Engineering Ethics:

3 lectures: 1st: Set the stage 2nd: Professional Standards 3rd: Compromise
(n'to take too much time)

Situation 1: You are a graduate student with a desk next to a registered Professional Engineer (PE) who had 10 years experience working in nuclear power plants. You have classes with this person & are amazed that they never miss points on homework or exams. You are totally confused because the person can never seem to explain why they chose the particular method for their solutions. In your second class with this person, you notice that this person's solutions are always identical to the professor's even when there are several acceptable solution strategies.

Question: Do you address the question with your superior?

My Solution: Don't accuse! It's toxic for organizations & teams, I went in to the professor for the class and asked, I must be missing something because I was not performing nearly as well as this other person on my approach to these problems. I asked him how he decided his particular solution strategy was the best? He said that it was just the way he chose to do it. I said well, you & this person are really in sync. Even when the professor made a mistake, the other person made the same mistake.
The professor laughed & said, "wow that is a coincidence." The professor wrote his own problems so there wasn't a solution manual anywhere jokingly.

I asked the professor if he saved his solutions in a public location. He said that he backed up his files on his lab's shared drive. I asked him if he could not do that for the next few assignments.

After this it became clear that the PE had been cheating. He was never confronted about it, but was unable to get a graduate degree & is currently unemployed. Damage was already done. 

Moral: You cannot fake science or engineering. Someone, somewhere will do what you have done & find out you either made a mistake or falsified results.

Mistakes can hurt your credibility. Falsification of results will end your credibility.

Businesses succeed through either innovation or ignorance. While only sustainable approach is innovation.
Situation: You are working for a keyboard manufacturing company as an engineering manager. In order to improve the company's profitability, you have been instructed to implement the principles of Lean Manufacturing to reduce the number of hourly staff workers required by the manufacturing process.

Question: Is this ethical?

Later on you are presenting to a group of aspiring engineers that your program has been wildly successful as productivity increased with a 40% reduction in staff. As you and your 5 fellow managers discuss hitting the links this afternoon, one of the students asks what methods are in place to reduce the number of managers, as these are the highest paid positions in the company. Suddenly you realize there is no plan.

Question: Was the reduction in staff ethical?

Moral: After reductions in staff, expect a reduction in management.
Engineering Ethics is very much a problem of style.

There are no laws of the universe governing Ethics, so generally there are no correct answers. The process to developing solutions is then very similar to the process of engineering design.

- Establish a system for the problem.
- Establish facts, knowns & unknowns.
- Establish precedence & intent.
- Apply applicable laws.
- Develop a solution.
Whistle Blowing

→ When an employee finds his or her conscience unable to accept the actions of the company & telling the world about them, typically via the media.

→ Employees who blow the whistle on their employers are protected by law. If they are fired or otherwise retaliated against for whistle blowing, they can sue.