UNIT 5: ETHICS AND RESPONSIBILITIES FOR PROFESSIONAL PRACTICE

5.1 Professional Ethics & Responsibilities: Foundations

- Professional Ethics: A set of principles that govern the behavior of an individual or group in a business environment.
- Law vs. Ethics: Law tells you what you MUST do (and what you'll be punished for); Ethics tells you what you OUGHT to do even when no one is watching.
- The Social Contract: Society grants professionals high status and autonomy in exchange for the promise that they will protect the public's well-being.
  - *Discussion: Why are ethics more critical in engineering than in a non-technical business?*

5.1 Professional Ethics: Accountability and Judgment

- Accountability: Accepting the consequences for decisions made, whether the outcome is positive or negative.
- Professional Autonomy: The privilege of making judgment calls without interference from non-technical management.
- Informed Consent: Ensuring that stakeholders fully understand the risks involved in a technical decision or system.
  - *Moral Dilemma: Choosing between two 'goods'—e.g., maximizing efficiency vs. maximizing user privacy.*

5.1.1 Professional Roles and Responsibility

- The 'Paramountcy Principle': The engineer’s highest duty is to the safety, health, and welfare of the public.
- Dual Loyalty: The constant tension between loyalty to the employer (efficiency/profit) and loyalty to the profession (safety/quality).
- Duty of Competence: Only performing services in areas where you have specific education and experience.
  - *Duty of Vigilance: Actively looking for risks rather than waiting for someone to report them.*

5.1.1 Responsibility: Types of Liability

- Moral Responsibility: Internal obligation based on personal and professional values.
- Legal Responsibility (Liability): Obligation under the law; breach leads to fines, lawsuits, or imprisonment.
- Standard of Care: The level of service that a 'reasonably prudent' professional in the same field would provide.
  - *Professional Negligence: Failure to provide the Standard of Care, resulting in damage or injury.*

5.1.2 Conflict of Interest (COI)

- Definition: A situation where a professional's private interests (financial, personal, or political) interfere with their professional judgment.
- Categories of COI:
  - *Actual: A personal interest already impacting professional duty.*
  - *Potential: An interest that could interfere with duty in the near future.*
  - *Apparent: No conflict exists, but it LOOKS like one to the public, damaging trust.*

5.1.2 COI: Mitigation and Examples

- Common Examples: Recieving 'kickbacks' from suppliers, moonlighting for a competitor, or hiring family members for government contracts (Nepotism).
- The '4 Ds' of Management:
  - *Disclose: Inform all affected parties immediately.*
  - *Detach: Recuse yourself from the decision-making process.*
  - *Divest: Sell the conflicting financial interest (e.g., stocks).*
  - *Distance: Refuse the gift or the secondary role.*

5.1.3 Whistleblowing: Definitions

- Whistleblowing: Reporting an employer's illegal, immoral, or hazardous activities to an oversight body.
- Internal Whistleblowing: Reporting up the 'chain of command' within the organization (e.g., to the HR or Ethics Committee).
- External Whistleblowing: Reporting to government agencies, law enforcement, or the media.
  - *Discussion: Is whistleblowing an act of loyalty to the public or an act of betrayal to the employer?*

5.1.3 Whistleblowing: Ethical Criteria

- De George's Criteria for Justified Whistleblowing:
  - *1. Serious and considerable harm to the public will occur.*
  - *2. You have informed your immediate supervisor/manager.*
  - *3. Internal remedies have been exhausted without success.*
  - *4. You have documented evidence that would convince a reasonable observer.*
- Post-Reporting Reality: Professional risks include harassment, blacklisting, and loss of employment.

CSR in Technical Fields: Environmental & Social Sustainability

Corporate Social Responsibility (CSR) in technical fields focuses on using technology, engineering, and scientific expertise to create **social, environmental, and ethical impact** beyond profit.

1. Key Areas of CSR in Technical Sectors

Environmental Responsibility

- Energy-efficient systems and green data centers
- Sustainable product design (low power, recyclable materials)
- Carbon footprint reduction through automation and optimization

Ethical Technology Use

- Data privacy and cybersecurity by design
- Responsible AI (bias reduction, transparency, explainability)
- Ethical software development and testing standards

Social Impact Through Technology

- Digital inclusion (bridging the digital divide)
- Open-source contributions for public good
- Tech solutions for health, education, agriculture, and disaster management

Capacity Building & Education

- Technical training programs and internships
- STEM education support in underserved communities
- Knowledge sharing, mentorship, and upskilling initiatives

Workplace Responsibility

- Safe and inclusive technical work environments
- Continuous learning and innovation culture
- Fair labor practices in technical operations and supply chains

