Business Analytics for Management Decision
Prof. Rudra P Pradhan
Vinod Gupta School of Management
Indian Institute of Technology, Kharagpur

Lecture - 14
Descriptive Analytics (Contd.)

Hello everybody, this is Rudra Pradhan here. And welcome you all to BMDA course and today our discussion is on descriptive analytics. And in the previous three lectures, we have discussed details about the descriptive statistics then the concept of you know association kind of you know structures and then we have discussed probability. So, the idea is that you know the descriptive statistic and association statistics are very handy to solve some of the business problem and to get some kind of you know managerial implications or you are in a position to take some kind of you know management decisions.

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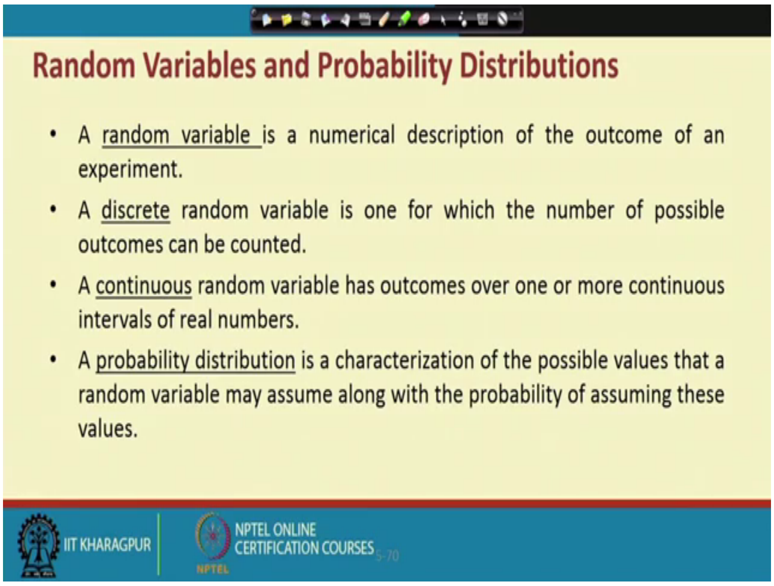

So, now here you know in the last lecture of course, we have discussed something called as you know probability; and a probability is one of the typical requirement of any kind of you know complex problems so for as you know business analytics is concerned. So, now in the last lectures, in fact, we have discussed details about the probability, the concept, rules and the kind of you know features and requirements.

And here we will continue this probability concept and then connect with some kind of you know distributions. Because we have actually lots of distributions and your analysis or your predictions, and the kind of you know management decision is concerned, so you have to see you know what actually the data or your information exactly that to you know in what extent and that to what behavior altogether.

So, in totals you are supposed to know what is the typical distributions your information will be lying. So, once you are in a position to detect then you know then you may be in a position to analyze properly they you know accordingly you can come to a conclusions. So, before we connect with you know probability distribution, so some of the concept I like to highlight here.

So, the first concept is actually random variables. We have already discussed what is exactly variable. Now, here the concept is called as a random variable; and it is a numerical description of the outcome of an you know experiment. And the discrete random variable is one of one for which the number of possible outcomes can be counted; and on the contrary so there is a concept called as a continuous random variable where the outcomes over one or more continuous intervals of real numbers

So, now a probability distributions will be you know featuring of the possible values that a random variable may assume along with the probability of assuming these values. So, these are you know simple kind of you know understanding. So, in the kind of you know structure, so we like to actually connect with the random variable, discrete random variable, continuous random variable and the concept of you know probability distribution.

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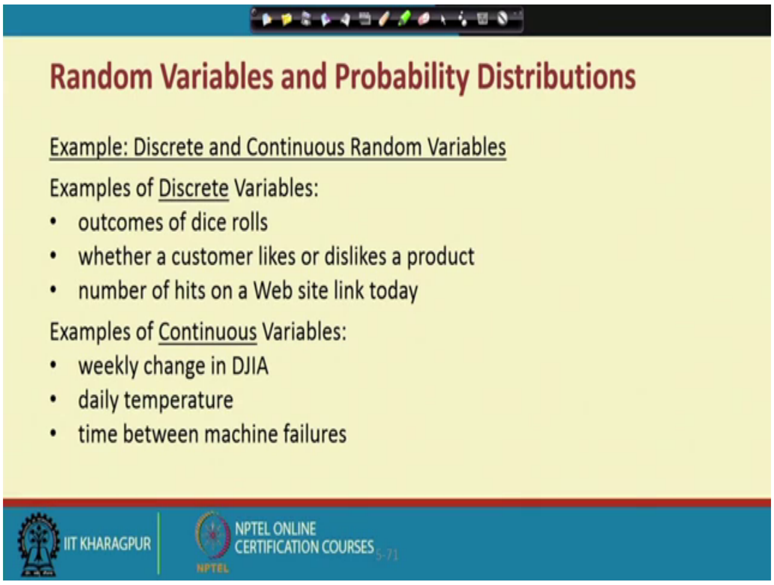

So, now we will start here like this. So, first of all discrete and continuous random variables; and let me first you know you know give you some kind of you know connections that to highlight some of the examples under the discrete variables and continuous random variables. So, like you know on the previous examples outcomes of you know dice rolls, whether a customer likes or dislikes a product, number of hits on a website you know linking today.

Then examples of you know continuous variables will be weekly changed in a kind of you know structure, daily temperature, time between some kind of you know machine failures, time between two different kind of you know policy change. So, these are the typical examples through which actually you can understand the kind of you know discrete random variable and continuous random variables. So, accordingly your distribution will be he connected.

So, once you understand the particular you know variables whether it is a discrete or continuous, so you can apply the discrete probability distributions or you can apply the continuous probability distribution. So, that means you know typically what we have discussed earlier so you know frequently you know which you are highlighting every time that if you are understand, problem understanding is not clear, whether with respect to concept or way with respect to technique or with respect to data or variable something like that then you may not be in a position to address the problem or analyze the problem as per the particular you know need.

So, obviously, so your requirement is you have to understand the problems and it is kind of you know requirements in a kind of you know attractive way, so that you know you may be in a position to solve the problems as for the problem requirement.

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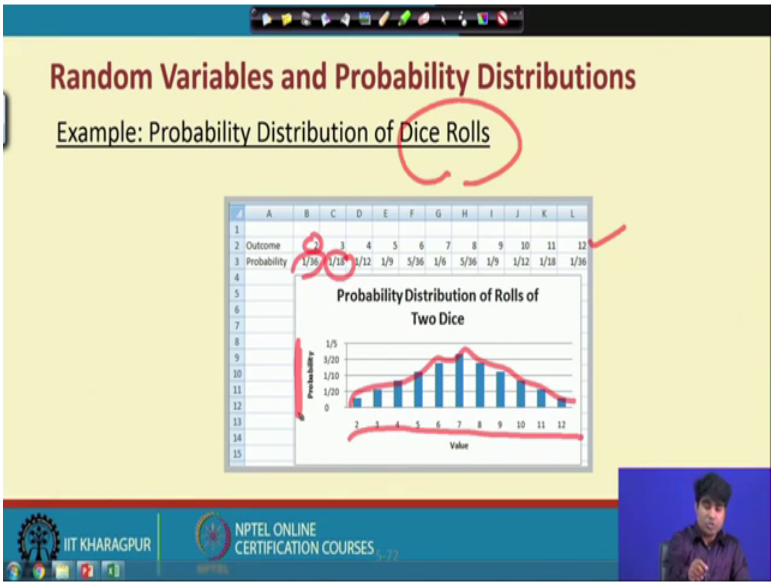

So, now with this particular example which you have cited earlier, now, this is the outcome of you know two dice and then what is the kind of you know probability which you have already discussed earlier. So, in the earlier case, we are actually targeting a specific case, so that means when two dice will be rolling then you know what is the sum. So, it may be starting with you know 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12. And the earlier we are targeting a particular case, so now, in the distribution so for as a distribution is concerned then all possible outcomes, you have to cite and corresponding to each possible outcomes so what should be the probability. So, that is the difference between you know probability and probability distribution.

