Ethics in Engineering Practice
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Lecture - 30
Key Questions - Ethical Conduct of Engineers

Welcome today we will be discussing some Key Questions which are relevant to engineering practice. Till this module we have covered different sections of engineering practice and we have discussed different issues related to it at length. Today we are going to take up certain key questions which are relevant to the topics which may be we could not discuss in a particular session, but which requires extensive focus. So, in the subsequent like modules, we are going to take up certain key questions and do detailed discussions about it. So, today we will discuss the Key Questions which are pertaining to Ethical Conduct for Engineers.

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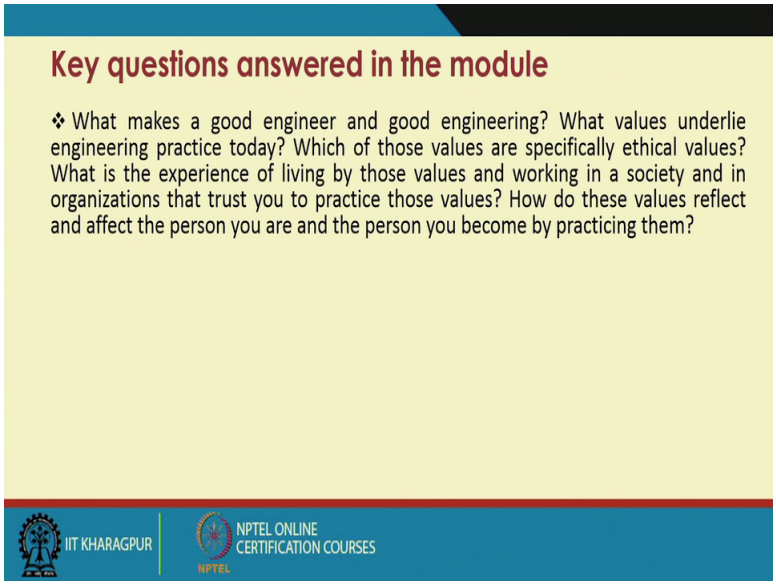

The key questions that will be answered in this module are like: what makes a good engineer and good engineering? What values underlie engineering practice today? Which of those values are specifically ethical values? What is the experience of living by those values and working in a society and organization that trust you to practice those values? How do these values reflect and affect person you are and the person you become by practicing them?

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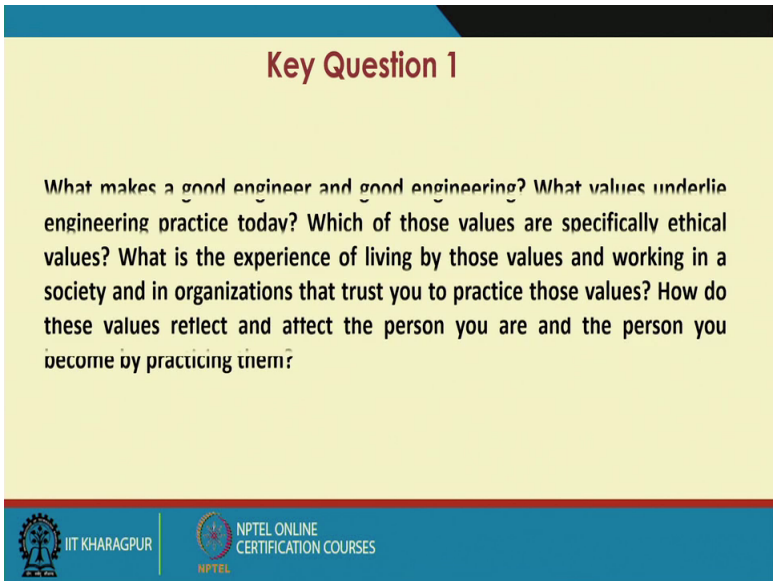

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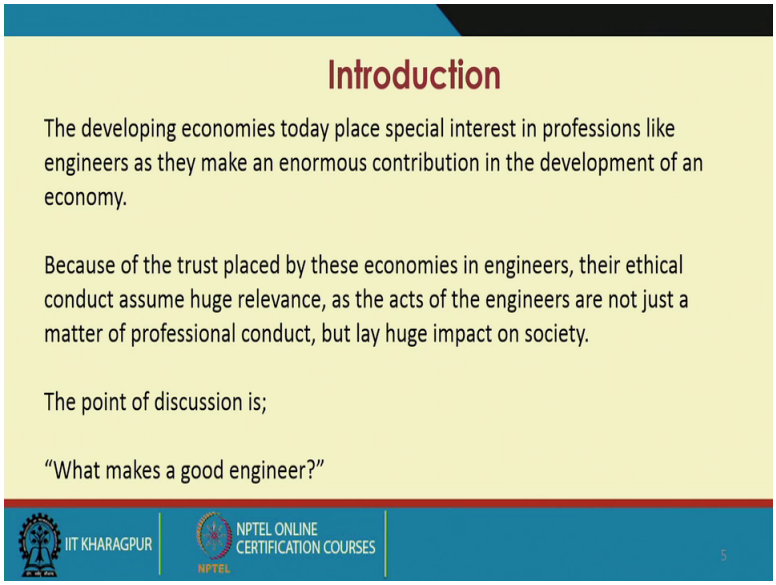

This is the first question that we are going to discuss today and what we find over here is like with the developing economies in place which like as a put special place of interest in professions like engineers because, they make enormous contribution in the development of economy and like because the trust is placed in these economies in the engineers. So, it becomes very important to think about their ethical conducts as their conduct, specifically the conduct of engineers are not just a matter of professional conduct, but it lay huge impact on society also.

