Ethics for Engineers, Patents, Copyrights and IPR

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Lecture 1
Introduction to Ethics

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What is Ethics?

- Ethics are standards of right and wrong that guide actions and promote fairness, virtues, and fundamental rights.
- They prohibit harmful actions like stealing, fraud, and violence.
- Ethics emphasize virtues such as honesty, compassion, and loyalty.
- They include the right to life, privacy, and freedom from harm, supported by consistent reasoning.
- Ethics involve continuously studying and refining personal and societal moral standards.
- Being **ethical** is about distinguishing between what is morally right and wrong with the purpose of doing what is right. If a person has the ability to distinguish between right and wrong but chooses NOT to do what is right, this conduct can be described as **unethical**..

Ethics in Engineering

It refers to the moral principles and guidelines that engineers must follow to ensure their work benefits society, protects the environment, and prioritizes safety, fairness, and integrity. Key points include:

1. **Public Safety**: Engineers must prioritize the health, safety, and welfare of the public in their designs and practices.
2. **Environmental Responsibility**: They should minimize harm to the environment and promote sustainability in their work.
3. **Honesty and Integrity**: Engineers must provide truthful information, avoid misrepresentation, and act transparently in their professional duties.
4. **Professional Competence**: Engineers should perform tasks only within their areas of expertise and continually improve their skills.
5. **Fairness and Accountability**: Treating all stakeholders fairly and taking responsibility for the outcomes of their projects is essential.
6. **Conflict of Interest**: Engineers must avoid situations where personal interests conflict with professional responsibilities.

Ethics in Research

- Research ethics involves applying ethical principles to scientific research to differentiate between acceptable and unacceptable behavior, guiding research design and practices.
- Researchers are fully responsible for the ethical conduct and publishing of their work, ensuring integrity and quality in their research.
- The public expects research findings to be correct and unique, placing an obligation on researchers to uphold ethical standards and maintain academic integrity.
- The Nuremberg Code (1947), established after WWII, and the Declaration of Helsinki (adopted by WMA in 1964), were landmark developments in preventing human rights abuses and setting guidelines for research involving human subjects.
- Researchers must understand the distinction between "doing right" and "the right of doing" and familiarize themselves with ethical principles to prevent misconduct.
- Ethics spans all research stages, from planning to publication, ensuring that misconduct is avoided and ethical standards are upheld throughout.

Requisite for Ethics in Research

- The scientists and researchers must consider and follow the ethics in research and should adhere to the code of conduct during their research work execution. The responsible conduct of research lies with the following points:
  - Honesty and integrity
  - Protection of human subjects
  - Respecting Intellectual Property Rights
  - Objectivity
  - Data Management
  - Responsible publishing
  - Confidentiality
  - Avoid plagiarism
  - Openness
  - Avoid scientific misconduct

Ethical Issues Related to Confidentiality

- The human subjects in research completely need privacy and dignity. Privacy refers to the individual right to prevent accessibility of others to personal details, thoughts and health-related information

Confidentiality:

- Confidentiality involves removing participants' identifying information from research reports to protect their privacy, even though the researcher knows their details.
- This ensures personal data cannot be accessed by others, builds trust between participants and researchers, and maintains the dignity and respect of the respondents.

Steps to Protect Data Privacy and Maintain Confidentiality:

1. **Secure Storage of Research Records:**
    1. Keep signed consent files in a locked file to prevent unauthorized access.
    2. Use password protection for all survey data files, ensuring only approved researchers can access them.
2. **Anonymizing Identifying Information:** Eliminate or assign codes to respondents' identifying details.
3. **Anonymous Dissemination:** Share research results without including any personal information about respondents.
4. **Informed Consent:** Obtain participants' consent before sharing findings involving personal information.

Anonymity

- Anonymity ensures that participants' personal details are not collected, making them unidentifiable during and after the research process.
- Participants remain unidentified throughout the research, safeguarding their identity.
- While anonymity ensures confidentiality, maintaining it is challenging, repeated interactions with participants increase the risk of personal exposure.
- This raises the chances of unintentionally revealing identities.
- Adequate care and strict measures are necessary to maintain the anonymity of human subjects effectively.

Challenges in Confidentiality

- **Protection of Respondent Privacy**: Researchers must protect respondents' privacy, especially for sensitive information, from planning to publication and dataset sharing.
- **Right to Privacy**: Confidentiality and long-term protection of participant data are crucial, with no information shared at any time.
- **Special Care for Vulnerable Populations**: Vulnerable populations, such as those with HIV/AIDS or genetic disorders, require extra precautions to safeguard their identities.
- **Focus Group Challenges**: Focus group discussions pose risks to confidentiality, requiring informed consent and mutual respect among participants.
- **Responsibility of All Stakeholders**: All stakeholders, including researchers and publishers, must ensure privacy protection, as breaches are unacceptable.
- **Informed Risk Awareness**: Researchers should inform participants of potential risks and minimize them to maintain trust and transparency.

Ethical Issues Related to Publication, Reproducibility and Accountability

- Research ethics is not only related to research conduct, data collection and analysis but also related to the publishing process. The preparation of publication includes ethical issues such as fraudulent publication, authorship credit, plagiarism and citations.