So, that means, probability distribution followed the kind of you know all possible you know events, you know subject to the corresponding probability. For instance this is the case of you know dice roll case and here so the sum will be starting with a 2, 3, 4 which we have already discussed in the last you know last discussion and then corresponding to 2, so this will be 1 by 36, because the frequency will be 1.

Here the frequency will be 3, again here the frequency will be also 3, then again the probability will be 1 by 18, so that means actually so it is a two different case 2 by 36, so this coming actually 1 by 18. So, like that you know, so it is better you know you can first put it you know possible outcomes and number of frequency then individual case divided by total frequency, so that means, every times you can keep actually down 36, 36, 36, so that you know you should not have any kind of you know confusion.

So, now, if we will be plot then the plotting will be exactly will be coming like this. So, it will be look like kind of you know distributions. So, this is a probability distribution of you know roll of two dice. So, this is actually the x-axis will follow the value that is the sum of you know outcome, and then the chance of you know occurrence that is what the probability all about. So, this is the standard example of you know probability distribution.

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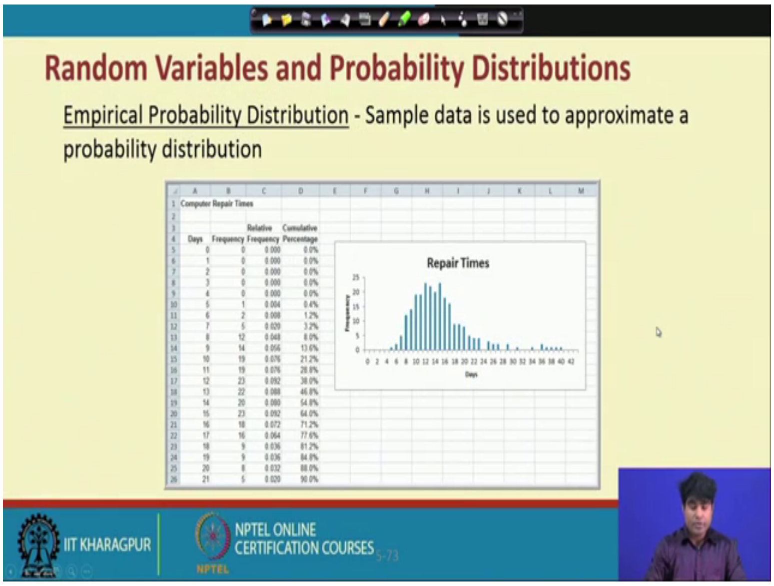

So, now corresponding to this, this particular case if you move further then you know we have already discussed this particular concept the computer repair times. So, now, I am again plotting the same. So, here in the case of probability distribution, all the possible outcomes need to be plotted and then you know you the idea is you know you have to check how these actually outcomes are and that to which distribution it follows. So, depending upon particular distributions, then you will apply the prediction rule or as per your problem requirement.

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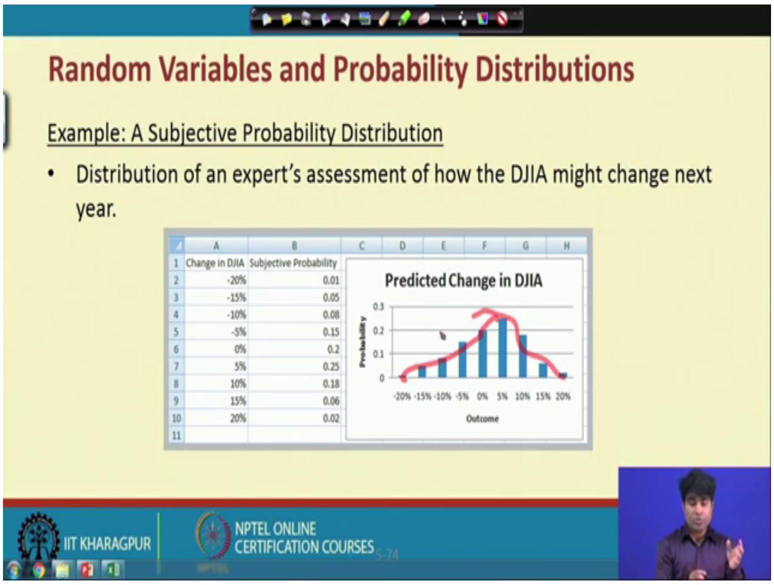

So, accordingly this is another examples here. So, then corresponding to this you know you know chain situation, then the availability of probability once you plot then; obviously, it will also follow a kind of you know probability you know kind of pattern. And this again if you connect this will be. So, you some kind of you know distributions. So, now likewise you know, so here the idea is you know how probability it can be connected or you know to you know create a kind of you know distributions. So, this is how you have to understand.

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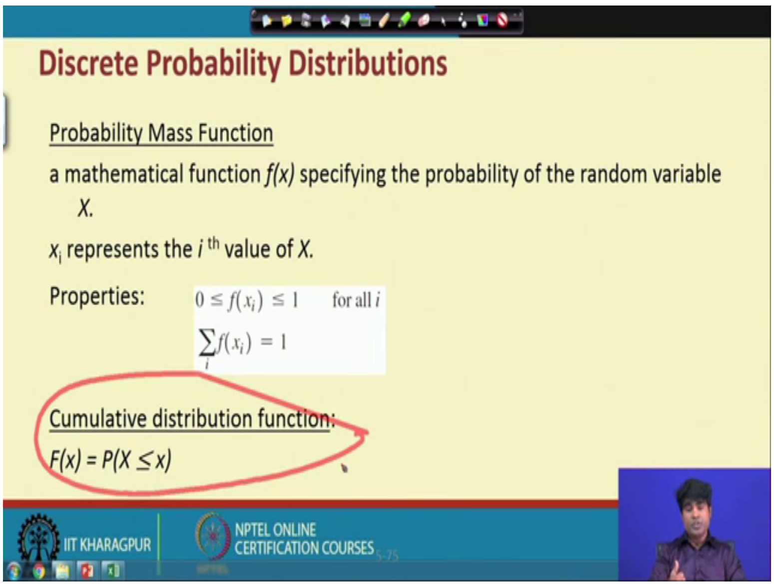

And then again so there is a concept called as you know probability mass functions. It is a kind of you know mathematical function and represented by f of x specifying the probability of the random variable X, so that means, x will specify the particular case; that means, x i represents the ith value of a X. So, we have a number of cases. So, I may be you know moving from 1 to 10, so then you know you will define what is the probability of x 1, probability of x 2, probability of x 3 up to probability of you know x 10s. So, the cumulative probability distributions, cumulative probability distribution, so you like to find out you know individual kind of you know probability then finally, you have to find out you know cumulative probability.

So, now cumulative probability means you have to add you know one by one then finally, if you follow up the probability principle then the finally, you will get you know some of the you know point will be exactly equal to 1, so that is what actually the total probability. So, that means, technically we have already discussed earlier the value of the probability will be 0 to 1; and in between 0 to 1 and the total probability will be exactly equal to 1. So, this is also you know applicable here in the case of probability distribution and then accordingly you have to analyze the kind of you know business problems.

