Engineering Professional Practice
(CVL 440)
Chapter 2: Ethics and Professionalism
(3 hours)

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http://nec.edu.np/faculty/hariks/Chap%201%20Lecture%20Notes%20Apr%202015.pdf
2. Ethics and Professionalism

2.1 Moral, ethics and professionalism

2.2 Characteristics of ethical decision making

2.3 Liability of engineers in design, construction and implementation of projects

2.4 Loss of professionalism

2.5 Ethical issues in professional engineering in dealing with other professions (accounting, banking, law, journalism, and management)
2.1 Moral, ethics and professionalism

2.1 a) Moral and non-moral actions:

- **Moral measures** the standard of good behavior by which people are judged. Engineering moral measures the standard of good behavior of engineers.
- **Moral of a person** is reflected by one’s action when no one is watching, like anonymous donation and help without expectation.

**Non-moral actions**: Actions that are beyond the scope of moral or immoral actions. Non-moral actions are not immoral actions. The types of non-moral actions are:

- **events of nature**, because they cannot be controlled.
- **actions of animals** (except human) because they lack rationality. They can neither justify nor accept the consequences of their actions.
- **actions or behavior of children** and insane persons because they cannot foresee the consequences of their actions.
- **actions guided by the circumstances beyond control** such as coercion (case of force majeure).
Technical examples of moral actions

• Any action conducted under moral conviction, ignoring benefit.
• Stopping profitable projects to save environmentally sensitive areas, endangered species.
• Attempting to stop activities which may result in high risk to workers/staff and local residents, at the risk of loosing job.
• Whistle blowing: informing concerned authorities of activities which may result in high risk to workers and local residents, at the risk of loosing job, when timely warnings are ignored.
• Going extra mile, doing more than what is normally expected, as per rule or norm, to ensure safety of workers and local residents, during impending accident, at the risk of his/her own life.
• Ignoring basic code of conduct, to prevent other’s life during accident in a project, at the risk of his/her own life/job/legal hassle; when convinced that following the code word by word will put someone’s life in danger.
Technical examples of non-moral actions

- An infrastructure (road, bridge, tower, transmission lines, building, telephone connection, etc.) destroyed by natural events like an earthquake, flood, or landslide is a non-moral event. Beneficial natural events are also non-moral actions.

- A child (less than 14 years old) hacking website of a company is a non-moral event. A child cutting wire and causing short-circuit in electrical connection which resulted in fire is a non-moral event. Action of a child which is illegal for an adult to do.

- An elephant destroying buildings, wooden electrical-poles etc. is a non-moral event. If the same elephant does something which is beneficial for people, it is still a non-moral event.

- A resident engineer of a project forced to change alignment of a road, or an MIS engineer of an ISP or a social media site forced to reveal password of its clients, doctor forced to disclose patient’s record, under threat of life, is a non-moral event.
2.1 b) Ethics

- Ethics is the study of standards of right and wrong; science and philosophy dealing with moral conduct, duty, and judgment. Ethics deals with voluntary actions specifically taken by an individual with sufficient knowledge of the options available.

- Ethics are well defined and in written form, generally. E.g. doctors and lawyers know what the ethics of their profession dictate. A doctor will never divulge patient’s medical history to anyone other than the patient himself, unless authorized by the later, or required under law to do so. Similarly a lawyer will never compromise client’s interest notwithstanding his own disposition towards his client.

- But morals are of a subliminal nature and deciding upon what constitutes them is not that easy. We know of moral dilemma, not an ethical one.

- Following ethics is therefore a relatively simple affair, after all it only involves a set of socially acceptable guidelines which benefit all.
Difference between Ethics and Moral

1. Moral constitute a basic human marker of right conduct and behavior, the ethics is more like a set of guidelines that define accepted practices and behavior for a certain group of people.
2. Ethics relates to a society or a profession where morality is related to an individual person.
3. Ethics relate more in a professional life while morals are what individuals follow independently.
4. “Morals are how you treat people you know. Ethics are how you treat people you don’t know” (Ian Welsh)
5. Morals are the principles on which one’s judgments of right and wrong are based. Ethics are principles of right conduct.
6. The morals are more abstract, subjective, and often personal or religion-based, while ethics are more practical, conceived as shared principles promoting fairness in social and business interactions. Moral values changes much more slowly than ethical values.
The Seven Social Sins are:

- Wealth without work.
- Pleasure without conscience.
- Knowledge without character.
- Commerce without morality.
- Science without humanity.
- Worship without sacrifice.
- Politics without principle.

