TEACHING ETHICS TO ENGINEERING STUDENTS
Integration of Ethics in the Masters Programs of EDITI

Gordana Dodig Crnkovic,
Department of Applied Information Technology, Chalmers & GU
"Perfection of means and confusion of goals seem, in my opinion, to characterize our age."
Einstein, 'Out of My Later Years'
As citizens we have democratic right to think ourselves and share our thoughts with other people. Thinking creates novelty while sharing preserves existing knowledge and values. Both are necessary.
DISCUSSING AND ADOPTING VALUE SYSTEMS

As teachers we have duty to share our best knowledge and insights with our students. That includes value system.
NEW CHALLENGING TECHNOLOGICAL DEVELOPMENT

Challenge-driven innovation

Big data
Internet of things – internet of everything
Intelligent cities
Autonomous cars
Autonomous intelligent software as control systems, information systems etc.
WE EDUCATE FOR THE FUTURE

We are educating engineers that will solve future problems

Future is already at our doors

Choices are made all the time in the design and engineering
WHY ETHICS AND VALUE SYSTEM ARE IMPORTANT?

Every technical solution is made for some reason. Was the reason good enough?

We want cars that are less fuel consuming, built with less material but those are not goals in themselves. As cheaper cars can inspire changing cars more often, more people having cars and using cars more often.

The worthwhile goal is more environmental friendly, sustainable society
WHY ETHICS AND VALUE SYSTEM ARE IMPORTANT?

Important for every engineer is to share this understanding of the overarching values of engineering.

Engineers are both problem solvers and designers of new material civilization.

They are constantly making choices, and we will help to provide an adequate ethical framework for this decision making.

WE ARE LEARNING BOTH AS INDIVIDUALS AND AS SOCIETY
PROFESSIONAL ETHICS COURSE

http://www.idt.mdh.se/kurser/cd5590/
RULES OF CONDUCT

Important elements in work with humans:

- Information to the research subject
- Informed Consent of the research subject
- Confidentiality of the results
- Adequate usage of the research results

... in order to protect the involved persons or groups and to respect their personal integrity and privacy.
SWEDISH RESEARCH COUNCIL
EXPERT GROUP FOR ETHICS

• http://www.vr.se/inenglish/ethics.469f66a93108e85f68d48000116.html

• http://www.epn.se/sv/start/startsida/
STAKEHOLDERS IN AN INDUSTRIAL PROJECT

- Clients/Consumers
- Industry (Other firms)
- Profession (Societies)
- Nature
- Family, Relatives, Friends (Private Sphere)
- Engineer
- Colleagues
- Managers

Society at Large
RESEARCH ETHICS
RESEARCH ETHICS

Research ethics is not only a concern for the individual researchers regarding the rules of conduct – correct use of research tools and methods and collegial relationships.

Besides individual researchers, research ethics is a concern for the whole research field - a question of responsibility of researchers and research community towards ethical behavior of the research field.

Research ethics is about working for the better world.

Research ethics is a subset of professional ethics.
ON BEING A SCIENTIST

http://www.nap.edu/catalog.php?record_id=12192

http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf The European Code of Conduct for Research Integrity
PROFESSIONAL ETHICS

... a question of relations between different stakeholders

• practicing professionals
• employee and employer
• professionals and their clients
• teachers and students
• supervisors and research students
STAKEHOLDERS IN A RESEARCH PROJECT

Research Communities

International Academic research community

Professional Organizations Societies

Financing bodies

Society at Large

Nature

Family, Relatives, Friends (Private Sphere)

Academia

PhD Student

Research group

PhD Advisors
PUBLICERINGSETIK (Book in Swedish)

https://www.studentlitteratur.se/#33300-01
https://www.studentlitteratur.se/#produkt/110/41433/innehall/
PROMOTING RESEARCH INTEGRITY

Sample Chapter(s)
Introduction (46 KB)
Section II: Research Integrity Structures
Section III: Research Misconduct

http://www.worldscientific.coworldscibooks/10.1142/8102 Promoting Research Integrity in a Global Environment
PEER REVIEW AND MANUSCRIPT MANAGEMENT
PEER REVIEW GUIDELINES & EXAMPLES

http://www.elsevier.com/reviewers/reviewer-guidelines#youve-been-asked-to-review

http://www.mhhe.com/mayfieldpub/maner/resources/peerreview.htm

http://www.bmj.com/about-bmj/resources-reviewers/guidance-peer-reviewers BMJ Guidance for peer reviewers

http://www.peerageofscience.org/review/review-examples
The Professional Ethics Committee

Chalmers Professional Ethics Committee has been appointed by the President of Chalmers, in consultation with the Faculty Board, to act as a guiding body for Chalmers on ethical issues.

You can turn to the Professional Ethics Committee if you need support or advice concerning ethical issues within research and education: for example, choice of research questions, the relationship between a supervisor and a doctoral student or unsatisfactory conditions in the organisation.

The Ethics Committee handles individual questions in confidence. Informal contacts by telephone are a good first step; incoming documents, such as e-mail, are usually public if there is no legal authority for secrecy.

http://www.chalmers.se/insidan/EN/about-chalmers/organization/professional-ethics
http://www.chalmers.se/insidan/SV/om-chalmers/moten/verksamhetsetiska
What is Research Ethics?

“The beauty of math, of course, is that we don’t need an ethicist.”
Reasons Scientists Avoid Thinking about Ethics

Discussion based on Paul Root Wolpe article from Cell 125, June 16, 2006 p. 1023. – class discussion

• “I’m Not Trained in Ethics”
• “My Scientific Work Has Little to Do with Ethics”
• “Ethics Is Arbitrary”
• “Ethicists Mostly Say ‘No’ to New Technologies”
• “Others Will Make the Ethical Decisions”
• “The Public Does Not Know What It Wants”
• “Knowledge Is Intrinsically Good”

• Can you plausibly defend any of the above positions?
• Can you plausibly refute any of the above positions?
You will recognize this domain-based view in the analysis of many different types of problems – organization of society, sustainability of cities, ecology, economics, ethical aspects etc.
RESEARCH ETHICS RESOURCES

http://www.nap.edu/catalog.php?record_id=12192


http://sciencecareers.sciencemag.org/career_magazine/
previous_issues/articles/2010_11_19/caredit.a1000111

Responsible Conduct of Research for Junior Researchers
(Science, November 2010)
RESEARCH ETHICS RESOURCES

http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf The European Code of Conduct for Research Integrity

http://www.zim.mpg.de/openaccess-berlin/berlin_declaration.pdf Berlin Declaration on Open Access to Knowledge

http://www.icmje.org/urm_main.html Uniform Requirements for Manuscripts

http://www.codex.vr.se/

http://www.vr.se/inenglish/ethics.4.69f66a93108e85f68d48000116.html Research Ethics from Research Council