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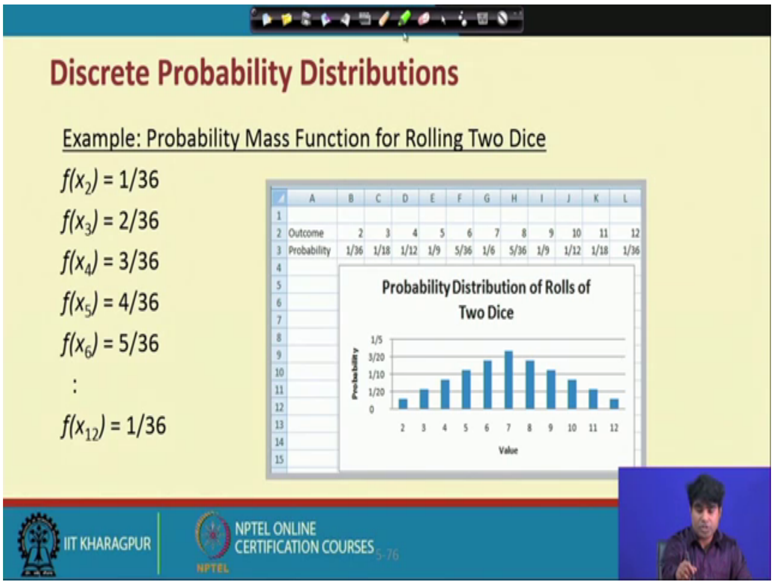

So, same things, so earlier case we are actually using P. So, here we are actually using probability mass functions by a citing you know f of x. And depending upon you know exchange, so you will get a kind of you know probability structure. And if you plot then it will give you a kind of distribution, so that particular structure is called as you know discrete probability distributions. In the case of continuous probability distribution, the structure is a little bit you know different because you need to you know say aside the kind of you know interval structures.

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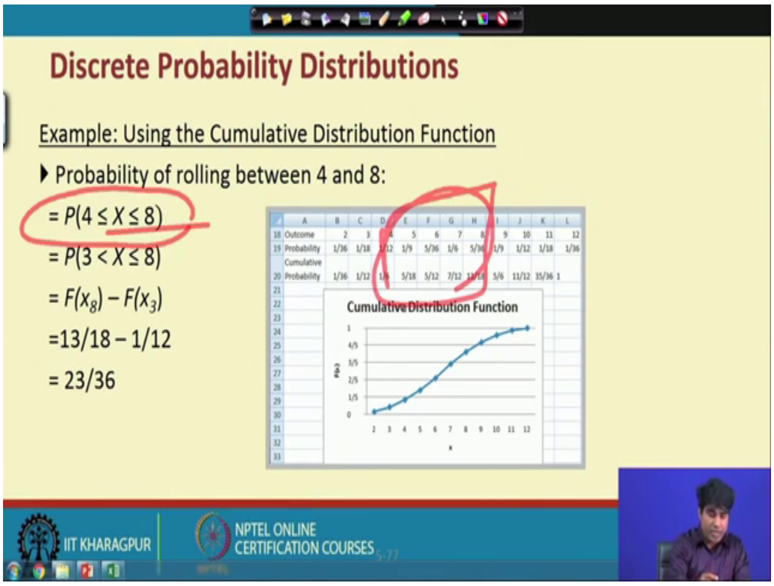

So, let us you know move to that particular you know concept. So, here is the kind of you know a structure called as you know cumulative distribution function. So, probability of rolling between 4 and 8 right 4 and 8 means, so the idea actually here, so this is what actually the representation P you know. So, x is the kind of requirement and that to in between 4 and 8. So, we have actually a 2, 3 4, and 8, so this is how the kind of you know structure we need actually this much. So, then so P 4, 8 means so probability of 4 minus you know probability of 8. So, f of you know x equal to 4 and f of x equal to 8 then you will get the particular you know probability again.

So, this is actually some kind of you know micro specific kind of you know requirement. Again probability of 3 a probability of X which is you know between 3 and 8 so that means, this is the case typically. 13 by 8 minus 1 by 12, so this will give you the value of probability 23 by 36 right. So, likewise actually so the probability mass functions will give you some kind of you know overview to understand the concept of you know probability.

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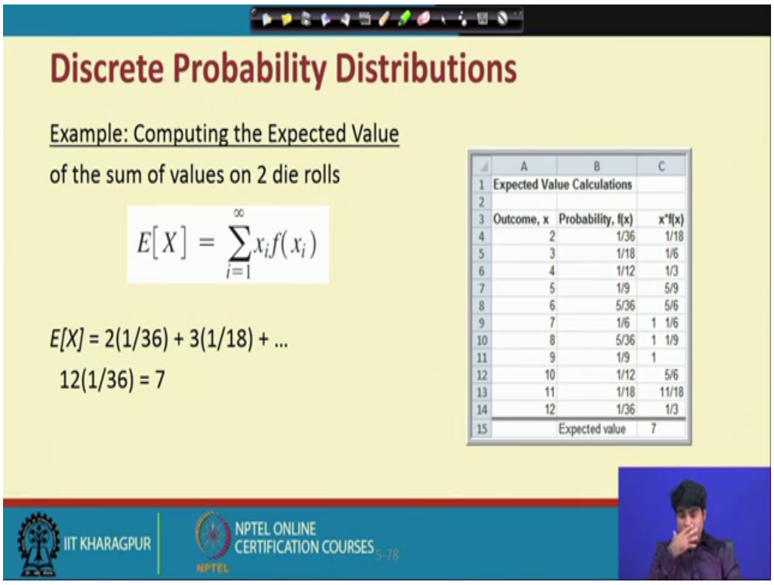

So, now we have already discussed you know mean and you know variance standard deviations. Now, through probability distribution you can also you know calculate the mean variance etcetera of this particular you know series. So, when you are you know playing the particular game, then the possible outcomes will be coming one after another, so that means, all possible outcomes are you know known to you corresponding all possible outcomes. So, you have actually probability. So, now so that is what actually called as you know sample points.

So, now corresponding x, x and you have a frequency or you know probability, so now in order to get actually a mean of this particular you know distribution or mean of that particular series or variance of that particular series then you have to just connect with you know x upon the corresponding probability like you know a cited example is you know what we call as you know weighted mean. So, now, this probability is nothing but you know called as a weight vectors.

So, now corresponding to x entry then you have to find out what is the corresponding f p. So, it is something you know summation p i x i. So, for a particular you know if you know situation, so what should be the probability then all possible cases. So, if you if you add up then by default we will get you know you know kind of concept called as you know average of this particular series. Here we called as a concept call as an expected value of x and this is nothing but you know summation p i x i divide by summation p i that is actually sum of the frequency or sum of the probability. Since sum of the probability is exactly all means exactly equal to 1 and that is always true, so obviously mean of this particular series will be summation x i f x i only. So, this is the cited example here. And the particular concept will be like this. So, this is what the kind of you know structure. So, you know you will continuously move up to a particular you know situation then finally, you can calculate the kind of you know mean of this series.

