# COMP 516
# Research Methods in Computer Science

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**University of Liverpool**

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## Lecture 19: Legal, Social, Ethical and Professional Issues (2)

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with material from Ullrich Hustadt and Rahul Savani

# Professions: Characteristics

- Substantial education and / or training are required in order to practise a profession
- The members of a profession themselves decide the nature of this education and training
- The members of a profession sometimes also control entry to the profession
- A profession is typically organised into one or more professional bodies
- A profession lays down standards of conduct with which its members must comply

# Professional Bodies in Computing

- Institute of Electrical and Electronic Engineers Computer Society (IEEE-CS) founded in 1946 in the USA
  - ⇝ "world's leading computing membership organization and the trusted information and career-development source for a global workforce of technology leaders"

- Association for Computing Machinery (ACM) founded in 1947 in the USA
  - ⇝ "world's largest educational and scientific computing society, uniting educators, researchers and professionals"

- BCS (British Computer Society), The Chartered Institute for IT, formed in 1957; received a royal charter in 1984
  - Recognised as a professional engineering institute for the registration of information systems and software engineers
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# British Computer Society

- Chartered Scientist is a professional qualification in the UK, holders can use the post-nominal letters CSci
- the required standard for Chartered Scientist registration is MSc qualification (or equivalent) with four years of postgraduate work experience

To be a Student Member the fee is 30 pounds per year and

- you have to be a student on a BCS accredited degree programme

To become a Professional Member (MBCS): 106 pounds per year

- 5 years IT work experience, or
- 2–3 years IT work experience plus relevant recognised qualifications (depending on level of qualification), or
- an Honours degree with BCS exemption

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# Professional Ethics

- More restrictive than universal ethics because
  - it involves the more restrictive society/culture of work and commerce
  - it determines right/wrong in cases where a general ethical theory might not do so
- Applies also to other restrictive social contracts such as study
- Many flavours of professional ethics exist:
  medical, engineering, ~~banking~~, etc
- Often associated with formal structure
  BMA (medicine), IET (engineering), BCS (computing)
- Often formally constructed rules and codes of conduct
  Hippocratic oath taken by doctors

# The IT Professional Context

- Legal obligations
- Social obligations
- Ownership/sharing obligations
- IP obligations
- Product development process obligations
- Product quality obligation
  - validity
  - robustness
  - simplicity
  - modifiability
  - reusability
  - compatibility
  - efficiency
  - ease of use
  - portability
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- Product consequence obligations

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# BCS Code of Conduct

Four component parts:

1. Public Interest
2. Professional Competence and Integrity
3. Duty to Relevant Authority
4. Duty to Profession

(`http://www.bcs.org/upload/pdf/conduct.pdf`)

- Contents of the Code of Conduct changes frequently
  $\rightsquigarrow$ BCS members need to keep up to date with such changes
- Code of Conduct is complemented by a Code of Good Practice
  `http://www.bcs.org/upload/pdf/cop.pdf`

# Public Interest

- Safeguarding public health and safety
- Have due regard for the legitimate rights of third parties
- Conduct your professional activities without discrimination
- Promote equal access to the benefits of IT

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# Professional Competence and Integrity

- Only undertake work that is within your professional competence
- Do not claim any level of competence that you do not possess
- Upgrade and maintain knowledge, skills and competence on a continuing basis
- Respect and value alternative viewpoints and, seek, accept and offer honest criticism of work
- Avoid injuring others, their property, reputation, or employment by false or malicious or negligent action or inaction
- Reject and do not make any offer of bribery or unethical inducement

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# Duty to Relevant Authority

- Carry out your professional responsibilities with due care and dilligence in accordance with the Relevant Authority's requirements whilst exercising your professional judgement
- Avoid any situation that may give rise to a conflict of interest between you and your Relevant Authority and clients
- Accept professional responsibility for your work and for the work of colleagues under your supervision
- Respect confidential information
- Be honest about products and services and do not take advantage of a lack of knowledge or inexperience of others