1. **Publication**

- Fraudulent publication can be intentional (for personal gain) or unintentional (due to negligence).
- Duplicate or redundant publication: Publishing overlapping research without referencing the original work.
- Salami publication: Splitting a single research process into multiple publications to increase publication volume.
- Predatory journals: Journals that accept and publish articles without proper peer review, driven by payment.

2. Authorship

- Authorship in research is for individuals who significantly contribute to the study, including designing, conducting, analyzing, and writing the paper.
- Tasks like data collection or editing don't qualify for authorship.
- Ethical issues include:
  - **Multiple Authorship**: Papers often have multiple authors, with the first author making the biggest contribution. Order may reflect contribution, seniority, or alphabetically.
  - **Misconduct**: This includes plagiarism, fabricating data, or harming others' research.
  - **Inappropriate Authorship**: Involves honorary (assigning authorship without contribution), guest (adding authors for personal gain), and ghost (not crediting contributors).

Clear authorship roles should be established at the beginning of the research to avoid disputes.

3. Peer Review

Peer Review is a process where manuscripts are evaluated for quality before publication, with reviewers checking the originality, validity, and significance of the work. The main types of peer review include:

1. **Single-blind**: Reviewers know the authors' identities, but authors don't know the reviewers.
2. **Double-blind**: Both the reviewers and authors are anonymous.
3. **Open**: Both the authors and reviewers know each other's identities.
4. **Transparent**: Similar to open peer review, with more detailed review process transparency.

Editors play a key role in selecting high-quality reviewers.

Ethical issues in peer review include:

- **Confidentiality**: Reviewers must maintain the confidentiality of manuscripts and not use the information for their own research.
- **Reviewer expertise and bias**: The quality of the review depends on the reviewer’s expertise and potential conflicts of interest, such as past collaborations or shared institutional affiliations.
- **Conflict of interest**: Reviewers and editors may face biases due to personal or professional relationships, which can affect the review’s impartiality. Financial conflicts are also a form of misconduct.

4. Plagiarism and Self-Plagiarism

Plagiarism is the unethical practice of using someone else's intellectual work as your own, including stealing ideas, opinions, or sections of text without proper credit. It can be intentional or unintentional but still harms the original authors. Examples include copying from the internet, altering words without citation, and taking credit for others' work.

Types of Plagiarism:

1. **Wholesale Plagiarism**: Copying an entire work and submitting it as one's own, often seen in student assignments.
2. **Mosaic Plagiarism**: Includes:
    1. **Verbatim Plagiarism**: Copying text directly without quotation marks or citation.
    2. **Conceptual Plagiarism**: Stealing ideas or facts without giving credit.
    3. **Structural Plagiarism**: Paraphrasing a source without citation.
3. **Other Types**:
    1. **Plagiarism of Secondary Sources**: Using information from a secondary source without acknowledgment.
    2. **Plagiarism of Authorship**: Claiming authorship of work that one didn't contribute to.

- Common reasons for plagiarism include easy access to information, publication pressure, low confidence, poor writing skills, and lack of awareness.

Self-plagiarism

- **Self-plagiarism** occurs when a researcher republishes or resubmits their own previously published work without properly citing the original source. This allows the researcher to present their ideas as new, even though they have already been published.
- Common forms of self-plagiarism include:
- **Duplicate Publication**: Reusing the same paper or data in multiple places without citation.
- **Redundant Publication**: Publishing similar content in multiple papers without acknowledging prior work.
- **Augmented Publication**: Slightly modifying an earlier paper and submitting it again.
- **Salami Fragmentation**: Breaking up one piece of research into multiple smaller papers, which may distort or repeat the same findings.
- Self-plagiarism can violate copyright laws and ethical codes, especially when a researcher presents duplicated data or findings across multiple papers, potentially leading to misleading outcomes.

Plagiarism Detection Tools

- In the present scenario, there are many ways to check plagiarism and control the copying of others' work using plagiarism detection software.
- The plagiarism checking software is either paid or free- of cost
- Some of the paid plagiarism detection software are
  - iThenticate (http://www.ithenticate.com)
  - Turnitin (https://turnitin.com)
  - Ephorus (http://www.ephorus.com)
  - Urkund (http://www.urkund.com)
  - Plagiarism Scanner (http://www.plagiarismscanner.com)
- Some examples of free online software are
  - Duplichecker Checker (http://www.duplichecker. com)
  - Viper (http://www.scanmyessay.com)
  - Plagium (http://www.plagium.com)
  - Plagiarism Checker (http://www.plagiarismchecker.com)

Copyright and Patent: Understanding Intellectual Property Protection

By: Dr. Reetu Singh

What is Intellectual Property (IP)?

•Intellectual property refers to **creations of the human mind** that can be legally protected.

•It includes:

•**Copyright** (books, music, movies, software, etc.)
•**Patents** (new inventions, processes, machines, etc.)
•**Trademarks** (logos, brand names, slogans)
•**Trade Secrets** (business formulas, confidential processes)

Why is IP Important?

Protects creators' rights.

Encourages innovation and creativity.

Prevents unauthorized use or reproduction.