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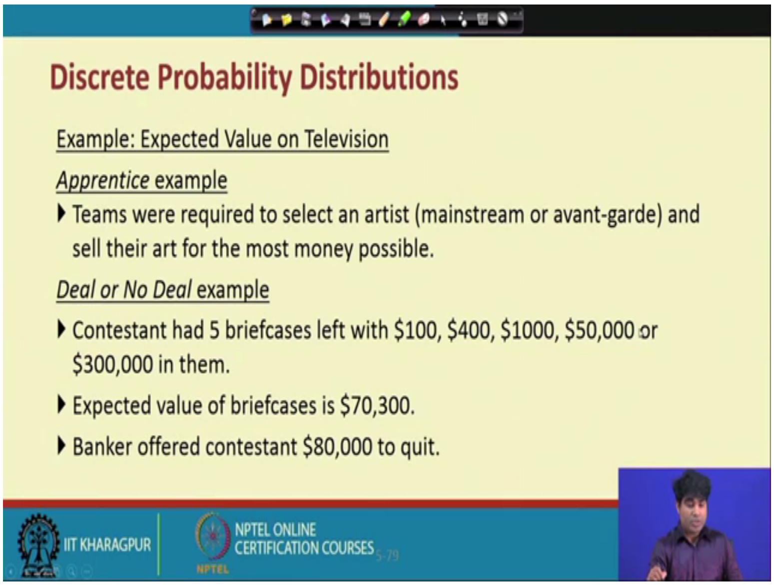

So, similarly you can actually calculate the variance of the series. So, I will show you in details in the excel sheet. So, here expected value of you know (Refer Time: 15:01) this is specific actually examples and like you know these are you know possible cases. And what is the expected value of this particular you know series and obviously, connect with the probability then you know find out the expected value. It is nothing but actually to what we call as you know mean occurrence and the variance will be by default will be check the volatility part of this particular you know series or you know distributions.

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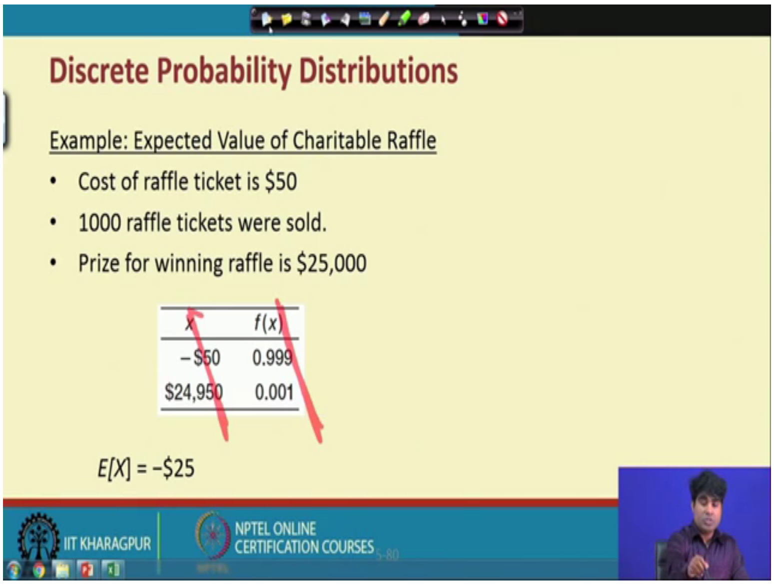

So, this is what actually a you know another way of you know citing this discrete probability distributions. So, cost of this particular you know ticket is you know dollar 50, then a corresponding to this you know the information, so you have to create a distribution. So, these are all called as you know x possible situation, and this is the f x possible situation, then you have to find out the mean of this particular you know series.

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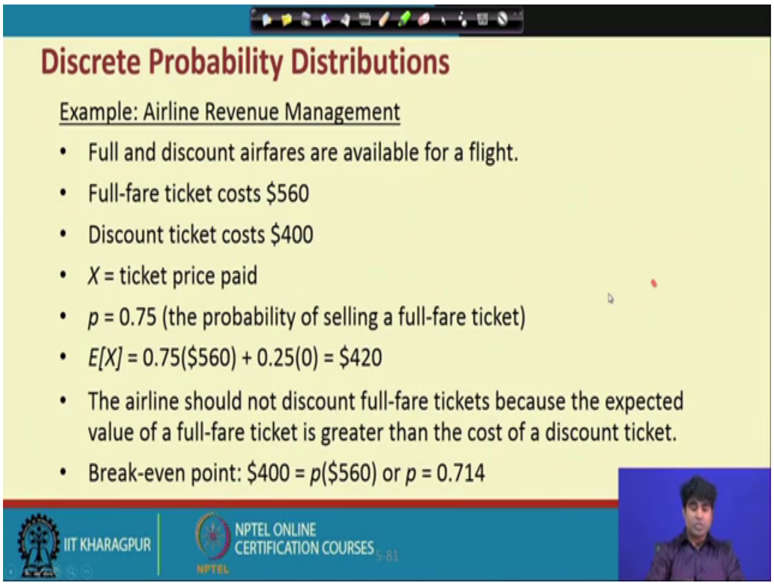

So, means like what I like to summit here that you know this is a standard kind of you know structure through which actually you have to generate a distributions. And once you get a distributions then in order to address you know furthers, you have to find out the average of this particular distribution, variance of that particular distribution. And if there are you know two such kind of you know parallel kind of structure, so then you can also connect with you know association establishing the association kind of you know concept and that can help you to predict the kind of business problem or business environment.

This is another kind of you know typical examples through which actually you have to predict the particular you know environment. Here simply actually number of cases and then corresponding to probability, and you have to find out the mean of this particular you know happenings. Then with the help of you know mean of the happening, so you can predict the particular you know business environment. This cited example is here the kind of you know airline revenue management. So, you have actually ticket cost and ticket price then what should be the expected probability a of you know selling full-fare ticket, so that you know here business will be at the highest levels.

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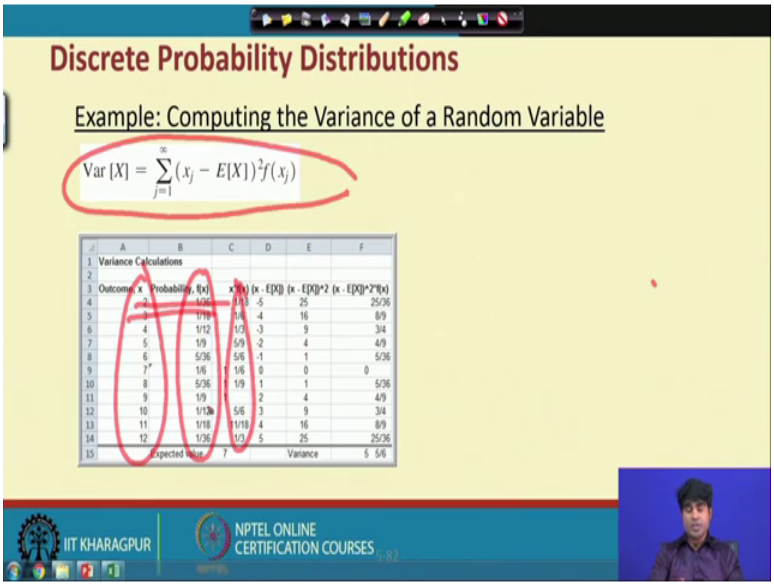

So, these are the typical example which you can follow. And what I have already mentioned, so you know you can calculate the variance of this particular series. So, the kind of you know example which have cited, so this is actually x occurrence and these are all corresponding probability. So, just you have to multiply then you will get x of f x. So, this will give you the kind of you know mean of the x series. If you sum altogether, then you will get a concept called as expected value of x. And the difference this is actually standard variance formula, which we have already discussed earlier.