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# Duty to the Profession

- Accept your personal duty to uphold the reputation of the profession
- Seek to improve professional standards through participation in their development, use and enforcement
- Uphold the reputation and good standing of BCS, the Chartered Insitute for IT
- Act with integrity towards other professionals
- Notify BCS if convicted of a criminal offence or becoming bankrupt or disqualified as a Company Director
- Encourage and support fellow members in their professional development

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# ACM Code of Conduct

Four component parts:

- General moral imperatives
- Professional responsibilities
- Organisational leadership
- Compliance with the code

# General Moral Imperatives

- Contribute to society and human well-being
- Avoid harm to others
- Be honest and trustworthy
- Be fair and take action not to discriminate
- Honor property rights including copyrights and patents
- Give proper credit for intellectual property
- Respect the privacy of others
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# Professional Responsibilities

- Strive to achieve the highest quality, effectiveness and dignity in both the process and products of professional work
- Acquire and maintain professional competence
- Know and respect existing laws pertaining to professional work
- Accept and provide appropriate professional review
- Give comprehensive and thorough evaluation of computer systems and their impacts, including analysis of possible risks
- Honor contracts, agreements, and assigned responsibilities
- Improve public understanding of computing and its consequences
- Access computing and communication resources only when authorised to do so

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# Organisational Leadership

- Articulate social responsibilities of members of an organisational unit and encourage full acceptance of those responsibilities
- Manage personnel and resources to design and build information systems that enhance the quality of working life
- Acknowledge and support proper and authorised uses of an organisation's computing and communication resources
- Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements; later the system must be validated to meet those requirements
- Articulate and support policies that protect the dignity of users and others affected by a computing system
- Create opportunities for members of the organisation to learn the principles and limitations of computer systems

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# Compliance with the Code

- Uphold and promote the principles of this code
- Treat violations of this code as inconsistent with membership in the ACM

# Standards and Standardisation

- Standards are written agreements on some technical matter that seeks to ensure that what is governed is fit for purpose
- In information technology, standards deal with
  - Protocols
  - Data formats
  - (Programming) Languages
    - Syntax
    - Semantics
    - Technical aspects
- (Proper) standards are devised by standards organisations
- Proprietary 'standards' are typically devised by companies and accepted due to the company's market power

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- Standards are written agreements on some technical matter that seeks to ensure that what is governed is fit for purpose
- In information technology, standards deal with
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  - Data formats
  - (Programming) Languages
    - Syntax
    - Semantics
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# Standards Organisations

- ISO — International Standards Organisation
  `http://www.iso.org/`
- ANSI — American National Standards Institute
  `http://www.ansi.org/`
- CEN — Comitté Européen de Normalisation
  `http://www.cenorm.be/cenorm/`
- BSI — British Standards Institute
  `http://www.bsonline.bsi-global.com`
- IETF — Internet Engineering Task Force
  `http://www.ietf.org/`
- ITU — International Telecommunication Union
  `http://www.itu.int/home/`

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- A federation of national standards bodies from some 130 countries
- Non-governmental
- Established in 1947
- ISO's mission

  > To promote the development of standardisation and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity

- ISO's work results in international agreements which are published as International Standards
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- International community of network designers, operators, vendors, and researchers; open to any interested individual
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  > The mission of the IETF is to produce high quality, relevant technical and engineering documents that influence the way people design, use, and manage the Internet in such a way as to make the Internet work better. These documents include protocol standards, best current practices, and informational documents of various kinds.

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  - member states (189)
  - sector members (602)
    e.g. phone companies, TV companies, equipment manufactures
- Traces its origins back to 1865
- ITU's mission is to coordinate the operation of telecommunication networks and services and advance the development of communications technology
- Works through conferences and meetings, where members negotiate the agreements which serve as the basis for the operation of global telecommunication services, based on specifications and recommendations prepared by experts

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  Examples: ‘Kilogram’, ‘Metre’, ‘Class 1 banana’

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