Now, the point of discussion over here is then like if there is so much importance given on the professional conduct of engineers and society lays so much importance on it, then what makes a good engineer.

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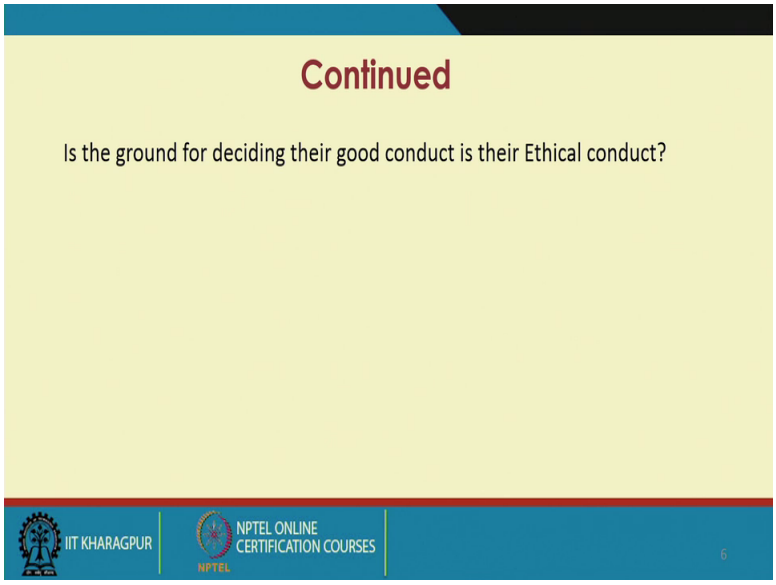

What we find over here is like and what is the ground for deciding like we have to discuss like what makes the good engineer and what are the ground for deciding their good conduct as ethical conduct. This will be the main focus of discussion now.

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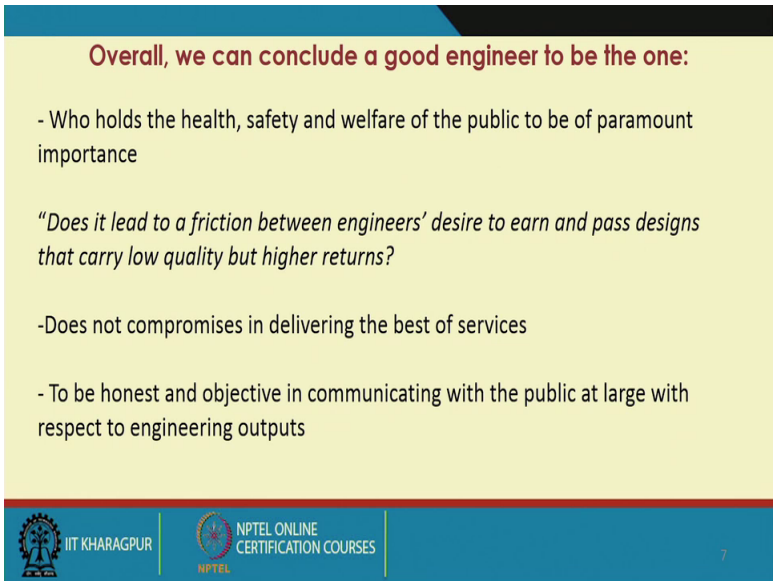

Now, what we find is like a good engineer is a person who takes into consideration health safety and welfare of the public to be of paramount importance. So, like if it leads to a friction between engineers design to earn and pass design that carry low quality, but higher returns. What is that engineer going to do? It is expected that the engineer does not compromise in delivering the best of services to be honest and objective in communicating with the public at large with respect to engineering outputs is one of the qualities which are expected for the engineers. So, what we find may be honesty, trust, worthiness.

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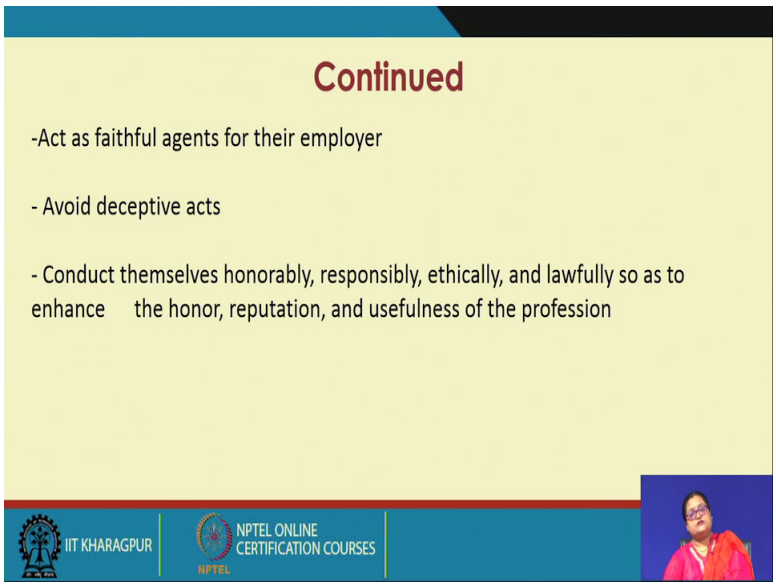

These are important qualities that we expect from engineers like they act as faithful agents for their employer, they avoid deceptive acts and they conduct themselves honorably responsibly, ethically and lawfully, so that they enhance the honor reputation and usefulness of the profession. So, responsible acts they have to honor their profession, they have to act lawfully. These are some of the expectations from engineers.