Here only thing is you know you have to connected with this probability concept only. So, then ultimately so you will get a variance vectors. So, now, with the value of you know mean and variance, you can actually predict the particular you know situation. So, for instance you know if you are predicting a particular business, so the means should be high and the variance should be low. So, now a different situation you have to apply accordingly and then you have to follow kind of you know structure.

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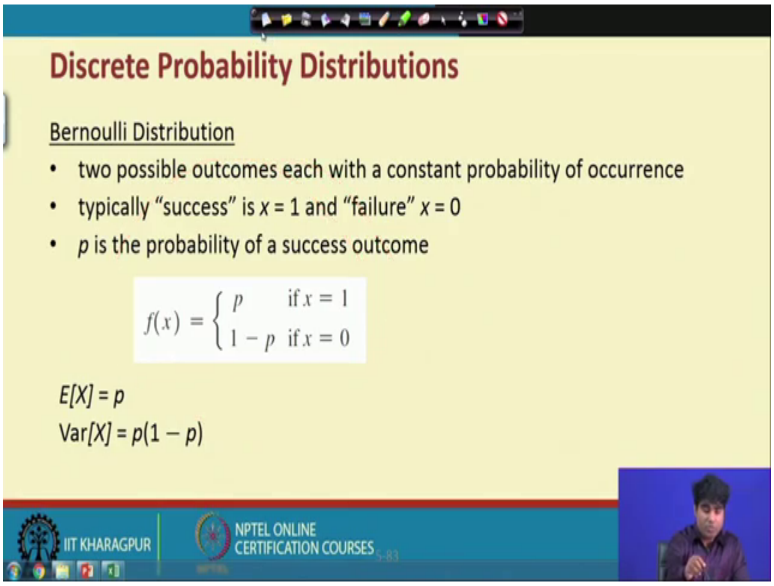

So, after knowing all these kind of you know probability and probability distribution then we will go by specific case. We have actually couple of you know cited examples starting with you know binomial distribution, then Poisson distribution, normal distributions, exponential distributions, uniform distribution so that means, actually having the information and the corresponding probability, you have to typically follow how is this particular you know concept. So, this is actually Bernoulli distributions and here. So, it is nothing but actually the concept of you know probability of success to probability of you know failure of a particular you know a event.

So, this is the concept where you know binomial distribution or you know Bernoulli distribution is concerned. And then accordingly you have to calculate the mean of this particular distribution and variance of this particular distribution that means, once you have a probability distribution then in order to predict the particular you know situation as per the requirement, you have to report the mean and variance. And with the help of you know mean and variance, you can get to know what is happening and what should be the kind of you know future strategy.

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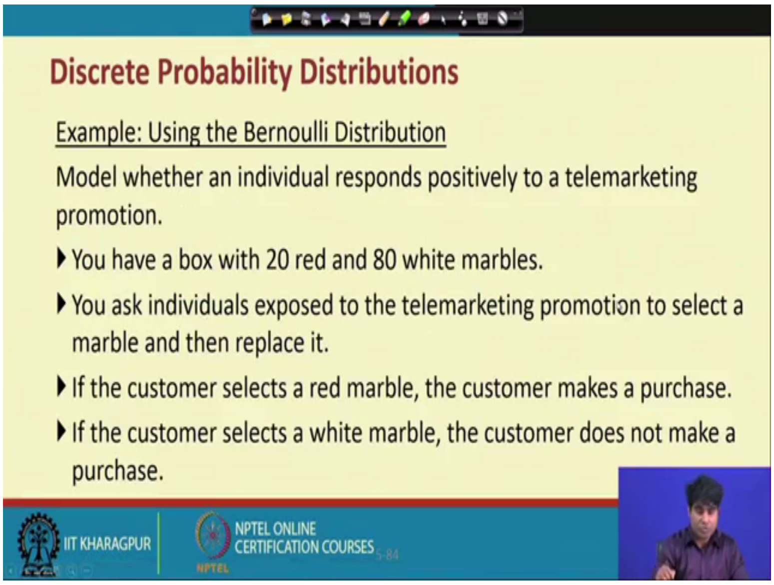

So, likewise you know you have actually a similar kind of you know examples. So, these are all actually cited examples which will be connected with Bernoulli distribution.

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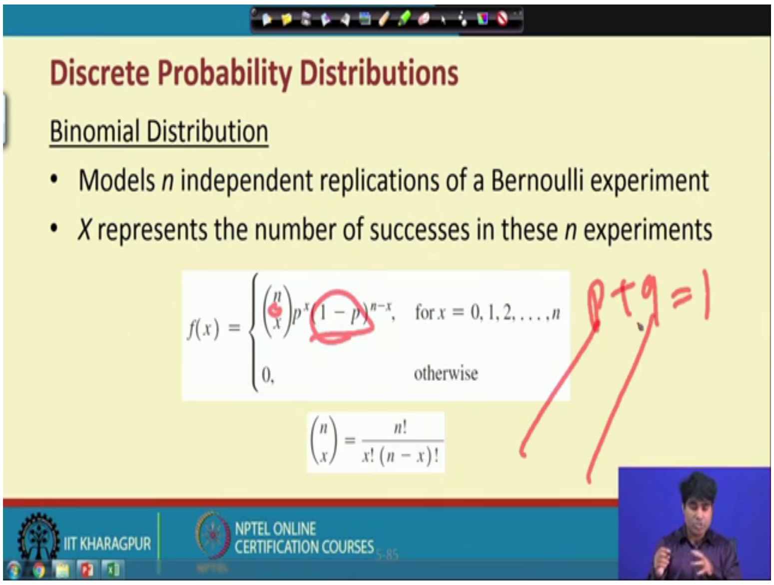

And I am not going in details, but I am directly coming to this you know binomial distribution structure, where the particular structure is a followed by n c x p x 1 minus p to the power n minus x. So, here hence this is actually c is missing here, but actually say n c x. Then this 1 minus p is nothing but you know called as you know q; and p plus q is nothing but actual equal to 1. So, p is the probability of success, and q is the probability of failure. Then the distribution will be follow like this. So, x upon you know binomial distribution so that means, the structure will be exactly create a kind of you know strategy through which you can understand how is these particular you know game altogether.

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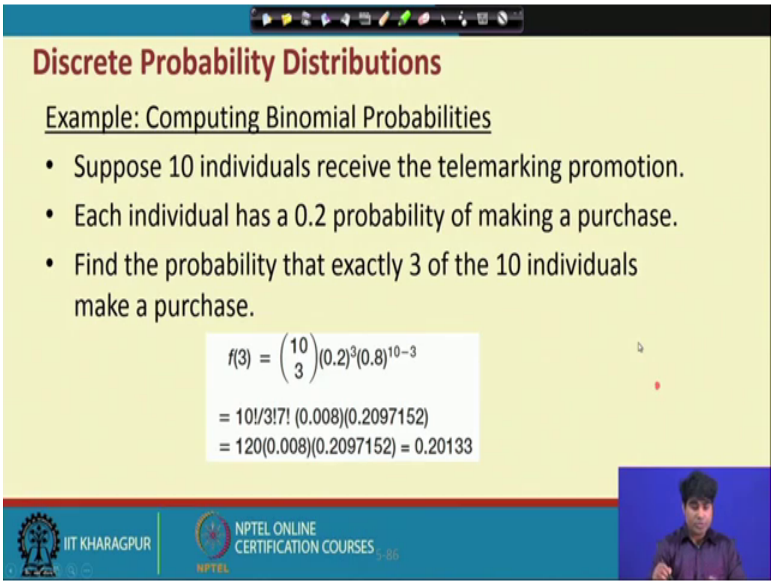

So, like this you have a another distribution called as you know what will call as you know this is what is a typical example of you know binomial distribution. I will take you to the excel sheet and you know show you how actually it is coming altogether. This very simple actually, so n c x p to the power x q to the power you know n minus x means you have to just see the probability structure, the individual requirement and the kind of you know sample requirement, then accordingly you have to find out the probability that is what actually prediction structure altogether.