-Frederick Lewis Donaldson

Engineers without ethics is more a burden and less an asset to a society.
2.1 c) Professionalism

• A profession is defined as having a systematic knowledge acquired through specialized training or education and practicing the same as an occupation. Professionals bear moral and ethical behavior.

• A profession means practice or application of such knowledge and skill that are acquired through a systematic study or training for the betterment of the society or people in the form of services.

• The content of a profession with moral and ethical behaviors is professionalism.
Some of the features of a professional person:

- A professional acquires a systematic knowledge and skill through study, training and experience.

- A professional exercises the knowledge and enhance skill ethically as an expert. As such, professionals are endowed with specific rights/authority, like right to approve design, right to prescribe medicine, right to grade paper.

- The service or work as an expertise of a professional is evaluated by the public.

- Professionals follow code of conducts to keep morale of the profession high. The activities of a professional are regulated by the professional organizations through licensing, code of conducts, and disciplinary actions.

- Professionals have their own cultures, developed through mutual contacts in social and professional gatherings.
2.1 d) Examples of un-professional behavior of an engineer:

**Time related**: Late arrival in meetings/office/duty station, Late submission of reports/deliverables, i.e., missing deadlines

**Quality related**: Failing to monitor quality of works performed, Failing to detect apparent errors in drawings/designs/codes/software

**Meeting**: Talking on phone during meeting/ loud ring tones of cell phones, Talking with others during meeting, Late arrival, Taking frequent breaks, Any activity that indicates that the meeting is of less importance to you.

**Personal Integrity**: Hiding conflict of interest, Accepting extra offer from client/contractor, Disclosing client’s confidential information, Inconsistency in saying and doing (hypocrite), Making judgment based on partial knowledge, like determining the brand of cement or steel rod or wire/transformer/turbine based on advertisement, rather than on test-data. Inability to detect (and correct) apparent flaws in drawings/designs, Inability to make appropriate judgment in a particular situation.
2.1 d) Examples of un-professional behavior of an engineer:

**Personal Manner:** Shouting at subordinates/workers, Sloppy dress up/attention grabbing hair style/jewelry, Disrespect to others, especially to those who are less fortunate.

**Criminal offense:** Forging document, Falsifying data, Accepting/ofering bribes, Abuse/misuse/disuse of authority: use of official property (vehicle, building, equipment) for personal purpose, asking office personnel to do personal works, Nepotism, Plagiarism, Plotting against firm, client, other engineers

**Code of Conduct:** Forgetting to sign on documents, Disregard for code of conduct, standards, bylaws, and norms, Advertisement in newspaper/TV/Radio, Part time work as a salesman, Attempt of undue influence, Intentionally misleading public, client, employer, Accepting offer from potential client/contractor

**Negligence:** Using different coefficients from engineering handbooks, without checking their applicability in particular conditions, Allowing breach of terms and conditions at construction sites, Not checking documents properly for formatting, contents, etc. before submission.
UN imposes sanctions on NSET, its 3 officials

25 Feb 2017, The Kathmandu Post

2.2 Characteristics of Ethical Decision Making

- Ethical decisions hold paramount the safety, health and welfare of the public, over financial profit.
- Ethical decisions uphold and enhance the honor, integrity and dignity of the profession,
- Ethical decisions uphold integrity
  - free from conflict of interest
  - Abide by all prevailing laws, rules, regulations
  - Follows guidelines, directives, bylaws, codes
  - Follows applicable codes of conduct
  - Fair, honest, transparent, aspires highest quality and open communication
- Ethical decisions reflect loyalty to client, organization, and society
- Respect: culture, social customs, practices, self respect of others, customer, environment
- Concern: Concern to the benefit of all stakeholders: Client, public, government, material suppliers, worker, contractor, consultant, funding agency
Three sources of liability:

a) **Liabilities due to contract**: liable to fulfill all terms of contract; if there is no contract, legally, there is no liability under this category. An engineer is liable for loss of damage due to breach of contract clauses.