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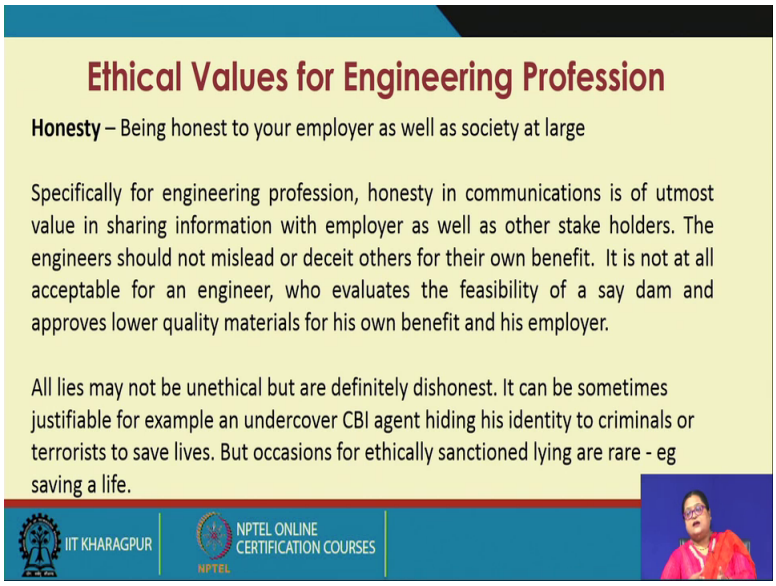

Then, what we find like if that is the expectation, then there are certain ethical values which this profession demands and may be one of those prominent values is of course honesty. So, what we find is that because if you are talking of having an earning which is going to give me more earning and in the quality needs to be compromised, if I am not honest in towards my profession, if I am not honest towards my responsibility for the public at large, then I am going to may be just lean towards the side of getting more like thinking of my personal earning and compromise on the quality of the product.

So, honesty is one of the important pillars of the like ethical values expected for the engineering profession because it demands being honest to employer, to the society at large and to oneself also. So, honesty is of utmost value for the engineer in sharing information with the employer as well as with the other stakeholders. They should not be misleading or deceit others for their own benefit.

It is not at all acceptable for an engineer to like approve for low quality material for a particular dam or other things for his own benefit and for his employers benefit. So, all lies like may not be unethical, but is definitely a dishonesty. So, sometimes there are ethically sanctioned lies like for saving a life, but these are very rare cases. So, honesty is one of the expected pillars of ethical values.

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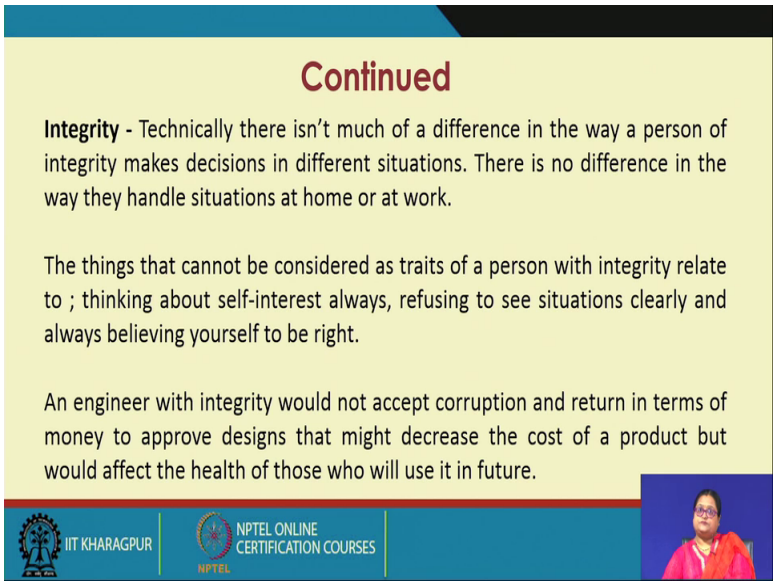

Next if we are thinking of another pillar which comes is the integrity of the character of the person. So, integrity talks of persistency in a persons character like the way that the person thinks, makes decision in different situations is not very different when you are talking of the integrity of the person. So, some qualities which cannot be connected to integrity are like thinking only of self-interest, refusing to see situations clearly and always believing oneself to be right. These are not qualities of people with integrity.

So, person with integrity is not going to accept corruption in terms of money to approve design or that might decrease the cost of a product, but it would affect the health of the public at large. So, integrity means consistency in repetitiveness of a time. So, this is one of the character traits of a person.

