Teaching Plans & Structure
Course Syllabus

BELH-0006 ETHICS & VALUES

Credits: 02 **Semester III/IV** **L–T–P: 2–0–0**

Objectives:

- The course aims to develop a logical understanding of morality and society.
- It aims to develop a critical perspective of the assumptions and prejudices which we use in the decision-making process.
- It is to foster the understanding of professional ethics. It is to train students to rationalize the problems of life and profession to learn problem-solving and decision-making skills.
- It is to help students in identifying normative commitments of technological knowledge.

Module No.	Content	Teaching Hours
I	**Conceptual Foundations:** Foundations of Morality; Professional Ethics; Professional Standards in Engineering Practice; Major Theories of Ethics and Different Ethical Approaches; Normatively of Science and Technology **Professions and Moral Dilemmas:** Contemporary Ethical Issues; Conflict of Interests; Contracts; Rights and Violations; Consent and Dissent; Privacy and Confidentiality; Consultancy; Allocation of Burdens and Benefits; Direct and Indirect Responsibility; Patents, Piracy and Clones	14
II	**Decision Making:** Theoretical Bases; Foundational Values; Greater Welfare Approach; Risk-Benefit Analysis; Right-based Approach; Priority Allocation; Binding Grounds of Decisions; Public Norms and Professional Guidelines	14
III	**Social Responsibility:** Individual and Collective Responsibility; Corporate Social Responsibility; Justice and Fairness; Beneficence and Safety; Respect for Humanity, Life, and Nature; Sustainable Development	11

References:

1) **Sandel J. Michael, Justice: What's Right Thing to Do?, Penguin Press.**
2) **https://www.google.co.in/#q=references+for+Kantianism%2C+Libertarianism+and+Virtue+Theory**
3) **http://people.wku.edu/jan.garrett/350/350ethry.htm**
4) **http://en.wikipedia.org/wiki/Deontological_ethics**
5) **http://www.blackwellreference.com/public/tocnode?id=g9780631201199_chunk_g978063120119917**
6) **http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780195395686.001.0001/acprof-9780195395686-chapter-11**
7) **http://www.iep.utm.edu/libertar/**
8) **http://en.wikipedia.org/wiki/A_Theory_of_Justice**
9) **http://gelaam.org/uploads/2/7/9/2/2792936/justice.pdf**
10) **http://www.youtube.com/watch?v=kBdfcR-8hEY**
11) **http://www.youtube.com/watch?v=0O2Rq4HJBxw**
12) **http://www.youtube.com/watch?v=Qw4l1w0rkjs**
13) **http://www.youtube.com/watch?v=MGyygiXMzRk**
14) **http://www.youtube.com/watch?v=KqzW0eHzDSQ**
15) **http://www.youtube.com/watch?v=8rv-4aUbZxQ**
16) **http://www.youtube.com/watch?v=AUhReMT5uqA**
17) **http://www.youtube.com/watch?v=18IHldzt6bU&list=PLF2900CF84737E005**
18) **https://www.facebook.com/HarvardJustice**
19)

Case Studies: Personal and Professional Ethics

1) **A Violation of Privacy :**
   https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/a-violation-of-privacy/

Marcus is a computer engineer who has recently developed an app that helps users keep track of medical information, doctor's appointments, and prescriptions.

Information about the user is stored in this app, including what prescriptions they are taking and how frequently they schedule doctor's appointments. As the developers of the app, Marcus and his company have access to this information.

The marketing department requests Marcus supply them with customer-specific information so they can better target ads and app suggestions to the users. Marcus understands that he is part of a company, but also feels that the privacy of the app users should be protected. Additionally, Marcus feels that as an engineer, he should be responsible to those who use his technology.

- How does Marcus determine how much of the user's information should be shared with marketing? Is this an ethical use of information or a violation of the user's privacy?

Clare Bartlett was a 2014-2015 Hackworth Fellow in Engineering Ethics at the Markkula Center for Applied Ethics at Santa Clara University.

2) **Ship or Not to Ship :**
https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/to-ship-or-not-to-ship/

Rachel works as a Quality Assurance Engineer at a large electronics company. She is responsible for the final testing of her company's servers and is part of a team that decides when new products will be shipped to distributors for sale.

Rachel's company has a contract with another company that makes the chips that are incorporated into the servers Rachel's company makes. The business model for this product is to release a new generation server approximately every six months, meaning Rachel has a limited timeframe to conduct her Quality Control tests.

Because there is such a short amount of time between the releases of each next new product, the Quality and Assurance department cannot perform every possible test on the servers to ensure they are defect-free. Rachel will not ship a product if there is any possibility that the server could malfunction and cause physical harm to the customer. However, she will ship a product that has a higher likelihood of failure resulting in data loss for the customer, because she knows that if she doesn't, her company's competitor will.