b) **Liabilities due to criminal law**: liable to follow all prevailing laws of nation, breach of law related to design, construction and implementation of design can result in criminal case, whether there is damage or not.

c) **Liabilities due to tort**: liable to prevent customers/users of products and services from loss or damage; even if there is no specific contract and no laws have been breached, an engineer can be held liable for loss or damage to the customer due to the use of services and products designed, constructed, or implemented by the engineer. Pre-information or pre-warning or disclaimer can prevent an engineer from liability due to tort.

Two types of liability:

a) **Vicarious Liability**: liable due to acts of staff of a company or contractor/subcontractor of a company or project
   i) **Control test**: degree of liability depends on level of control a company has on its staff or contractor
   ii) **Business integration test**: degree of liability depends on level of business integration
   iii) **Multiple test**: both the control test and business integration can be used to evaluate degree of liability.

b) **Partnership Liability**: liability due to acts of partner(s)
2.3 Liabilities of engineers in project design, construction and implementation

a) Liabilities of engineers in project design

• Fitness for purpose
• Negligent misstatement
• Statutes, bylaws and building regulations/codes
• Examination of site above and below the ground
• Public and private rights
• Plans, drawings and specifications
• Materials (quantity, quality and availability)
• Novel, risky design and employers’ interference in design
• Revision of design during construction

Details are in Chapter 4.
Liabilities of engineers in project construction and implementation

- Completion of project in time, within budget
- With quality: material, workmanship, method of construction
- Consistency: in quality, form
- Safety and welfare of project workers, people living in and around project area, and people travelling through or visiting the project area
- Follow applicable laws, rules, regulations, guidelines, conventions, codes and bylaws
- Meet social obligations

...engineer must struggle to design in such a way as to avoid failure, and, more importantly, catastrophic failure which could result in loss of property, damage to the environment of the user of that technology, and possibly injury or loss of life...
http://www.matscieng.sunysb.edu/disaster/
समयमै काम पूरा नगरेपछि पप्पु कन्स्ट्रक्सनलाई एडिबिले तिरायो ५ करोड

साउन ६, २०७४ बाँके:

एसियाली विकास बैंक (एडिबिल) ले जमुनहाँ-राझा सडक खण्ड निर्माणको जिम्मा पाएको पप्पु कन्स्ट्रक्सन जेभीलाई ५ करोडको बढी रुपैयाहरु निर्माण तिराएको छ। समझौता अनुसारको काम समयमा पूरा नगरेपछि एसियाली विकास बैंकले पप्पु कन्स्ट्रक्सन जेभीलाई करिब ५ करोड ५० लाख रुपैयाँ हर्जोना तिराएको मध्यपश्चिम क्षेत्रीय सडक निर्माण विभाग धनेश्वर पत्रकार आदर्शको करोडबन्दा फढी रुपैयाँ हजारो प्रमुख अर्जनकुमार बमले जानकारी दियो। ‘हर्जोना लगायत भनेको कारखानालाई भने हो, यसले अन्य योजनाको ठेकोपात्रतामा पनि असर पैदा सक्छ,’ उनले भने। उनले पप्पु कन्स्ट्रक्सनको ठेको जुलाई, २०१६ सम्म मात्र भएकोले अब पप्पु र एसियाली विकास बैंकबीच कुनै सम्बन्ध नर्जोको बनाए। पप्पुले ५७ करोड रुपैयाँमा राझा-जमुनहाँ सडकखण्ड कालोपन्ने गर्ने ठेकोलिएको प्रयोगै। अनुसार निर्माण नगरको प्रमाणित भएपछि एसियाली विकास बैंकले उसलाई एक करोड रुपैयाँ मात्र दिने निर्णय गरेको थियो। हर्जोनाबाटको रकम असुली हर्जोना बापूतको रकम एडिबिले असुली गरिसकेको छ। काम गरेबाट उसले पाँच रुपैयाँ हर्जोनोमा कटाइएको हो। सडक निर्माणको लागि ठेकोलिएको क्रममा जमुनहाँ गरेको रकम पनि राजस्व कार्यालयमा पठाउएको सडक निर्माण कार्यालय नेपालगन्तले जनाएको छ। बाँकी रकम पिंमिसीलगायत पप्पुको बैंके खाताबाट असुली गरिएको धन निर्माण प्रमुख बमले बनाए।