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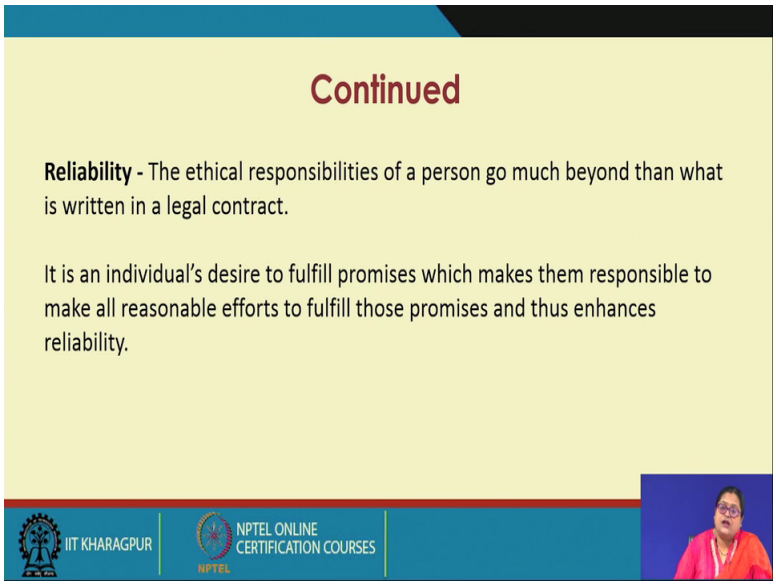

Next what we can think of is one of the ethical values are reliability. So, if I am reliable, if I am trust worthy, if I engage myself to 5 fulfill the promises that have made, so that person is called reliable. So, reliability is an individuals desire to fulfill the promises and which makes them responsible to take all the efforts to fulfill those promises and which thus enhances the reliability of the person means I can like someone can rely on me, I am trustworthy.

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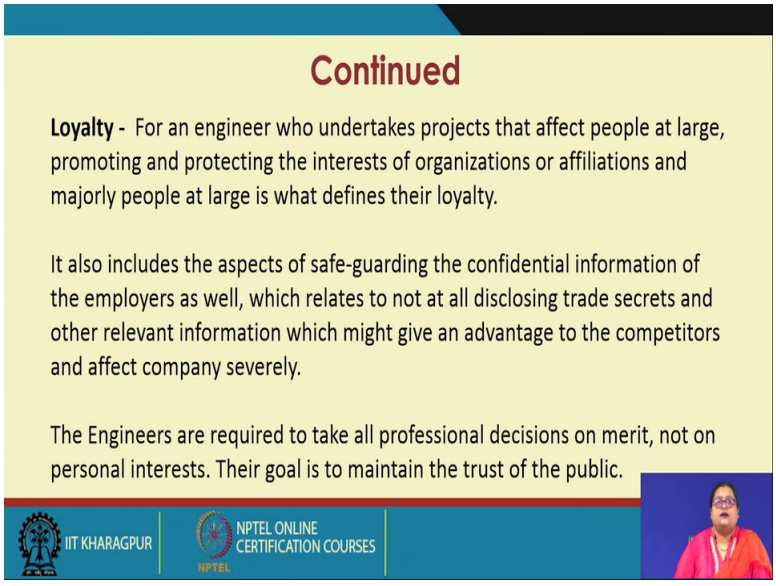

Next we you talk of loyalty. So, loyalty is like my commitment towards someone. Now, this question who is this someone is very important. When we are discussing engineering ethics I am loyal to my profession, I am loyal to my organization, I am loyal to the public at large. So, if I am talking of loyalty to myself, then it talks of self-integrity, it talks of the honesty of your character. If you are talking of loyalty to your organization, then it talks of safe guarding the confidential information of the employers, not disclosing the trade secrets or other relevant information which may be of advantage to the competitors and may affect the company severely.

When we are talking of loyalty towards the public at large, it talks of like thinking of the safety, health and security issues of the greater public at large and you understanding ones part of duty towards them. So, it may so happen like if the organizations is trying to promote a project which may not be totally beneficial to the public at large, then you may and your employee of that organization you may face a dilemma of I should be loyal to whom. So, at first it is your loyalty towards your organization, but also it is your loyalty towards the public at large means you should if the organization is not doing something correct, you first try to sense based on your professional expertise, you try to sensitize the organization about its practices which needs to be taken care of, which needs to be improved.

So, that the interest of the public at large is not jeopardized, but if you find like the organization is not like answering to these issues properly, then it is your loyalty to the public at large which is supreme and then, that is where you may come for whistleblowing and making to know the public about the dangers of the may be project that your organization has undertaken when you talk about responsibility.