- Is this an ethical way to conduct business? How should she determine when to ship a product with known defects?

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3) **Copyright Concerns**
https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/copyright-concerns/

SDX Alliance is a large company that sells computers, computer components, and software. Ralph is hired as an entry-level software engineer at SDX Alliance. His first project was to assist in writing the code for SDX Alliance's new hard disc controller. He had previously worked on a similar system interning at a start-up and had written a code that greatly enhanced the performance of their product. Ralph quietly re-uses this same code in the SDX Alliance product and does not think to tell anyone that he has used the code from his last job. His manager is thrilled with the speed improvements this code brings to the product.

Before the product is released, it has to undergo a four-month-long quality assurance process review. During the review of the product, it was found the code which Ralph developed had been copyrighted by the startup he had previously worked for. Even though Ralph had developed the code, his previous company still owned the intellectual property rights to it.

When his manager informed Ralph of the problem, Ralph admits he did not realize he had made a mistake because he was not familiar with copyright laws. Ralph then goes on to explain that the

start-up he used to work for is now out of business and is unsure if SDX Alliance would be able to get in contact with the owner of the copyright. If SDX Alliance can't use Ralph's code, then it will have to rewrite the entire code of the product, delaying its release by many months.

- What should they do?

4) **Misinterpretation Mishaps**

   https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/misinterpretation-mishap/

Tony is a project leader at a company frequently subcontracted to produce code for various U.S. government entities and affiliates. Traditionally, code that was developed for one federal department could be reused for another if approval was obtained by the former. One day, Tony's company was contacted by a privately-owned commercial corporation, Fly High, to create code for an avionics-related image processing effort. Since the code requested was almost identical to the one used for a past project, Tony's team decided to, once approval had been obtained from the government, reuse the code.

After permission was granted through email, however, Tony realized the approving party, a law agency that was contracted by the government, lacked a complete understanding of who would benefit from the reused code. Tony wanted to contact the government directly to ensure it had been informed of all vital aspects of the contract but realized doing so could mean having the initial approval revoked, having to re-code the requested code, and increasing the contract bid up to two million dollars.

- Understanding the contract between his company and Fly High was on the line, should Tony move forward with clarifying the situation to the appropriate party?

5) **Going Public:**
   https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/going-public/

As a technical sales engineer, Avery is responsible for selling her company's integrated circuit test systems. Each of these systems costs approximately one million dollars and Avery's sales goals are to sell at least ten of these systems per revenue quarter.

These sales expectations are in place because Avery's company is trying to go public (IPO). To do so, they must be profitable for five quarters in a row. Therefore, there is enormous pressure from the company's investors and board to meet the assigned sales goals.

As the end of the fifth quarter approaches, Avery realizes she is one sale short of reaching her goal. When she approaches her manager to let him know that she will not be meeting her goals, he explains to her a way to get around the problem. He tells her that when he was a sales engineer, he would approach customers who he knew would soon be purchasing a system. He would get the customer to place the order and receive a price discount if they come to the

factory, be shown an empty shell of a system that was not yet built, and sign paperwork documenting their acceptance of the unbuilt system as if it was already built. That way the order could count as part of this quarter's profits, but the customer would not have to pay for the order until the next quarter.

Avery's manager explains that although this practice of falsifying sales reports is now illegal when he was a salesperson the practice was a common way of meeting sales goals. Additionally, he suggests to Avery that he would look the other way if she were to falsify a customer acceptance report and reminds her that the company will only be able to go public if she meets her sales goal. If she fails to meet her goal, the IPO will be postponed for at least a year and so will her IPO profits and the profits of all the other employees and shareholders.

- What should Avery do?

6) **A Breach In Security**
https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/a-breach-in-security/

Data-Time Inc. is a company that manages databases for a large city in Colorado. Included in these databases are information collected from the city's homeless shelters and free clinics. Specifically, the databases contain personal information of the users of these services over the past 10 years; this includes people's Social Security numbers and health records.

This data is highly secure and only accessible to the employees of Data-Time Inc. Employees are given a laptop when they are hired which allows them to access the database remotely. Unfortunately, one of these laptops is stolen and the security of the database is compromised.

A majority of the people whose information was compromised are homeless; therefore there is no easy way to contact them to alert them of the security breach.

- How should Data-Time Inc. manage this breach in security?

7) **May The Truth Be With You**

https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/may-the-truth-be-with-you/

Catherine is a new hire at a startup that produces LCDs for large venues, such as shopping malls. Part of her job requires her to troubleshoot malfunctioning displays.

One day, a shopping mall reported that two display units out of twelve had stopped working from their installation three months prior. The customer also noted serial and revision numbers on the two units were different from the rest of the units.