So, let me first highlight all these distribution then I will take you to the spreadsheet and show you how these actually coming, and what is the kind of you know probability or you know prediction strategy altogether.

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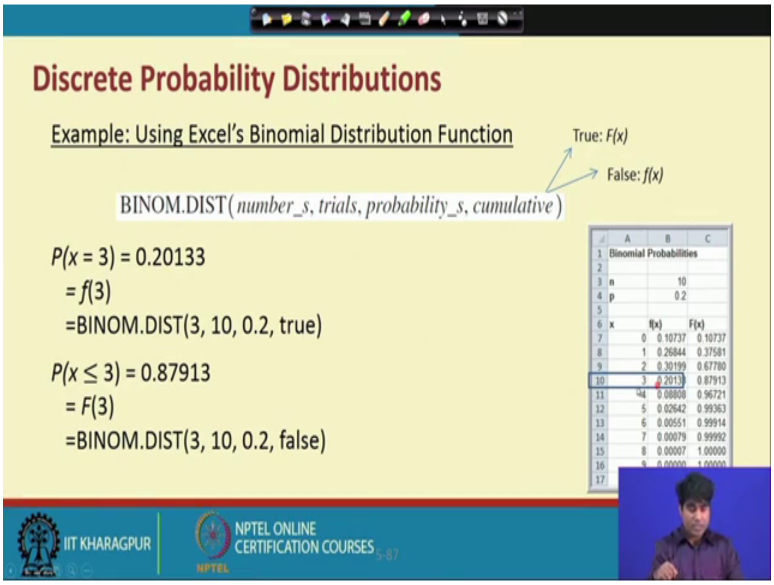

And this is how the you know what we called as you know excel spreadsheet, you have to just follow this particular you know structure to get the kind of you know distribution patterns or you know the kind of you know probability requirement. It is exactly the probability distribution, but it will follow a particular you know patterns.

For instance in the binomial distributions, so you have to fix the numbers then the trials then the probability and then whether you are looking for a particular case or you are looking for you know kind of you know cumulative case. So, accordingly so you have to find out the particular you know structures.

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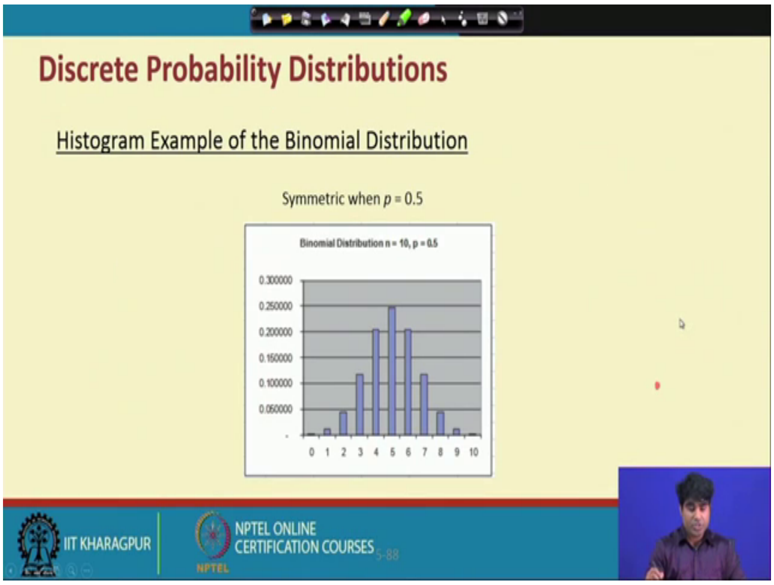

This is a example for discrete you know binomial distribution. And again it will be follow a patterns this is what actually probability distributional together so that means, whether you are using the binomial distributions or Poisson distribution or exponential distribution; obviously, you have x occurrence and the corresponding probability. So, the probability may be following actually binomial kind of you know structure or exponential kind of you know structure, uniform kind of you know structure like this you know. So, depending upon the kind of you know game, it will be actually having you know kind of you know difference. So, we like to check what is the kind of you know difference altogether.

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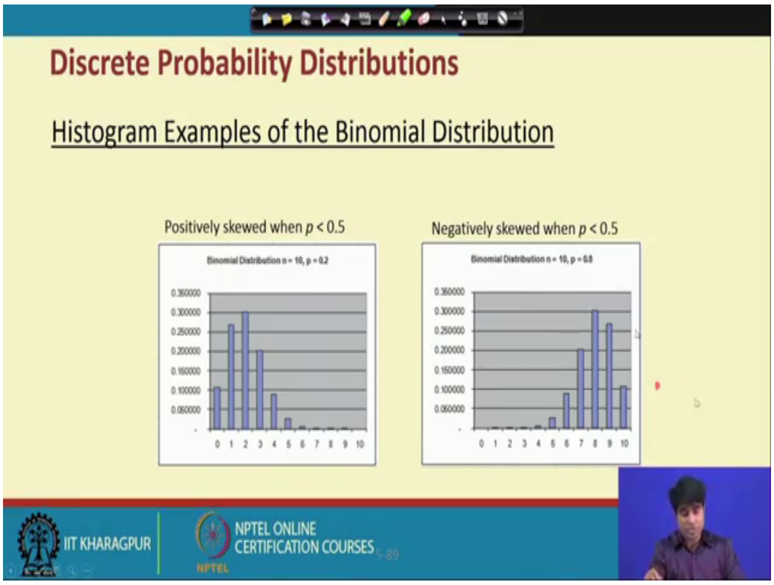

So, this is another kind of you know example of you know binomial distribution.

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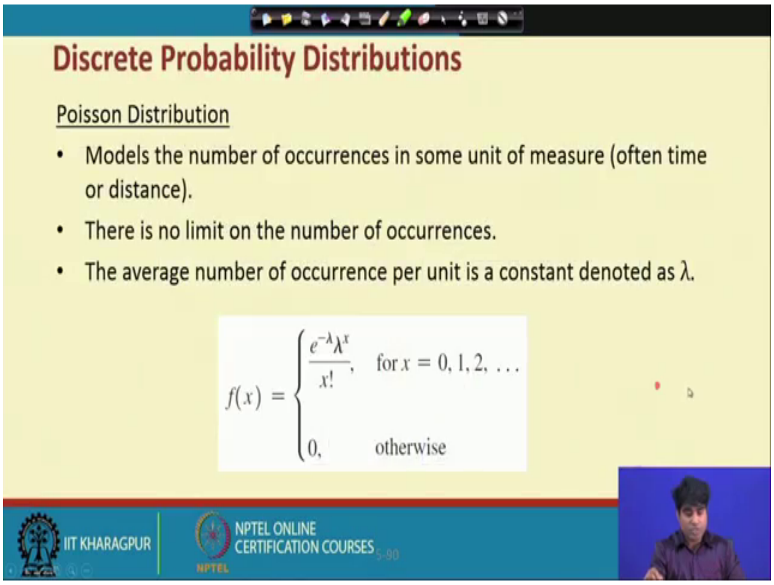

And another distribution is called as a Poisson distributions. So, here so the number of occurrence in some unit of measures, and there is no limit on the number of you know occurrences. Here the average number of occurrence per unit is a constant and that is denoted by a structure called as you know lambda. So, now, the probability mass functions for this you know Poisson distribution will be this one. And again with the specific you know parameters value, you can actually predict the particular environment and create a distributions. So, again we will highlight in details in the excel spreadsheet. So, let me complete this one first then we will move to this.

