citicorp case: LeMessurier did pass his concerns along (to client). Result: catastrophe averted.
- Challenger case: Thiokol did not pass all information along (to NASA). Result: loss of Challenger and crew.

Case: DC-10
In 1972, McDonnell Douglas subcontracted Convair to design and build a cargo door latch for the DC-10. A pressure test caused the cargo door to blow out, buckling the passenger floor, and severing critical hydraulic and electrical lines. After modifications, the design was still faulty. An emergency landing was required in Detroit; no injuries resulted. Dan Applegate, a Convair engineer, informed his managers about the design flaws, but they suppressed the information to avoid financial penalties and litigation. In Paris in 1974, just as Applegate had predicted, a cargo hatch blew open killing 346 people.

Conflicts of Interest
Definition:
Conflict of interest... a conflict between the private interests and the official responsibilities of a person in a position of trust (as a government or corporate official)

Webster’s Ninth Collegiate Dictionary
Conflicts of interest

A conflict of interest arises when employees at any level have private interests that are substantial enough to interfere with their job duties; that is, when their private interests lead them, or might reasonably be expected to lead them, to make decisions or act in ways that are detrimental to their employer's interests.

W.M. Shaw and V. Barry
Moral Issues in Business

Conflicts of interest

More generally...

A person has a conflict of interest when he/she serves in two (or more) roles and the interests of each role clash, or potentially clash.

Example: #1

- John is a purchasing agent for JayCo. For the past 100 years, John's family has owned a company that makes bolts. JayCo needs to purchase 100,000 bolts.
- Does John have a conflict of interest?

Example: #2

- Mary is a research chemist and works in a U.S. government laboratory. The laboratory is aggressively encouraging their scientists to generate patents that will generate income to fund more research. Mary does research in her own laboratory and has an excellent reputation. Because of her reputation, she is invited to review proposals from universities who are proposing new research projects in Mary's area of research.
- Does Mary have a conflict of interest?

Example: #3

- Professor Winslow is a world-renowned expert in heat transfer. He has written the leading textbook on heat transfer which is used in 50% of the mechanical engineering departments in the U.S. Professor Winslow teaches heat transfer to 100 students each semester. He selects his own text which will generate an additional $2,000/yr in royalties.
- Does Professor Winslow have a conflict of interest?

Example: #4

- Fred is an expert on the design of boat hulls. Two teams that are competing in the America's Cup race approach him to help design their hulls. Fred accepts the offer from each team.
- Does Fred have a conflict of interest?
"A Conflict of Interest" is not...

- **Conflicting Interest**
  - A student likes to play soccer and football; he cannot decide which of his interests he likes better.
- **Conflicting Obligation**
  - An engineer is designing an automobile. He has an obligation to make it safe, but he also has an obligation to make it profitable.

Note:

- An engineer is only obligated to protect "legitimate" interests of his employer or client.

Hypothetical case

- Sally, a mechanical engineer, is president of the ASME Pressure Vessel Committee. This committee was established to produce technical codes that protect the public from exploding pressure vessels, such as steam boilers. Her role as president is strictly voluntary and unpaid. Her employer asks her to reduce the cost of a pressure vessel by using steel that is 25% thinner than the pressure vessel code requires. As president of the ASME Pressure Vessel Committee, she has an interest in protecting the public, but as an employee, she has an interest in serving her employer.
- Does she have a conflict of interest?

Types of Conflicts of Interest

- **Actual**
- **Potential**
- **Apparent**

Actual conflict of interest--Example

- John is a purchasing agent for JayCo. For the past 100 years, John’s family has owned a company that makes bolts. JayCo needs to purchase 100,000 bolts. If JayCo purchases the bolts, the value of John’s stock in the family business will increase by 20%.

Potential conflict of interest--Example

- John is a purchasing agent for JayCo. For the past 100 years, his fiancee’s family has owned a company that makes bolts. JayCo needs to purchase 100,000 bolts. If John marries his fiancee, he stands to gain financially if JayCo purchases the bolts from his fiancee’s company.
Apparent conflict of interest--Example
- John is a purchasing agent for JayCo.
- For the past 100 years, John's family has owned a company that makes bolts.
- Ten years ago, John had a fight with his family and has not spoken to them since.
- John owns no stock in the bolt company.
- JayCo needs to purchase 100,000 bolts.

Why does a conflict of interest matter?
- Engineers are hired for their expertise.
- Their judgment must be reliable.
- The client/employer must trust the engineer to make correct, unbiased decisions.
- Actual and potential conflicts of interest can cause biased decisions; apparent conflicts of interest can damage the trust.

What To Do About a Conflict of Interest...
- Disclose: “Boss, I want you to know my family owns a bolt company that will bid on the upcoming procurement.”
- Recuse: “Boss, please do not assign me to the bolt procurement, because I have a conflict of interest. I will be happy to work on other projects.”

Gifts and conflicts of interest...
- Accepting a valuable gift should be avoided because it can cause conflicts of interest or create the appearance of a conflict of interest.
- Inexpensive gifts are usually not of concern.
- Where is the line drawn between inexpensive and valuable gifts?

Gift Case
- Tom has been named the department manager of a large new chemical process plant which is to be designed and constructed. Tom's responsibilities are to:
  - Form the design staff
  - Supervise the design staff
  - Ensure the plant is safe, operable, and maintainable
  - Direct the start up operations
- Tom recommends that the design staff specify a new ValCo valve to replace traditional gate valves.
First Scenario
- ValCo valves are superior to traditional gate valves because they seal more tightly and more quickly. After a large number of ValCo valves have been ordered, Jim - the ValCo salesman and a former classmate of Tom's - stops by and gives Tom a pen with the company logo stamped in gold. The pen is worth about $5.00.
  - Should Tom accept the pen?

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<th>Test Case</th>
<th>Negative Paradigm</th>
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<tr>
<td>Relationship of giver</td>
<td>Friend</td>
<td>X------------</td>
<td>Stranger</td>
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Third Scenario
- ValCo valves are superior to traditional gate valves because they seal more tightly and more quickly. After a large number of ValCo valves have been ordered, Jim, the ValCo salesman and a former classmate of Tom’s, stops by. Jim indicates that he will sponsor Tom for membership in an exclusive country club.
  - Should Tom accept the membership?

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Fourth Scenario
- ValCo valves are superior to traditional gate valves because they seal more tightly and more quickly. After a large number of ValCo valves have been ordered, Jim - the ValCo salesman - stops by. Although Tom has never met Jim before, Jim indicates that he will sponsor Tom for membership in an exclusive country club.
  - Should Tom accept the membership?
**In Summary**

- How do you define "valuable"?
- How do other people define "valuable"?
- Remember, accepting a valuable gift should be avoided because it lead to conflicts of interest or the appearance of conflicts of interest.