What is Copyright?

- Copyright is a **legal right that protects original works of authorship** from being copied, distributed, or modified without the creator's permission.
- It applies to **literary, artistic, musical, and software works**.
- **Example:**

- **Harry Potter books by J.K. Rowling** are copyrighted, meaning no one can publish or sell them without her permission.

- **Key Features:**
- Copyright is **automatically granted** upon creation.
- No registration is required, but registration helps in legal disputes.
- Lasts for the **life of the author + 70 years** (for individuals).

Types of Copyright

1. Economic Rights (Financial Benefits)

- The copyright holder can **sell, distribute, or license** the work.
- Example: A musician can sell songs on **Spotify or Apple Music**.

2. Moral Rights (Author's Integrity & Recognition)

- Right to be credited for the work.
- Right to prevent distortion or modification that harms the author's reputation.
- Example: If an artist creates a painting, others **cannot alter or destroy** it without permission.

Importance of Copyright

- **Encourages Creativity:** Writers, musicians, and artists are motivated to create new content.
- **Financial Protection:** Ensures that creators get paid for their work.
- **Prevents Plagiarism and Piracy:** Stops unauthorized copying and distribution.
- **Supports Creative Industries:** Protects movies, books, games, and software development.
- **Example:**
- Movie producers register copyrights for **films like "Avengers"** to prevent unauthorized streaming.

What is a Patent?

- **Definition:**
- A patent is a **legal right granted to inventors** for new inventions, processes, or designs.
- It **prevents others from using, making, or selling** the invention without permission.
- **Example:**
- **Edison's Light Bulb (Patent No. 223,898, 1880):** Thomas Edison patented his version of the light bulb, preventing competitors from copying his invention.
- **Key Features:**
- Patents must be **applied for and approved**.
- Protection lasts **20 years** from the filing date.
- The invention must be **novel, useful, and non-obvious**.

Types of Patents

1. Utility Patents (Functionality-based Patents)

- Protects new processes, machines, or technologies.
- Example: **Tesla’s electric car battery technology** is protected under a utility patent.

2. Design Patents (Appearance-based Patents)

- Protects the unique design or look of a product.
- Example: **Apple’s iPhone design** is protected by design patents.

3. Plant Patents (For New Plant Varieties)

- Granted to inventors who create new plant species.
- Example: A company developing a **genetically modified tomato plant** can patent it.

Importance of Patents

- **Encourages Technological Innovation:** Protects inventors and motivates further research.
- **Provides Exclusive Rights:** Inventors can **commercialize their innovation**.
- **Supports Economic Growth:** Companies can generate revenue by selling patented products.
- **Prevents Copying:** Competitors cannot legally use the patented technology.
- **Example:**
- **Pharmaceutical companies patent new drugs**, ensuring exclusive rights before generic versions can be made.

Key Differences Between Copyright and Patent

Feature	Copyright	Patent
Protects	Creative works (books, music, software)	Inventions (machines, drugs, processes)
How to Obtain	Automatic upon creation	Requires formal application & approval
Duration	Life + 70 years	20 years
Rights Granted	Control over reproduction and distribution	Exclusive right to make, use, sell
Examples	Novels, paintings, films	Medical devices, new car engines

Copyright Infringement & Protection

- **Copyright Infringement:**
- Unauthorized use, copying, or distribution of copyrighted material.

- **Examples:**
- Downloading movies illegally from **torrent websites**.
- Using copyrighted music in YouTube videos without permission.

How to Protect Copyrighted Works:

1

Register the work with copyright offices for legal proof.

2

Use copyright **notices (© symbol, author's name, and year)**.

3

Take legal action against piracy and unauthorized usage.

Patent Infringement & Protection

- **Patent Infringement:**
- When someone makes, sells, or uses a patented invention without permission.
- **Examples:**
- A company using **another company's patented drug formula**.
- A smartphone brand copying **a competitor’s patented camera technology**.
- **How to Protect Patents:**
- **File a patent application** early to secure rights.
- Monitor competitors and take legal action against violations.
- License the patent to other companies for revenue.

Case Studies of Copyright and Patent

- **Case 1: Copyright - Google Books vs. Authors Guild**
- Google scanned millions of books without authors’ permission, leading to legal action.
- Court ruled in Google’s favor, citing "Fair Use" for digital libraries.
- **Case 2: Patent - Apple vs. Samsung**
- Apple sued Samsung for copying **iPhone design & software patents**.
- Apple won a multi-million-dollar settlement in court.

Conclusion

Copyright protects creative works, while **patents protect inventions**.

Both encourage **innovation, creativity, and legal protection**.