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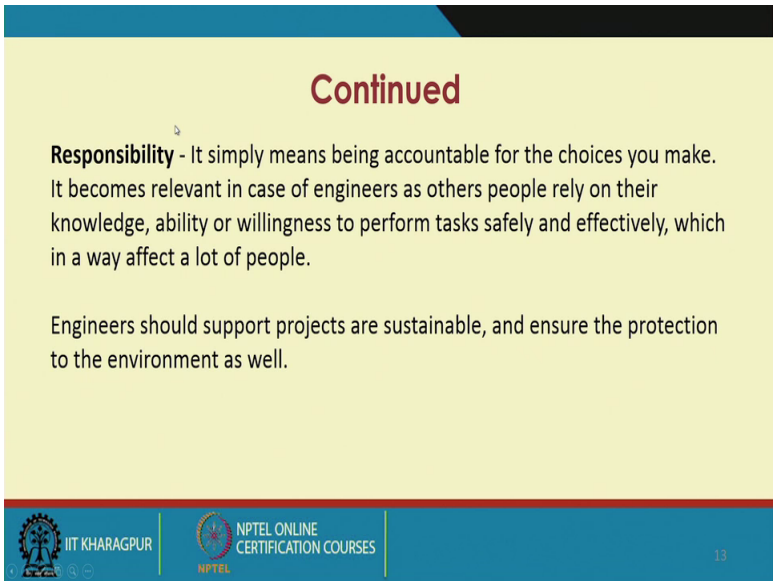

So, it is responsible for the choices that you make, it is the taking the owners on yourself for the decision that you have taken. So, because people rely on their ability or willingness to perform tasks safely and effectively and it effects a lot of people. So, taking the responsibility of ones own action, taking the responsibility to see the interest of the environment is not harmed. So, protecting the environment, making the projects sustainable, these are also important values for the engineers which needs to be considered.

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Fairness, so we were talking of honesty, we were talking of responsibility, we were talking of reliability, we are talking also of integrity and definitely if all these things are there, what comes to picture is fairness. Fairness is a value where the engineer tries to make a decision about a project about like the design to be finalized based on analyzing all different possible alternatives or outcomes which are there taking into consideration also the positive and negative outcomes for a particular action. So, it may so happen if you just focusing on the positive outcome and we are ignoring the negative outcome of our action, we may not be seeing the whole picture together.

But before we undertake any action, it is very important to judge whatever design we have made, whatever methodology we are going to follow, it is very important to judge both for the pros and cons part of the action and then, adopt a particular action or combination of actions which are going to reduce the harm and increase on the benefit, so that it is not only focusing only on the benefit. But we are doing a net analysis taking into consideration like how the harm has minimized, whether harm has been arrested or not, what proactive steps we have taken to arrest for the harm part and giving a fair chance of selection to all the possible outcomes.

It is not just jumping into particular conclusion because I may have some personal attachment to that conclusion, I may have some preferences for that conclusion, but rationally and logically going through all the alternatives before I choose my alternative is called fairness. So, engineers as professionals should make choices which are fair in nature and which is in the greatest interest of the public at large and should not be dominated by their own self-interest.

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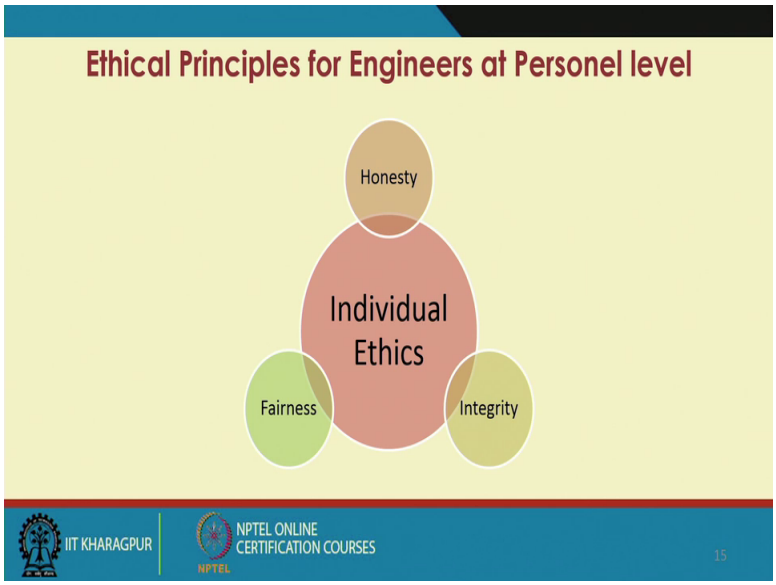

So, what we find in individual ethics 3 important things; honesty, integrity and fairness.

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It is at the ethical principles for engineers at personal level, at professional level. What we find they should have the competence for doing the work, they should be ensuring on the quality of the products and they should be ensuring on the safety of the beneficiaries at large.

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Also what we find as a part of professional ethics, they should be promoting sustainability, they should be looking into environmental protection and they should be looking into public welfare also. So, these are parts of professional ethics. Now, why we are discussing these as a part of professional ethics because it may so happen sometimes the organization may be doing some practices which are in their best interest, may not be in the best interest of the beneficiaries, then guided by these professional ethics like or it is only in the best interest of the human being organization is developing some product, but it is going to be disaster to the environment or to the future generation to come.

So, based on the professional ethics of like promoting sustainability or concern for environment as an engineer, you can always sound your voice telling: what are the cons part of the design, what are the cons part of the implementation of the project, implementing this project. And, what are the necessary actions precautions need to be taken, so that this harm is not like done to the environment or damage is not caused to the future generations to come.