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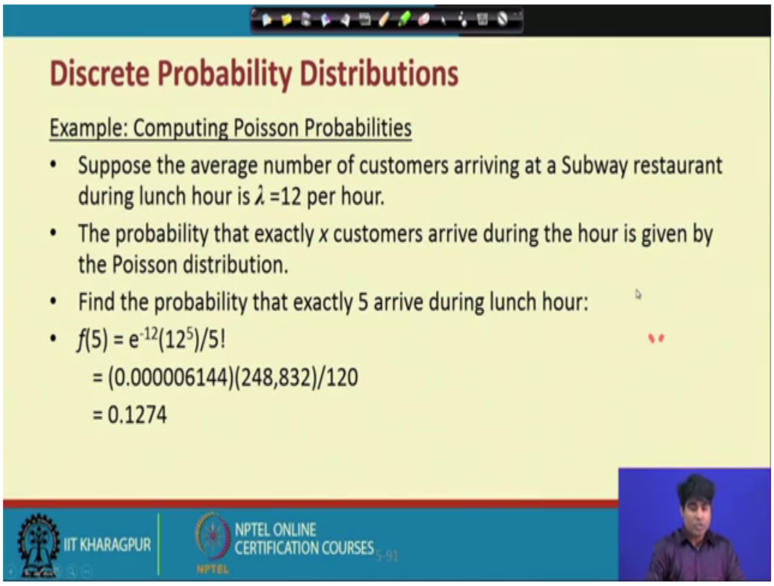

So, this is the details about the Poisson distributions and this is the classic examples through which actually you have to apply the kind of you know Poisson distribution and to predict the particular you know environment.

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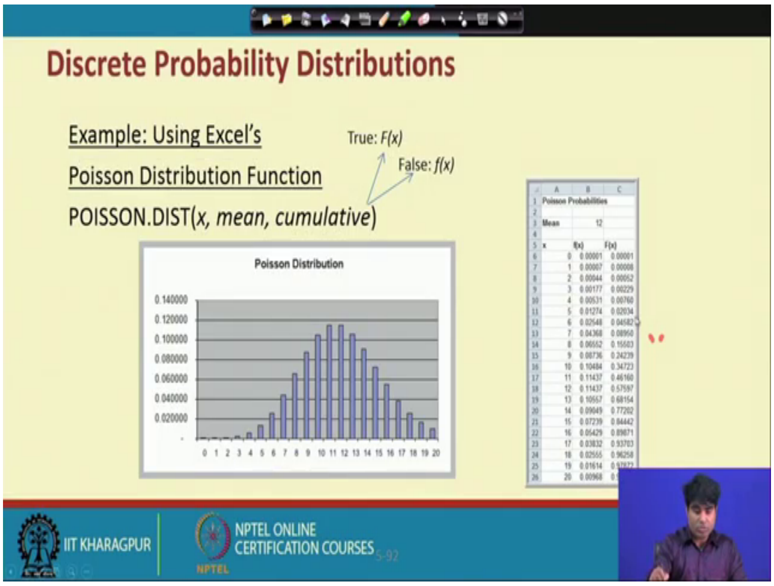

So, again this is the a kind of you know structure which you can follow in the case of you know excel spreadsheet to predict the particular environment. These are all you know x occurrence, and these are all you know corresponding frequency, and this is corresponding cumulative frequency.

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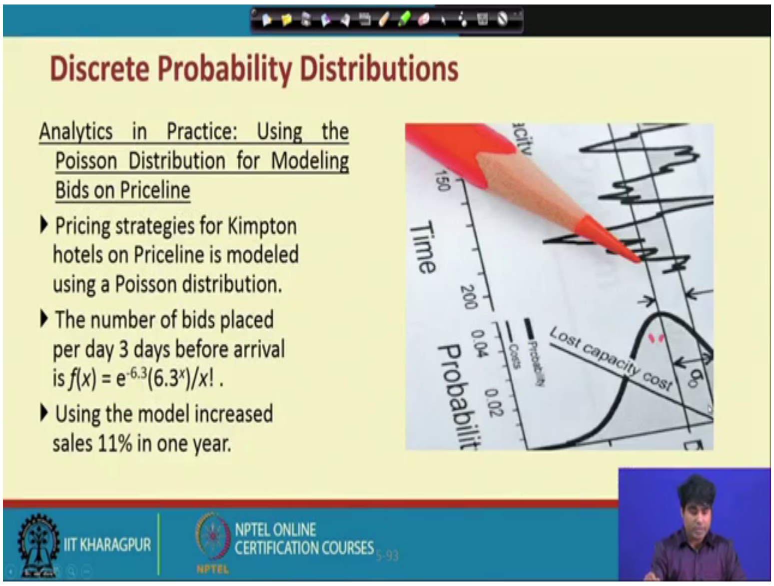

And then this is the classic example another classic examples that is pricing strategy for Kimpton hotels on Priceline these models using a Poisson distribution the number of you know bids placed per day three days before arrival. So, actually depending upon the parameters value then the prediction will be like this; and accordingly it will give you the kind of you know probability is about you know 11 percent.

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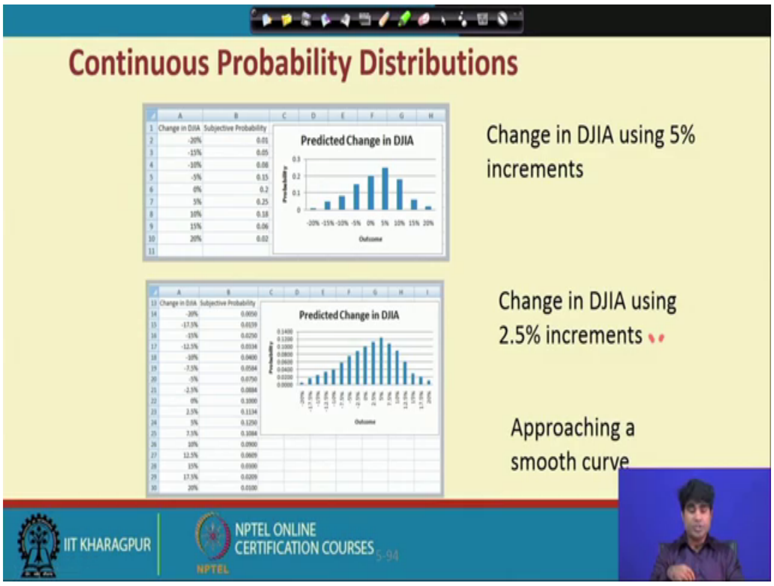

This is another kind of you know structure called as you know continuous probability distributions.