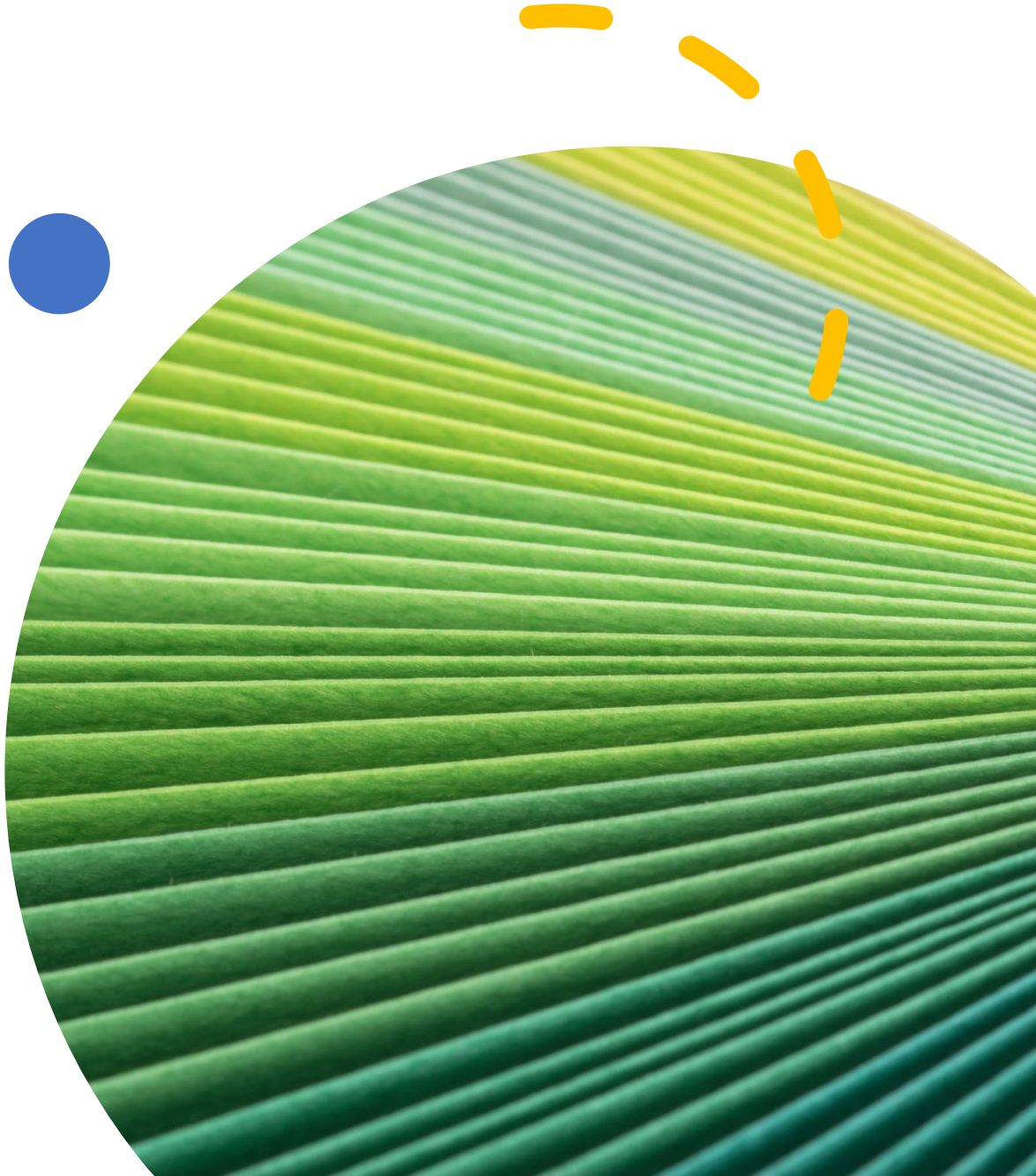
Understanding intellectual property laws is essential for **creators, businesses, and researchers**.

References

World Intellectual Property Organization (WIPO)

United States Patent and Trademark Office (USPTO)

Books and research papers on IP laws



Ethics for Engineers, Patents, Copyrights, and IPR – Module 1

Course Code: CSET208

Presented by: Dr. Reetu Singh

Introduction to IPR

- Definition: Intellectual Property Rights (IPR) are legal rights granted to inventors and creators to protect their intellectual creations.
- Purpose: Encourages innovation, provides exclusivity, and ensures fair competition.
- Examples: Patents, trademarks, copyrights, and designs.

Types of Intellectual Property Rights

- Patents – Protect inventions (e.g., technology, processes).
- Trademarks – Protect brand names, logos, and slogans.
- Copyrights – Protect literary, artistic, and musical works.
- Industrial Designs – Protect the visual design of objects.
- Geographical Indications (GI) – Protects products unique to a region (e.g., Darjeeling Tea).

Importance of IPR

- Promotes innovation and economic growth.
- Prevents unauthorized use of intellectual creations.
- Enhances market value and investment opportunities.
- Protects businesses from unfair competition and counterfeit products.

Case Study 1 – Colgate vs. Anchor

Background: Colgate, a globally recognized oral care brand, filed a lawsuit against Anchor for using similar packaging, particularly a red and white color scheme, which closely resembled Colgate's brand identity.

Legal Aspect: Colgate argued that the packaging and color scheme were integral to its brand recognition and that Anchor's imitation led to brand dilution and consumer confusion. The case was filed under **trademark law** concerning "trade dress."

Outcome: The court ruled in favor of Colgate, reinforcing the principle that packaging and brand identity elements are protected under trademark law.