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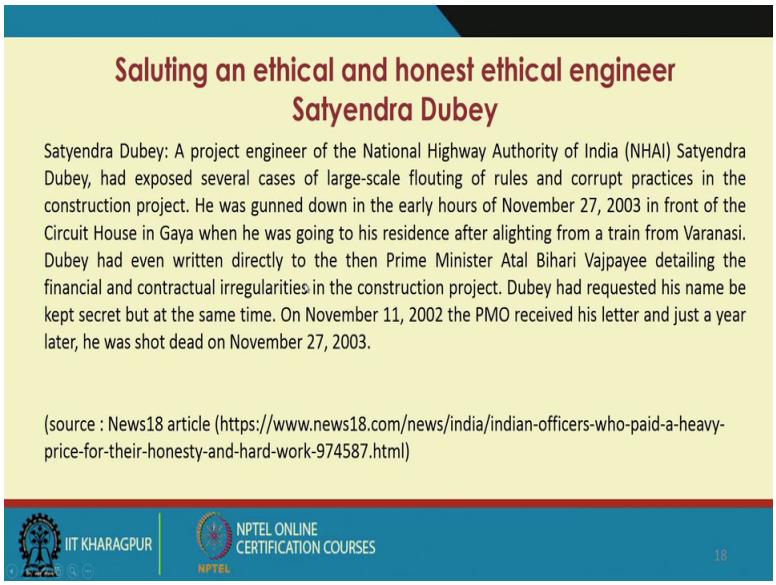

So, we will discuss here one important case of because we were like talking of like when your organizational interest may come into conflict with the interest of the public at large and how is your professional ethics which is going to help you to like raise your voice. We have the case of like the ethical engineer, honest ethical engineer Satyendra Dubey. So, he was a project engineer of the National Highway Authority of India and he has exposed several cases of large scale flouting of rules and corrupt practices in the construction project. So, he was gun down in the early hours of November 27, 2003 in front of circuit house in Gaya where he was going to his residence after alighting from a train in Varanasi.

So, he had written to the Prime Minister Atal Bihari Vajpayee [FL] detailing the financial and contractual irregularities in the construction project. So, he was he requested his name to be kept secret, but at the same time so like he told like these are the things like we have noticed that like the Prime Minister's office received his letter in 2002 and in 2003, 27 November he was shot dead. So, it is what you can like yes even if it like practices of whistleblowing, this requires really courage and like let us see it cost his life, but he was so determined for his professional ethics, he was so committed towards the cause of his profession and to the bringing in like the thinking of the welfare of the beneficiaries at large the public at large. So, any discrepancy that he noticed, he reported it to the like higher authorities to take care of.

Now, it is a very sad incident that he has suffered his lost his life for it, but it also becomes then the responsibility of the higher authorities to like how to protect the whistleblowers, how to give safety to the whistleblowers also which otherwise like if which like should take care of their safety and security, so that whenever they observe something wrong practices done, they are not worried about whether I should report or not, is it going to cost my life or not though like we agree like people who are not extremely courageous, people who are very like those who are only extremely courageous to value oriented, they do have the courage to become whistleblowers because they do not think of their personal benefits.

They are much above it and they want to like raise their voice for it, but it becomes unlike protecting the whistleblowers is also the responsibility of the authorities and to see like whether the whistle blowing is done, so that we can get more instances of people who will become courageous to come up and like take deal in a very strict way with the long practices being carried out in the organization, but if everybody suffers a consequences like Mr. Dubey, then some people may think may become afraid of whistleblowing also. So, protecting of the whistleblowers is also very critical issue like maintaining their secrecy, so that their life is not threatened. We need to take care of those things.

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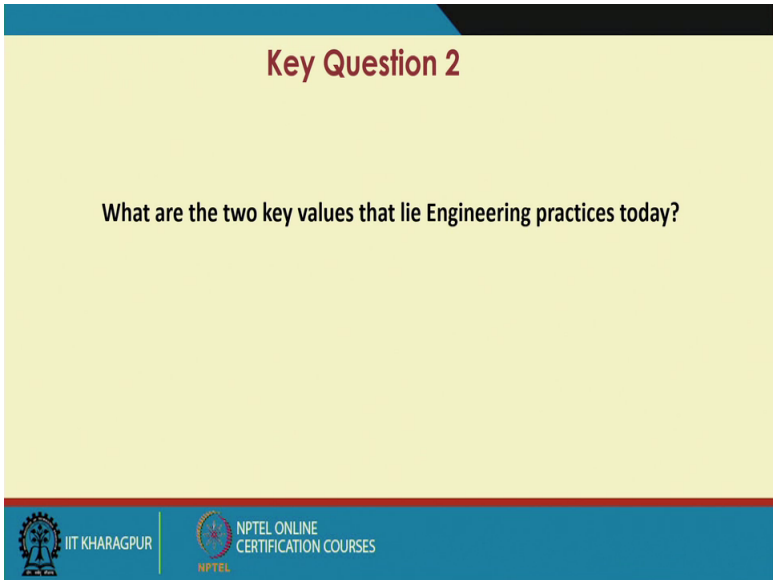

We will next come to the key question number 2 which are like what are the two key values that lie engineering practices today.