Read more at: http://thahakhabar.com/news/20256
2.4 Loss of Professionalism: causes

1. **Low Self-esteem**: A person with low self-esteem finds excuses to compromise professionalism easily.

2. **Low morale of the individual**: The upbringing of a person holding license to practice a profession is defective or against moral values and ethics of the profession, it results in low morale of the individual, and loss of professionalism. If the value of fairness and personal integrity are not inculcated during childhood of a person, such person normally ends up having low morale.

3. **Defective social norms or values**: When society accepts low or unprofessional behavior, turns blind eye to unethically accumulated property, respects persons with criminal records, admires rule-breaker and mocks rule-followers, professionalism plummets.

4. **Irregular, or inconsistent, application of laws and regulations**: If institutes like NEC, CIAA, line agencies or court apply the laws irregularly or selectively, the risk of indulging in unprofessional behavior becomes low and people loss their professionalism. When the penalty for law breaking is low compared to the gain from unprofessional action, people loss their professionalism.
5. **Lack of political commitment**: When national level political parties or government bodies are unwilling to take action law breakers or unprofessional activities, the level of professionalism in the society normally plunges.

6. **Weak or negligent professional societies**: When professional societies like NEA, SCAEF, FCAN, are weak, or negligent, in taking disciplinary actions against its members who blatantly break its rules and guidelines, the members tend to neglect the code of conduct of such professional societies, resulting in loss of professionalism.

7. **Inadequate salary**: When the salary is inadequate to fulfill the basic necessities of life (food, clothing, shelter, kid’s education, sanitation, health) and/or when the salary level of a similarly trained person in a different profession is much higher, people tend to engage in unprofessional activities.

Sort the causes based on their importance; which is more important?
In a scale of 1 to 10, what should be the weightage of each parameter?
2.5 Ethical Issues in professional engineering in dealing with other professions

a) **Accounting**: when accountant expects approval of bill before work completed or before quality approved; unnecessary variation orders

b) **Banking**: over valuation, project progress report, not evaluating parameters which may affect feasibility, not disclosing assumptions and associated risks

c) **Law**: disclosing/hiding client’s info, lying under oath, telling partial truth with ill intent, interfering in legal proceeding, making public comment on pending legal case

d) **Journalism**: disclosing client’s confidential info, provide statement without proof, data, temptation to be on mass media, appearing on interview on topics which are out of expertise

e) **Management**: Loyalty to management, whistle blowing, witness protection, leaking of confidential data to government for public good, unfair treatment to subordinates.

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Chapter 2: Self Test

• How the moral and non-moral action affects the quality of the work?
• Distinguish between moral and non-moral action with suitable examples.
• What do you mean by ethics and morale? What should be done to make the morale of an engineer high?
• What is your understanding of ethics and norms? How are they essential in developing healthy professionalism? Elaborate.
• Describe the factors affecting the morale of a professional?
• What is profession? Discuss the various factors that affect the morale of the profession.
• What are the characteristics of ethical decision making? Briefly discuss.
• Discuss the consequences of ethical decision making.
• What are the main features of a profession? “Do you think the morale of the professional will become low if they are paid inadequate salary? Explain.
• Define profession, professional and professionalism. Explain the feature of professionals.
• Define profession. Describe the characteristics of a profession?
• What do you understand by profession? State the features of a profession.
• How do you define moral and non-moral actions? Write the code of ethics for engineers.