Key Takeaway: This case highlighted the importance of **trade dress protection** under **trademark laws**, ensuring that competitors do not create confusion in the marketplace by imitating established brand identities.

IPR in India – Legal Framework

Key Laws Governing IPR in India:

The Patents Act, 1970

The Trademarks Act, 1999

The Copyright Act, 1957

The Designs Act, 2000

The Geographical Indications of Goods (Registration & Protection) Act, 1999

Regulatory Bodies:

Indian Patent Office (IPO)

Controller General of Patents, Designs & Trademarks (CGPDTM)

Copyright Office of India

Challenges in IPR Enforcement

- High cost of litigation and legal complexities.
- Difficulty in detecting and preventing counterfeiting.
- International trade issues and varying IPR laws across countries.
- Need for greater awareness and education on IPR.

Morality

- According to the Oxford dictionary, morality means principles concerning right and wrong or good and bad behavior.
- The term '**morality**' is concerned with
  - (a) what ought or ought not to be given in a given situation,
  - (b) what is right or wrong in handling it,
  - (c) what is good or bad about the persons, policies and principles involved in it.

Morality

- Moral reasons are required to support an act (or an idea) to be called as morally right act.
- **What are moral reasons?**
  - *Respecting others and ourselves*
  - *Respecting the right of others*
  - *Keeping promises to others*
  - *Avoiding unnecessary offence and pain to others*
  - *Avoiding cheating and dishonesty*
  - *Showing gratitude for favor to others*
  - *Encouraging teamwork.*

Variety of Moral Issues

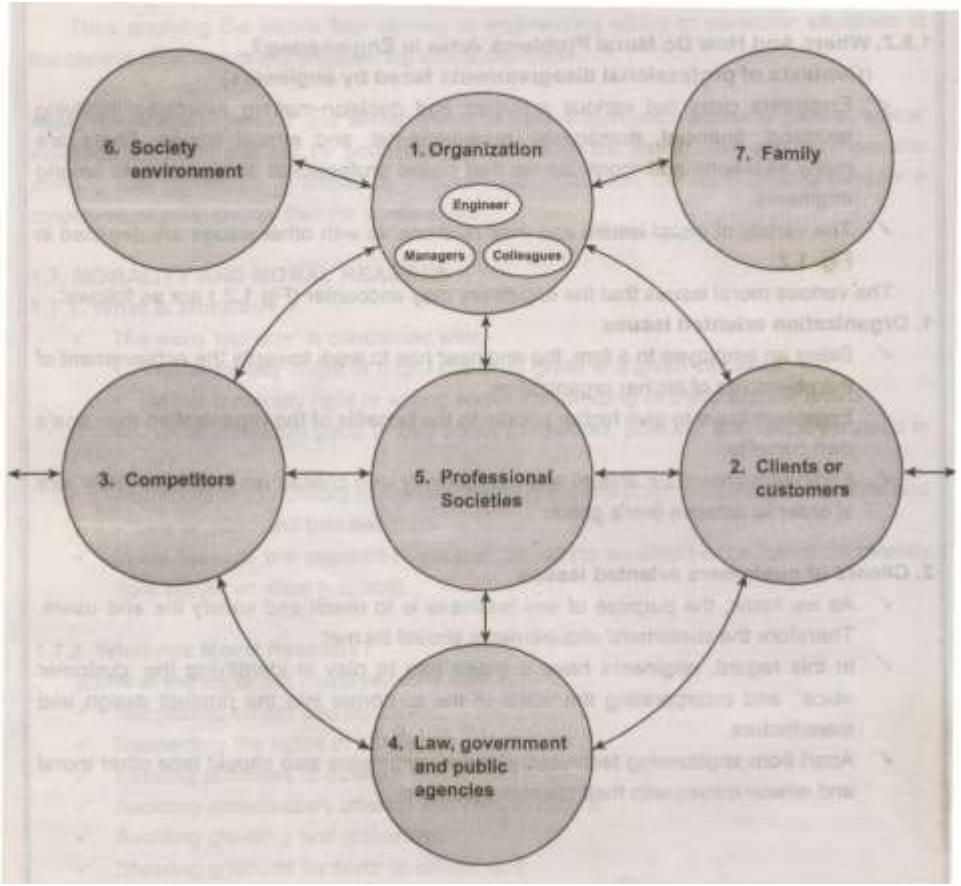
- **Two approaches**
  - **Micro-ethics:** deals with decisions and problems of individuals, professionals, and companies.
  - **Macro-ethics:** deals with the social problems on a regional/national level.

Variety of Moral Issues

- **Where and How do Moral Problems Arise in Engineering?**
  - Engineers carry out various activities and decision-making exercises involving technical, financial, managerial, environmental and ethical issues.
  - There are many situations and moral issues that cause professional disagreements among engineers.

