

## Case studies in engineering ethics education

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## CASE STUDIES IN ENGINEERING ETHICS EDUCATION

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**Topics:** Gender, Inclusion and Ethics

**Keywords:** ethics education, case studies

### **Background and Rationale**

Case studies are the prevalent teaching method employed in engineering ethics education, but despite their popularity, there is little or no empirical evidence supporting their effectiveness (Colby and Sullivan 2008; Yadav and Barry 2009). The most common use of case studies focuses on individual dilemmas set in scenarios of crisis (Haws 2001). There is less concern with incorporating realistic professional settings and topics such as public policy or the broader social mission of engineering (Colby and Sullivan 2008; Bielefeldt *et al* 2016). While students do show an ability to recognize obvious black and white ethical dilemmas, they fail to do so for “more subtle but possibly more serious dilemmas” (Schuman *et al* 2004, p 11).

### **Significance**

The growing criticism of individualistic engineering ethics case studies highlights the need to develop and use case studies that can capture the complexity of the profession and realistic features of the professional environment (Lynch and Kline 2000; Bucciarelli 2007; Conlon and Zandvoort 2011).

### **Motivation and learning outcomes**

The workshop aims to respond to the need for more complex ethics case studies and to facilitate the participants' use of the method in their own teaching. The workshop has two major outcomes. First, participants will gain an enhanced awareness of different approaches to case studies. The second expected outcome is facilitating the development of case studies by participants themselves, based on the workshop exercises. The case studies developed can be incorporated by the participants in their teaching, and can deliver input to the SEFI ethics working group.

### **Participant engagement**

The session is highly interactive. It follows a constructivist approach of introducing first a short case study exercise to make the participants experience strengths and weaknesses of the method and by facilitating discussions in small groups and with the

entire audience. Participants will thus be divided into small groups, meant to foster a reflective dialogue on their experience using case studies, as well as providing clarity about relevant outputs such as the drafting of new case studies and providing input for the SEFI Ethics working group.

### **Agenda**

1. welcome, introduction and overview
2. short case study exercise and debriefing on strengths and weaknesses
3. small group discussions guided by the following questions:
  - Q1: what are your (own, students', university's) expectations from the use of ethics case studies?
  - Q2: how do you choose case studies in your teaching?
  - Q3: which learning objectives or what characteristics of the engineering profession and work environment do you hope to convey to students through your choice?
  - Q4: what are the challenges encountered and your success stories?
4. Each group reports back, leading to an engaged dialogue with other participants.

### **Exercise**

- Groups can be reorganized according to common themes identified in the previous exercise. Each group is invited to draft answers to the formulated questions. This can serve as an initial approach for developing a case study which is in tune with their expectations from the method or the particular features of their module or geographic region. After the completion of the exercise, groups will report back. Tips and tricks to collaborate with real engineering stakeholders on the ethics case studies drafted will also be considered, based on the experience of the Author with engaging stakeholders in ethics case study instruction.
5. wrap up and concluding discussion on follow up strategies and initiatives

### **Takeaway**

Participants will receive samples of ethical case studies and a list of references. Given that the workshop offers a platform to initiate the development of new case studies, participants also have the opportunity to follow up and finalize the case studies drafted, which in the future can be used in their own teaching.

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