At the job site, Catherine inspected the displays and realized her company had sold units that were from a bad batch (i.e. group of displays that did not have over 50% yield during

manufacturing). Catherine wanted to tell the site why the units failed but recognized that if she disclosed this information, the site would be eligible to receive replacement displays at no additional cost. On the other hand, if she blamed the failing units on a weaker cause, such as improper installation, her company would be able to charge the site for replacement units.

Catherine knew her manager would want her to choose the option that would minimize the company's losses; however, she wanted to be honest with the site as they were one of the company's best customers.

- What should she do?

Videos:

Fundamental Values & Emotional Intelligence: Humility Honesty Integrity

1) **Humility: Homeless Lady:** https://www.youtube.com/watch?v=55WC5G9mj0Y
2) **Honesty:** https://www.youtube.com/watch?v=-L1IekaejfU
3) **Integrity: https://www.youtube.com/watch?v=tw84M32yV0k**
4) **Emotional Intelligence:** https://www.youtube.com/watch?v=zSZkIhTNgeM
5) **Joy Story: Ethical Dilemma:** https://www.youtube.com/watch?v=ZQGuVKHtrxc

Contemporary Ethical Issues: Learning from the Life in the View of Pandemic

6) **https://www.youtube.com/watch?v=gurZcyLwybI**
7) **https://www.youtube.com/watch?v=_fi3rxxrK7I**
8) **https://www.youtube.com/watch?v=x4ISnxOqi-M**
9) **https://www.youtube.com/watch?v=spZNTuxy8Jw**
10) **Universal Basic Income:** https://www.youtube.com/watch?v=W2Xv_9vSDE8

Documentaries:

1) **Artificial Intelligence and Ethics: https://www.youtube.com/watch?v=Izd2qOgOGQI**
2) **Cyber Security: https://www.youtube.com/watch?v=I3L6F6Rq0qQ**

Reflections: Selected Ted Talks:

1) **Technology and Sense of Right & Wrong: https://www.youtube.com/watch?v=7YoLMG2qja4**
2) **Ethics in the Age of Technology: https://www.youtube.com/watch?v=iiAirfn-lBI**
3) **Ethical Dilemma We face AI and Autonomous Tech: https://www.youtube.com/watch?v=3oE88_6jAwc**
4) **Ethics, Yes, Even No One Watching: https://www.youtube.com/watch?v=ohmOCHYz530**

Teaching Assessment Activities: (10 Marks)

This activity will be a team activity in which 2-4 students will work together.

Write an essay on any aspect of Covid-19 applying ethics and Computer Engineering & Applications to fight against Covid-19

1: Use of IOTs in fighting against Coid-19

2: Role of Computer science & applications in pandemic control

3: Use of AI in reducing Covid transmission

4: AI-based Covid surveillance

5: Use of ML and Robotics in Covid-pandemic

6: Review on applications used for Covid-pandemic

7: Use of Image processing during covid-19

8: Use of Data mining during covid-19

9: Use of AI in Online education during a pandemic

10: Review on IoT systems used during Covid-pandemic

Or Make a mini project on the following topics:

1. **Assess the impact on the development of variants between those who are vaccinated and unvaccinated individuals in a limited geographic area**
2. **Seroprevalence (Level of infection) studies to determine the susceptibility of individuals to SARS-CoV-2, as well as follow up seroprevalence studies at sites covered earlier to measure the impact of vaccination/herd immunity level**
3. **Surveillance of COVID-19 reinfections in previously infected individuals with the same/different SARSCoV-2 strains**
4. **Effectiveness of vaccines in reducing transmission**
5. **Develop an appropriate model for surveillance of COVID-19 in schools & colleges**
6. **Drivers of vaccine hesitancy across India (social / system related / cultural determinants of uptake/resistance/hesitancy with regards to vaccine uptake), in different geographical locations**
7. **Drivers of reduced vaccine uptake among different groups of people (groups prioritized for COVID19 vaccination/ like migrants, sexual minorities, tribal populations, urban poor), and ways to overcome them**

8. **Adherence to COVID appropriate behaviour in individuals and communities post-immunization with COVID-19 vaccines**
9. **Strategies for expansion of COVID-19 vaccination coverage in rural India**
10. **School reopening strategies**

Debate (05 Marks)

1. **Online education is ineffective.**
2. **Vaccination should be mandatory.**
3. **We should boycott the people who don't follow Covid protocols?**
4. **Helping a Covid positive is an irrational act.**
5. **We should use the Covid license (vaccination certificates) to allow individuals in collective gatherings?**

Change in teaching plan:

- **Instead of teaching through theories this time I will be teaching more through case studies, videos, documentaries, debates and projects.**
- **More participation through discussion on above study materials**
- **Weekly feedback**