Variety of Moral Issues

- **Variety of moral issues and their relationship with other issues are depicted in the following figure.**



1. Organization oriented Issues
2. Clients or Customers oriented Issues
3. Competitors oriented Issues
4. Law, Govt and Public oriented Issues
5. Professional Societies oriented Issues
6. Social and Environmental oriented Issues
7. Family oriented Issues

Variety of Moral Issues

1. **Organization oriented Issues**
   - Being an employee to a firm, the engineer has to work towards the achievement of the objectives of his/her organization.
   - Engineers have to give higher priority to the benefits of the organization than one's own benefits.
   - Engineers should be able to work collectively with colleagues and other members in order to achieve firm's goals.
2. **Clients or customers oriented Issues**
   - The customer's requirements should be met.
   - Engineers have a major role to play in identifying the 'customer voice', and incorporating the voice of the customer into the product design and manufacture.
   - Apart from engineering technicality issues, engineers also should face other moral and ethical issues with clients/customers.

Variety of Moral Issues

3. **Competitors oriented Issues**
   - In order to withstand in a market, engineers should produce things better than their competitors by all means.
   - But engineers should not practice cut-throat competition. They should follow certain professional behavior while facing their competitors.
   - Engineers should hold paramount the safety, health and welfare of the customers in the performance of their professional duties.
4. **Law, Government and Public Agencies oriented Issues**
   - The engineers should obey and voluntarily comply with all the government rules and regulations related to them.
   - They should also respect and honestly practice all other similar laws, policies and regulations.

Variety of Moral Issues

5. **Professional Societies oriented Issues**
   - The engineers should follow strictly the various codes of ethics by various professional societies in order to perform standard professional behavior.
6. **Social and Environmental oriented Issues**
   - Since the works of engineers have a direct and vital impact on the quality of life for all people, the engineers should be dedicated to the protection of the public health, safety and welfare.
   - Also engineers need to be aware their role as agents of experimenters. They should have a united commitment in protecting the environment.
7. **Family oriented Issues**
   - As a human being and the member of a family, the engineers do have the family obligations to take care of the needs of their family members.

Types of Inquiry

- Engineering ethics combines inquiries into values, meanings, and facts.
- In order to find solution to **‘moral dilemma’**, inquiries are being made.
- **In engineering ethics, three types of inquiry**
    - ***Normative Inquiries***
    - ***Conceptual Inquiries***
    - ***Factual inquiries***

Normative Inquiries

- **Normative Inquiries**
- These inquiries are mostly helpful to identify the values which guide the individuals and groups in taking a decision.
- These are meant for identifying and justifying some norms and standards of morally desirable nature for guiding individuals as well as groups.

Normative Inquiry

1. How do the obligations of engineers protect the public safety in given situations?
2. When should an engineer have to alarm their employers on dangerous practices?
3. Where are the laws and organizational procedures that affect engineering practice on moral issues?
4. Where are the moral rights essential for engineers to fulfill their professional obligations?

- From these questions, it is clear that normative inquiries also have the theoretical goal of justifying moral judgments.

Conceptual Inquiries

- **Conceptual Inquiries**
- These are meant for describing the meaning of concepts, principles, and issues related to Engineering Ethics.
- These inquiries also explain whether the concepts and ideas are expressed by single word or by phrases.

Conceptual Inquiries

1. What is the safety and how it is related to risk?
2. What does it mean when codes of ethics say engineers should protect the safety, health and welfare of the public?
3. What is a ‘bribe’?
4. What is a ‘profession’ and ‘professional’?

Factual Inquiries

- **Factual Inquiries**
- Known as ‘descriptive or exploratory’ inquiries.
- Helpful to provide facts required for understanding and resolving values issues.
- Researchers and engineers use these inquiries to get various information such as the history of engg. Profession, the effectiveness of professional societies.
- The above-obtained information through factual inquiries provides an understanding of the background conditions that generate moral problems.
- All these factual inquiries are helpful in solving moral problems by using alternative ways of solutions.
- Thus, factual inquiries are helpful in understanding the business, social, and political realities in which the company operates

Moral Dilemma

- **Moral Dilemmas**
  - Moral Dilemmas are situations in which two or more moral obligations, duties, rights, goods, or ideals come into conflict with each other.
  - The crucial feature of a moral dilemma is that all the moral principles cannot be fully respected in a given situation.
  - Also solving one moral principle can create two or more conflicting applications for a particular situation.

Moral Dilemma

- **Causes of moral Dilemmas**
  - Moral dilemmas are situations, mostly, due to the following three problems.
    - **Problem of Vagueness**
    - **Problem of Conflicting reasons**
    - **Problem of disagreement**

Moral Dilemma

- **Causes of moral Dilemmas**
  - **<u>Problem of Vagueness</u>**:
    - Vague means not clearly expressed or perceived; not specific or exact.
    - For a given situation, sometimes it is unclear to the engineers to apply the most appropriate moral considerations or principles.
      - They may not know how and which moral principles to be used in resolving a moral problem. This situation creates a typical moral dilemma.
      - **EXAMPLE**

Moral Dilemma

- **Causes of moral Dilemmas**
  - **<u>Problem of Conflicting Reasons</u>**:
    - This is a situation where two or more problems conflicting each other *(each of which seems to be correct)*.
    - *(In other words)* Situation in which two or more moral obligations, duties, rights, goods, or ideals come into conflict with each other.
      - But when they come together, it is very difficult choice to choose good one.
    - **EXAMPLE**

Moral Dilemma

- **Causes of moral Dilemmas**
  - **<u>Problem of Disagreement</u>**:
    - Individuals and groups may have different views, suggestions, interpretations and solutions on a moral problem in particular situations.
      - This disagreement among individuals and groups on interpreting moral issues will create a situation of another moral dilemma.
    - **EXAMPLE**

Moral Dilemma

- **Steps in Confronting Moral Dilemmas**
  - Identifying the pertinent moral factors and reasons.
  - Collecting all available moral considerations, which are relevant to the moral factors involved.
  - Ranking the above collected moral considerations on the basis of importance as applicable to the particular situation.
  - Making factual inquiries
  - Inviting discussions, suggestions from colleagues, friends, and other involved persons to critically examine the moral dilemmas.
  - Taking the final decision.