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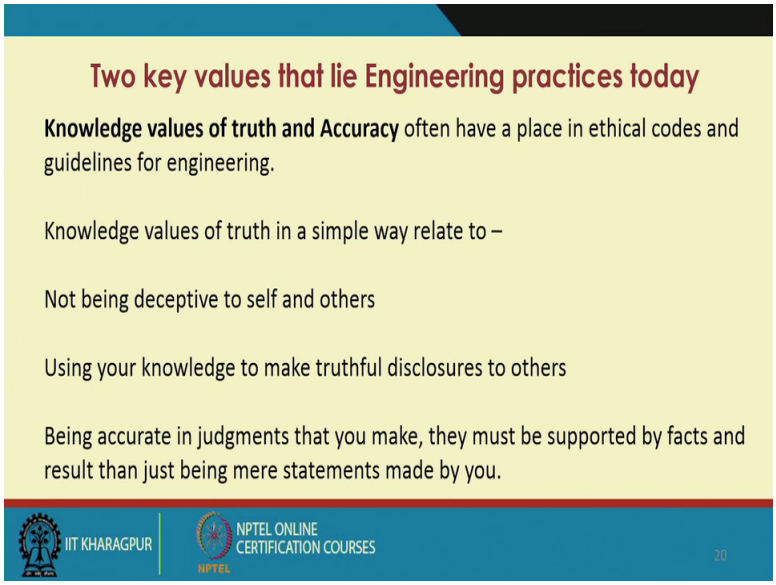

So, when we have discussed about the what makes a good engineer and what are the ethical values that the engineers should be providing, now we have to like develop on the question what are the two key values that lie in engineering practices today. So, if we have to talk of two values, it is the knowledge values of truth and accuracy. So, these are the guiding principles for the ethical codes of engineers. Knowledge value of truth refers to not being deceptive to self and others, using your knowledge to make truthful disclosures to others, being accurate in judgments that you make. They must be supported by facts and results than just being mere statements made by you.

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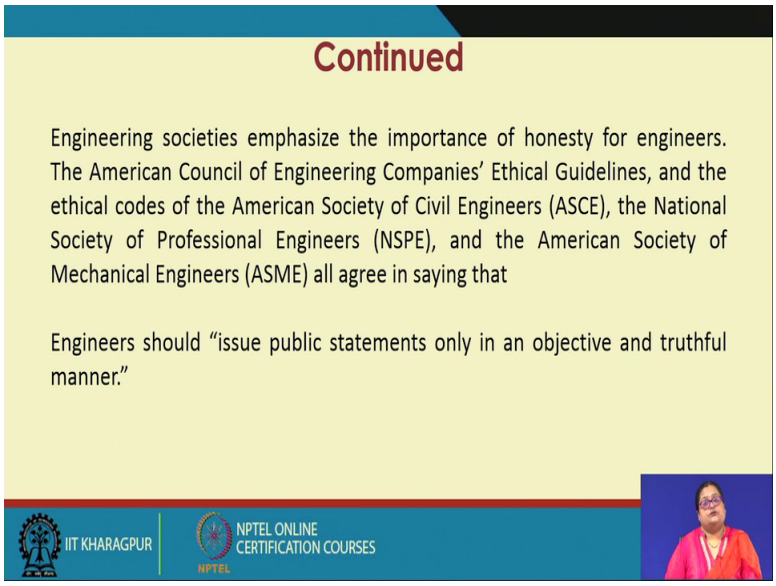

Engineering societies emphasizes the honesty for quality, honesty for engineers and that is why they have developed like different ethical guidelines and codes of conduct as we can see over here and they all agree that engineers issue public statement only in an objective and truthful manner. So, truthfulness of your whatever statements you are making truthfulness in terms of your behavior or important characteristics required for engineers.

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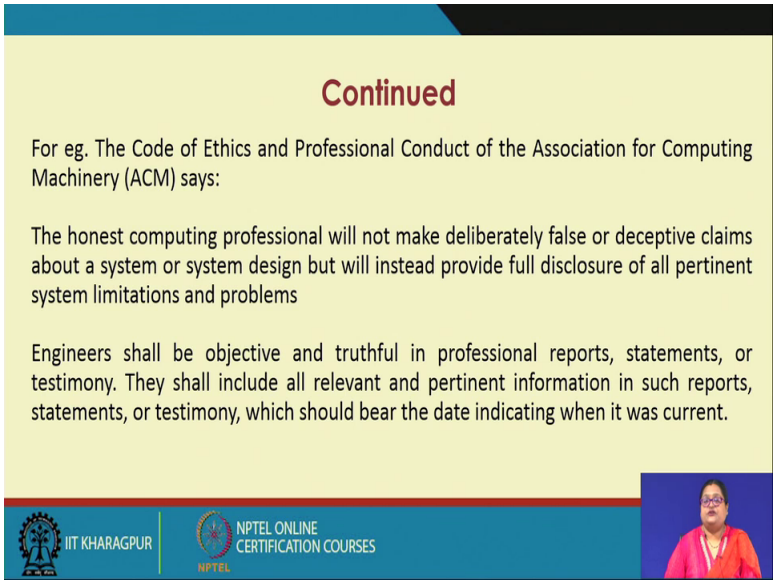

So, the Code of Ethics and Professional Conduct of the Association for Computing Machineries states the honest computing professional will not make deliberately false or deceptive claims about a system or a system design, but will instead provide full disclosure of all pertinent system limitations and problems. Engineers should be objective and truthful in professional reports statements or testimony, they shall include all relevant and pertinent information in such reports, statements or testimony which should bear the date when it was current.