Nepal Engineering Council (NEC): Legal Mandate

- Statutory Authority: Established under the Nepal Engineering Council Act, 2055 (1998) to regulate the engineering profession in Nepal.
- Mandatory Registration: No engineer can legally practice in Nepal without being registered with the NEC; practicing without it is a punishable offense.
- Categories of Registration: General, Professional, and Foreign Engineers.
  - *Standardized Curriculum: Ensuring that engineering education meets a minimum threshold that protects the public.*

NEC Code: Professional Conduct and Duties

- **1. Public safety and welfare**
  Engineers must give highest priority to the safety, health, and welfare of the public while carrying out professional duties.
- **2. Honesty and integrity**
  Engineers should act truthfully, avoid bribery, corruption, and misrepresentation, and maintain moral integrity in all professional activities.
- **3. Professional competence**
  Engineers must undertake only those works for which they are qualified by education, training, and experience.
- **4. Continuous professional development**
  Engineers should continuously update their technical knowledge and skills to maintain professional competence.
- **5. Avoidance of conflict of interest**
  Engineers must avoid situations where personal or financial interests influence professional judgment and disclose conflicts when they arise.
- **6. Confidentiality**
  Engineers must protect confidential information related to clients, employers, and projects unless disclosure is required by law or public safety.
- **7. Fairness and impartiality**
  Engineers should act fairly and objectively, treating all clients, colleagues, and stakeholders without bias or discrimination.
- **8. Respect for fellow professionals**
  Engineers should respect the work and reputation of other engineers and avoid unfair criticism or unethical competition.
- **9. Environmental responsibility**
  Engineers must promote sustainable development and minimize adverse environmental impacts of engineering projects.
- **10. Compliance with NEC rules**
  Engineers must follow NEC regulations and professional standards, and violations may lead to disciplinary action.

IEEE Code: Professional Solidarity & Development

IEEE stands for Institute of Electrical and Electronics Engineers and was established in 1963.

- **1. Public safety, health, and welfare**
  IEEE members must accept responsibility for engineering decisions that affect public safety, health, and welfare, and must disclose any factors that may endanger the public or the environment.
- **2. Honesty and integrity**
  Engineers should be honest and realistic in stating claims, estimates, data, and technical limitations of their work.
- **3. Avoid conflicts of interest**
  Engineers must avoid real or perceived conflicts of interest and disclose them promptly to affected parties when they arise.
- **4. Rejection of bribery and corruption**
  IEEE members must not offer, solicit, or accept bribes or improper benefits in professional practice.
- **5. Professional competence**
  Engineers should maintain and improve their technical competence and undertake tasks only in areas of their qualification.
- **6. Fairness and non-discrimination**
  IEEE members must treat all persons fairly and not engage in discrimination based on race, gender, religion, nationality, age, disability, or other inappropriate factors.
- **7. Respect for intellectual property**
  Engineers should acknowledge the contributions of others, give proper credit, and respect copyrights, patents, and proprietary information.
- **8. Constructive professional criticism**
  Engineers should seek, accept, and offer honest criticism of technical work, and acknowledge and correct errors.
- **9. Ethical conduct and accountability**
  IEEE members must uphold ethical conduct, assist colleagues in following ethical practices, and support those who adhere to the Code.
- **10. Promotion of ethical awareness**
  Engineers should help colleagues, students, and the public understand ethical responsibilities in engineering and technology.

Association for Computing Machinery (ACM)Code of Ethics: General Moral Imperatives

The **ACM Code of Ethics and Professional Conduct** is a set of ethical guidelines developed by the Association for Computing Machinery (ACM) to ensure that computing professionals act responsibly and prioritize the **public good**. Since computing technologies significantly influence society, the Code provides a moral framework to guide ethical decision-making in professional practice.

- The Code is divided into **four main sections**.
- **Section 1: General Ethical Principles** outlines fundamental responsibilities such as contributing to society and human well-being, avoiding harm, being honest and trustworthy, ensuring fairness and non-discrimination, respecting intellectual property, protecting privacy, and honoring confidentiality. These principles emphasize minimizing negative impacts of technology on individuals, society, and the environment.
- **Section 2: Professional Responsibilities** focuses on maintaining high quality and competence in professional work. It requires computing professionals to follow laws and organizational policies, work within their area of expertise, conduct thorough system evaluations including risk analysis, ensure system security, accept peer review, and access computing resources only when authorized or justified by the public good.
- **Section 3: Professional Leadership Principles** apply to individuals in leadership roles. Leaders are expected to place the public good at the center of all computing work, promote ethical culture within organizations, ensure the well-being of employees, support professional growth, manage system changes responsibly, and take special care of systems that become part of societal infrastructure.
- **Section 4: Compliance with the Code** stresses that all ACM members must uphold and promote the Code. Ethical violations are treated seriously and may result in remedial actions.