Moral Autonomy

- **What is meant by Moral Autonomy?**
  - As already discussed, the practical aim in studying and teaching engineering ethics course is to foster the moral autonomy of future engineers.
  - **Autonomy** means '***Self-determining***' or '***Independent***'
  - **Moral Autonomy is the ability to think critically and independently about moral issues and apply this normal thinking to situations that arise during the professional engineering practice.**

Moral Autonomy

- **What is meant by Moral Autonomy?**
  - In other words, moral autonomy means the skill and habit of thinking rationally on ethical issues based on moral concern.
    - i.e., it is concerned with the independent attitude of an individual related to ethical issues.
  - It is the ability to arrive at reasoned moral views based on the responsiveness to human values.

Moral Autonomy

- **Factors influencing the Moral Concern (of a person)**
  - Atmosphere in which the person is brought up in his childhood.
  - One’s relationship with friends and relatives.
  - One’s interaction with neighbors.
  - One’s family structure and family’s economy.

Moral Autonomy

- **Factors influencing the Moral Concern (of a person)**
  - Influence of religious institutions such as temples, churches, mosques etc.
  - Influence of educational institutions such as schools, colleges etc.
  - Influence of teachers and other mentors.
  - Influence of media like newspapers, novels, movies, television etc.
  - Influence of some social events.

Moral Autonomy

- **Skills required to improve Moral Autonomy** *(given by Mike Martin and Roland Schinizinger)*
  - Proficiency in recognizing moral problems and issues in engineering.
  - Skill in understanding, clarifying, and critically evaluating the arguments, which are against the moral issues.
  - Ability to form consistent and complete perspectives on the basis of relevant facts.

Moral Autonomy

- **Skills required to improve Moral Autonomy** *(given by Mike Martin and Roland Schinizinger)*
  - Ability to make imaginative and creative alternative solutions under difficult situations.
  - Sensitivity to valid difficulties and delicacies. (i.e. sensitivity to others' views, problems, and sufferings.)
  - Adequate knowledge to use the common ethical language so as to support or defend one's moral views with others.

Theories of Moral Development

- Concept of moral autonomy is very much related to psychology and moral development.
- **Lawrence Kohlberg** and **Carol Gilligan** have developed theories on moral development based on the sorts of reasoning and motivation adopted by individuals with regard to moral questions.

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Theories of Moral Development - Kohlberg's Theory

- **Lawrence Kohlberg's Theory**
- Lawrence Kohlberg suggested three levels of moral development, namely, ***Pre-conventional Level, Conventional Level,*** and ***Post-conventional Level*** based on the type of reasoning and motivation of the individuals in response to moral questions.

Kohlberg's Theory

- **Lawrence Kohlberg's Theory**
- **<u>Pre-Conventional Level</u>**
    - Based on desire to derive benefits for oneself.
    - Individuals behave according to socially acceptable norms (taught by parents and teachers)
    - Individuals are motivated by desire to avoid punishment or by their desire to satisfy their own needs.
    - ***Age: Birth to 9 years***

Kohlberg's Theory

- **Lawrence Kohlberg's Theory**
- **<u>Conventional Level</u>**
- Individuals are motivated by desire to please others and meet social unit expectations (other than self interest).
- Individuals give importance to loyalty and close identification with others (rather than self-interest).
- This level of moral thinking is found in society generally. That is why it is called Conventional Level
    - ***Age: 9 years to 20 years***

Kohlberg's Theory

- **Lawrence Kohlberg's Theory**
- **<u>Post-Conventional Level</u>**
- Individuals are guided by strong principles and convictions (not by selfish needs or pressure from society).
- These individuals are called 'autonomous'. (They think for/by themselves; they do not believe that customs are right.)
- They desire to maintain moral integrity, self-respect and the respect of other autonomous individuals.
    - ***Age: Over 20 years***

Kohlberg Stages of Moral Development		
Approximate Age Range	**Stage**	**Substages**
Birth to 9	Preconventional	1) Avoid punishment 2) Gain Reward
Age 9 to 20	Conventional	3) Gain Approval & Avoid Disapproval 4) Duty & Guilt
Age 20+ maybe never	Postconventional	5) Agreed upon rights 6) Personal moral standards

Theories of Moral Development – Gilligan's Theory

- **Carol Gilligan's Theory**
- Carol Gilligan states that Kohlberg's theory is only on ethics of rules and rights.
- But her theory is known as **ethics of care**. i.e. context oriented emphasis required to maintain the personal relationship.
- **Gilligan's** work on **moral development** outlines how a **woman's morality** is influenced by relationships and how women form their **moral** and **ethical** foundation based on how their decisions will affect others. She believes that women tend to **develop morality in stages**.

