COM6650/COM6655
Professional Issues

Part I:
Introduction and Themes

Dr Amanda Sharkey
a.sharkey@shef.ac.uk

Department of Computer Science
University of Sheffield
1. Introduction

1.1. What is this course?

- A series of lectures and tutorials on legal, social and ethical issues in computer science and software engineering.

- Provides a wider context for your technical knowledge.
1.2. *Motivation for the course*

- Computer science does not exist in a social vacuum.
- Interactions between computer science, society and the law.
- Growing public concern that computing professionals have too much power and not enough professional and social responsibility.
- Pressure from professional computing societies (accreditation by BCS, ACM curriculum guidelines).

- Computing professionals should be as ethically aware as other professionals (engineers, medics, lawyers).

- Legal skills are crucially important.
2. Objectives of the course

Objective 1: To examine the relationship between technological change, society and the law, and to emphasise the powerful role that computers and computer professionals play in a technological society.
Q. How does...

Technological innovation affect society?

Technological innovation affect law?

Society affect technological innovation?

Law affect technological innovation?
Objective 2: To provide an understanding of legal areas which are relevant to information technology, and the discipline of computer science.

- **Intellectual property law**
  - Copyright, patents, designs, trade marks
  - Law of confidence

- **Contract Law**
  - Licence agreements for off-the-shelf software
  - Contracts for writing software
● Computer Crime
  Fraud, viruses, hacking

● Liability
  Negligence
  Product liability
  Contractual liability

● Privacy and the Freedom of Information
  Data protection
  Freedom of information legislation
Objective 3: To provide an understanding of ethical concepts that are important as a computer professional, and to provide experience in the consideration of ethical matters.

- Ethical issues will be illustrated by presenting real life case studies where ethical issues are involved.

  What is the right thing to do?
  How do we decide?

- Introduction to moral philosophy
  Consequentialism
  Deontological ethics
  Justice and the social contract
Example scenario

A software engineer is trying to write a large program needed by his company. Employees in this company are encouraged to write about their work and publish their algorithms in professional journals. After several months, the engineer is stuck and has to complete the program within the next few days. Not knowing how to solve his problems, he looks at some source code written by another employee and some code from a commercial software package. He identifies two segments of code that can be used directly in his program, and uses them without telling anyone or mentioning this in the documentation. He completes the project a day ahead of schedule.

Q. Is there an ethical issue here?

Q. Has the software engineer broken the law?
3. Themes

3.1. Information as a species of property

- Information technology involves the application and manipulation of information:
  
- Information is valuable;
  
- Valuable things are treated as *property by the law*. 
- The law of intellectual property needs to address information products:
  Which products can belong to an individual?
  Which are incapable of ownership?

- Ownership of information also creates moral issues:

  e.g. Should a biotechnology company be allowed to patent the blueprint for the human genome?

  e.g. Should expert systems informed by the top experts in a field be allowed to gain a monopoly in particular areas of medicine or law?
3.2. Pros and cons of technological change

- Information technology has positive and negative effects on the quality of life.

- *Positive Effects*

- *Negative Effects*
3.3. Computers as a substitute for human effort

● Information technology is used:
  To substitute for some or many of the functions previously undertaken by humans;
  To perform functions that could not previously be performed by humans at all.

● Computers are placed in a powerful position of control.
  This raises problems that the law must resolve:
3.3.1. Allocation of responsibility

When someone relies on the operation of a computer rather than his own expertise and causes loss to another, where does responsibility lie?
3.3.2. Computers and evidence

How should the courts cope when the only evidence of a fact lies solely within the ‘knowledge’ of a machine?
3.3.3. Increased expectations of computer performance

How far should the law’s allocation of responsibility reflect increased expectations of computer systems?
3.4. Trading in information products

- Previously mainframe software was custom written:
  Contract and licensing matters were simple, because there was a direct contact between producer and consumer.
Now software is mass produced:

Many independent software houses;
Software is sold by third parties.

So when software is sold, what is traded? Goods?
Services? Something else?

The answer is important because:
• It determines the legal mechanism of contract for software supply;
• It influences the quality of software product that the purchaser is entitled to expect.

But what level of software quality is achievable, and can therefore be demanded by law?
3.5. Harmonisation of national laws

- The IT industry transcends national boundaries:
- IT products need to be treated in the same way in all jurisdictions for the market to work effectively;
- There is a natural trend towards the convergence of international laws;
- Countries whose laws take a different direction from the accepted norm may be forced to introduce amending legislation.
Examples:

- US law has an important influence because the USA produces a high volume of technological innovation.
- The European Community has produced legislation intended to harmonise many of the laws affecting the computer industry.
3.6. Technological change is faster than legal change

- The law must develop and adapt to keep pace with computer technology.

- Efforts of legislators and the courts to come to terms with new technology are often flawed.
Q. How does...

Technological innovation affect society?

Technological innovation affect law?

Society affect technological innovation?

Law affect technological innovation?
4. Syllabus

I Introduction and Themes
II Introduction to English Law
III Intellectual Property
IV Introduction to Moral Philosophy
V Contract Law
VI Liability for Defective Software
VII Ethical codes for computer professionals
VIII Data Protection, Privacy and the Freedom of Information
IX Computer Misuse and Computer Crime
X The Social Context of Computing
Assessment

**Com6650**
- 1 written assignment for 30%
  Due in: Wednesday 26th October 3pm
- 1 take home “exam” 70%
  Due in: Friday 9th December 3pm

**Com6655**
- 2 written assignments 15% and 15%
  Due in Wednesday 26th October 3pm
  Due in Wednesday 9th November 3pm
- 1 take home “exam” 70%
  Due in Friday 9th December 3pm
5. Reading list

- **Recommended texts**
  - also (new this year)
Supplementary texts


Journals and magazines

- Communications of the ACM.
- New Scientist.
- The Guardian

Background reading (a novel)

- *The Circle, David Eggers*
● Remember: no lecture on October 18th (week 4)
Help needed with a pilot study, looking at the effects of different kinds of noise on people.

Takes about 10 minutes in Computer Science department.

If you are interested in helping, please contact

Raihah Aminuddin:

raminuddin1@sheffield.ac.uk