So, whenever we are writing a report, it is very important to mention the date of the report, so that we can understand whatever information is been provided is relevant on that particular date because if you are not mentioning the date, then not certain situations may have changed which could have affected the result and the information shared then no longer remains valid. So, putting on the date on the like when the report is getting done, so based on that date on that situation this holds good like whatever has been reported holds good.

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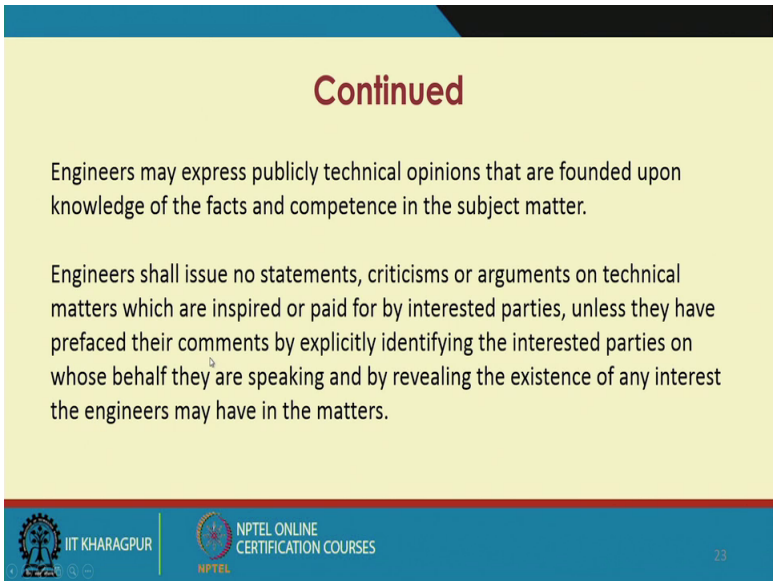

So, engineers may express publicly technical opinions that are founded on the knowledge of facts and competence in the subject matter. They should never like make issue any statement, criticism or argument which they are being paid for to do so by interest parties or like unless they have prefaced their comments by identifying like telling I am speaking on behalf of these interested parties and like generally when we put

acknowledge or contribution or we acknowledge the author from whom we are quoting, similarly like if they are issuing certain statement criticism or argument on technical matters which are paid by someone, by some interested parties that interested parties identity name should always be like referred to before making the comments.

So, this should reveal, which should reveal any existence interest in the engineers that they have in that matters. So, it may be like a support, some views of certain organization that is why I am speaking on their behalf, but these should be clarified in the statements that is made.

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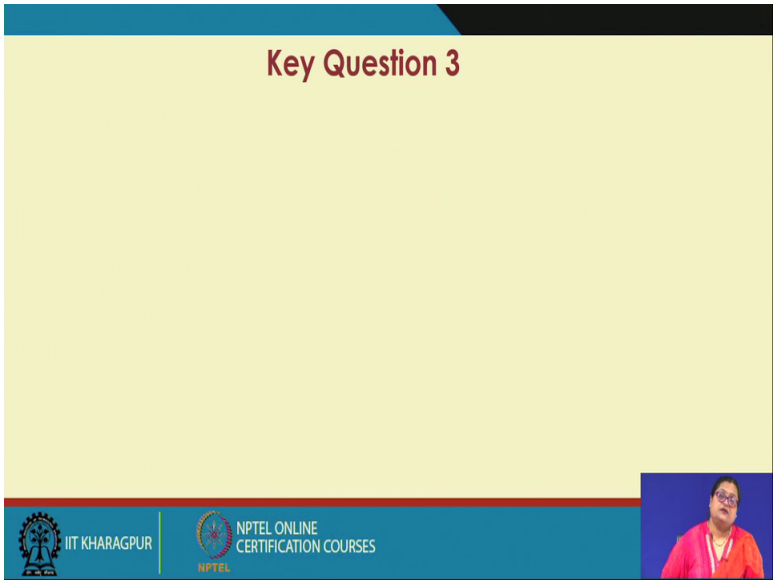

Otherwise, it may if it is made like a general statement, then what happens and I have not like confirmed about my relevant interest in it like why I am talking on behalf of certain groups. There people may think it like I am a neutral person who are talking about it, making comments about it and trying to form public opinion about it and people may get swayed by their on the judgments by my statements that I have made, but if I express like I do have this special interest in this party that is why I am speaking on their behalf.

Before making the final rational choices, people may think like to think in a different way. Yes they will obviously like take into consideration the statement given by the engineers, but they will not think this is the only answer possible. They definitely going to review it and with compare with it other possible like choices and if they find it relevant, then they are going to accept it.

So, it is very important like if you are talking on behalf of someone, you should be expressing that before you make that statement and why we are taking on behalf of that, what is your interest association with that party needs to be clarified. Also, we will take up more key questions in the subsequent module.

Till then thank you.