Gilligan's Theory

- **Carol Gilligan's Theory**
- **<u>Pre-Conventional Level</u>**

- This is more over the same as Kohlberg's first level.
- i.e. In this level, an individual is concerned with self-centered reasoning.

Gilligan's Theory

- **Carol Gilligan's Theory**

- **<u>Conventional Level</u>**
- This level differs from Kohlberg's second level.
- According to Gilligan, women do not want to hurt others and want to help others i.e. women always want to give up their interests in order to help the others to fulfill their needs.

Gilligan's Theory

- **Carol Gilligan's Theory**

- **<u>Post Conventional Level</u>**
- This level also differs from Kohlberg's third level.
- In this level, individuals (particularly women) want to balance between caring about other people and their interests.
- The balancing can be achieved only through context-oriented reasoning and not by abstract rules.

Kohlberg Theory and Gilligan's Theory

Kohlberg's Theory	*Carol Gilligan's Theory*
A. Basic Aspects	
1. Is based on the study on men. 2. Men give importance to moral rule. 3. Ethics of rules and rights.	1. Is based on the study on men and women 2. Women always want to keep up the personal relationships with all the persons involved in the situations. 3. Women give attention to circumstances leading to critical situations rather than rules: (context-oriented and ethics of care)
B Characteristic Features	
1. Justice 2. Factual 3. Right or wrong 4. Logic only 5. Logic and rule-based 6. Less of caring 7. Matter of fact (practical) 8. Present focus 9. Strict rules 10. Independence 11. Rigid 12. Taking a commanding role 13. Transactional approach	1. Reason 2. Emotional 3. Impact on relationships 4. Compassion too 5. Caring and concern 6. More of caring 7. Abstract 8. Future focus 9. Making exceptions 10. Dependence 11. Human-oriented 12. Shying away from decision-making 13. Transformational approach

Models of Professional Roles, Self Respect and Uses of Ethical theories

MODELS OF PROFESSIONAL ROLES

- Promotion of public good is the primary concern of the professional engineers.
- There are several role models to whom the engineers are attracted. These models provoke their thinking, attitudes and actions.

1. Savior

- The engineer as a savior, save the society from poverty, illiteracy, wastage, inefficiency, ill health, human (labor) dignity and lead it to prosperity, through technological development and social planning. For example, R.L. Stevenson.

2. Guardian

- He guards the interests of the poor and general public. As one who is conversant with technology development, is given the authority befitting his expertise to determine what is best suited to the society. For example, Lawrence of Arabia (an engineer).

3. Bureaucratic Servant

- He serves the organization and the employers. The management of an enterprise fixes its goals and assigns the job of problem solving to the engineer, who accepts the challenge and shapes them into concrete achievements. For example, Jamshedji Tata.

4. Social Servant

- It is one who exhibits social responsibility. The engineer translates the interest and aspirations of the society into a reality, remembering that his true master is the society at large. For example, Sir M.Viswesvarayya.

5. Social Enabler and Catalyst

- One who changes the society through technology. The engineer must assist the management and the society to understand their needs and make informed decisions on the desirable technological development and minimize the negative effects of technology on people and their living environment. Thus, he shines as a social enabler and a catalyst for further growth. For example, Sri Sundarlal Bahuguna

6. Game Player

- He is neither a servant nor master. An engineer is an assertive player, not a passive player who may carry out his master’s voice. He plays a unique role successfully within the organization, enjoying the excitement of the profession and having the satisfaction of surging ahead in a competitive world. For example, Narayanamurthy, Infosys and Dr. Kasthurirangan, ISRO.

SELF RESPECT

- **is valuing oneself in morally appropriate ways.**
- **takes two forms:**
- Recognition self-respect
- Appraisal self-respect
- **Specific virtues for self-respect:**
- A sense of honor
- Self-control
- Courage
- Good judgment

CUSTOMS AND ETHICAL RELATIVISM

- Various cultures in our pluralistic society lead to tolerance for various customs, beliefs, and outlooks.
- **Ethical pluralism** is the view that there may be alternative perspectives that are reasonable, but no one of which must be accepted completely by all rational and morally concerned persons.
- **Ethical relativism** says that actions are morally right when they are approved by law or custom; they are wrong when they violate laws or customs.
- **Moral rationalism** is the view that moral judgments should be made in relation to factors that may vary from case to case.

Religion

- **Religions have played major roles in shaping moral views and moral values.**
- **Each religion lays stress on certain high moral standards.**
- Hinduism holds polytheistic view and virtues of devotion and surrender to high order.
- Christianity believes in one deity and emphasizes on virtues of love, faith, and hope.
- Islam on one deity and adherence to *ishan* and prayer.
- **But many religious sects have adopted poor moral standards.**
- *People are killed in the name of religion.*

USES OF ETHICAL THEORIES

- **Ethical theories are useful:**
- for justifying moral obligations.
- for resolving moral dilemmas.
- in relating professional and ordinary morality.