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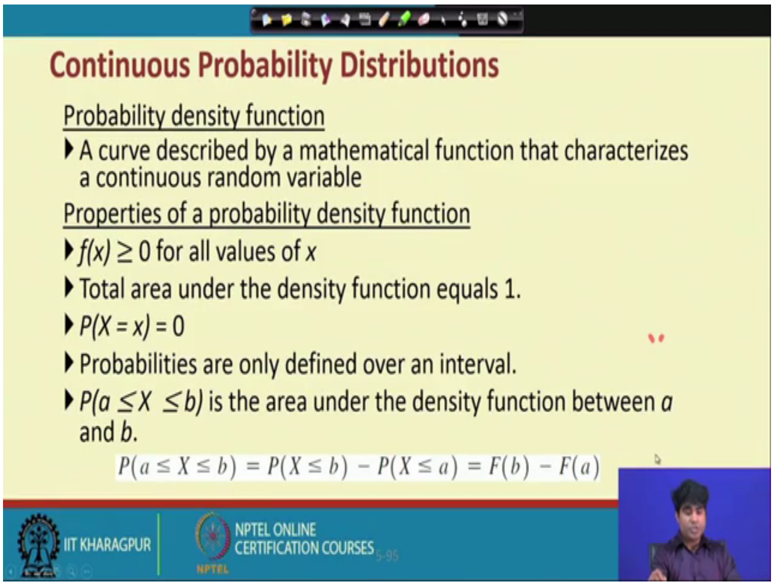

And in the continuous probability distributions, so your probability will be lying between two different intervals, so that is why here the structure will be probability of a less than equal to X less than equal to b.

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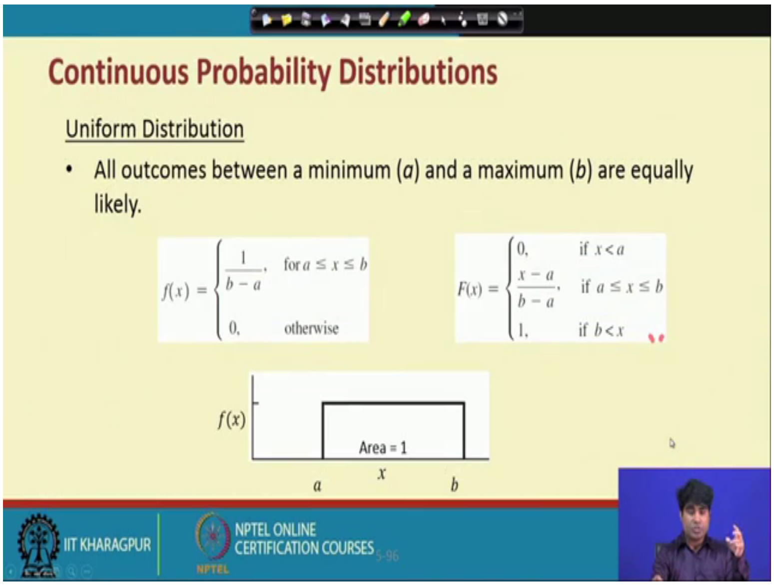

And standard example of this particular distribution is called as you know uniform distributions. And the probability density function will be follow like this and corresponding to this one's unit distributions we have actually so this is actually same expected value and variance.

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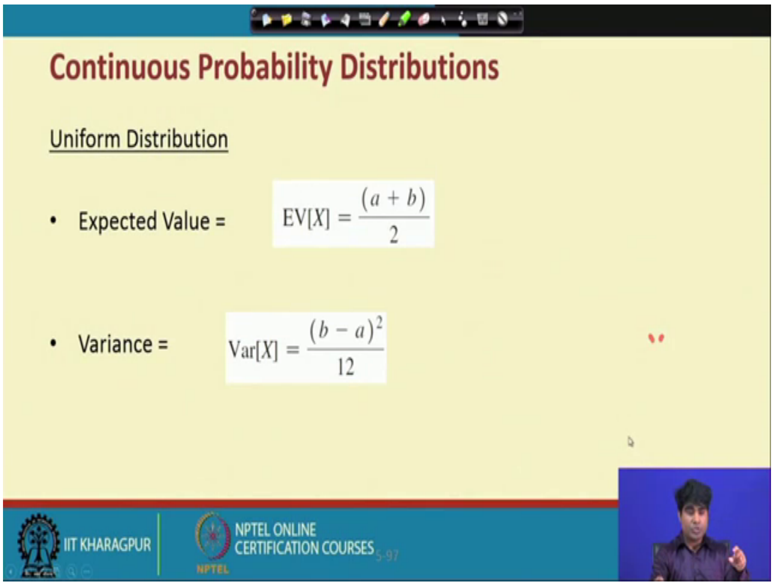

It means whether you know binomial distribution or you know Poisson distribution or uniform distribution, every time corresponding to the x, you have to use the mass function and create a probability structures. Then once you create for all x, then this will be create a distributions. And then you have to report the expected value and variance; and in order to understand the particular you know situation and then you have to predict as per your you know requirement.

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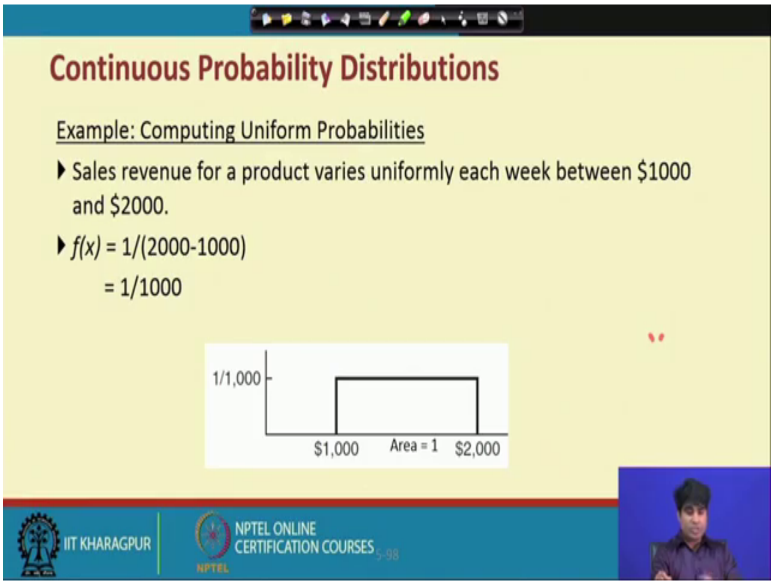

So, similarly this is the classic example of you know uniform distributions.

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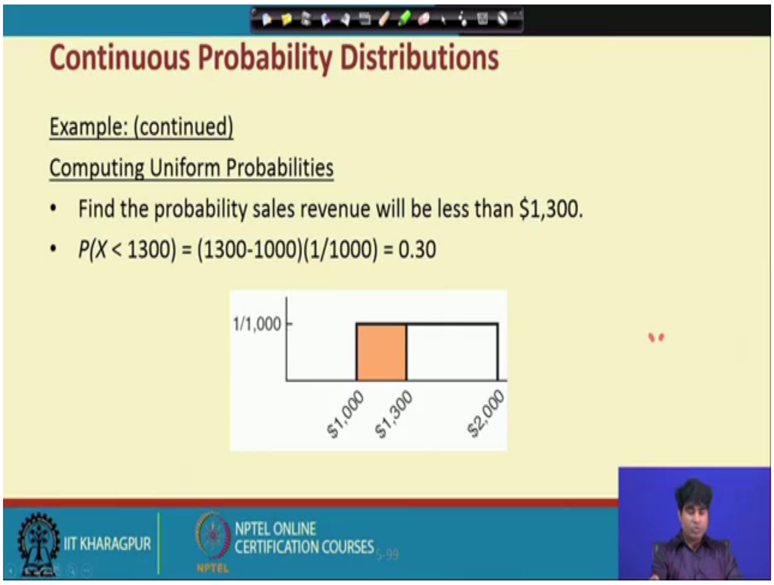

Followed by uniform distributions, so this is the exact structures will be following the uniform distribution.

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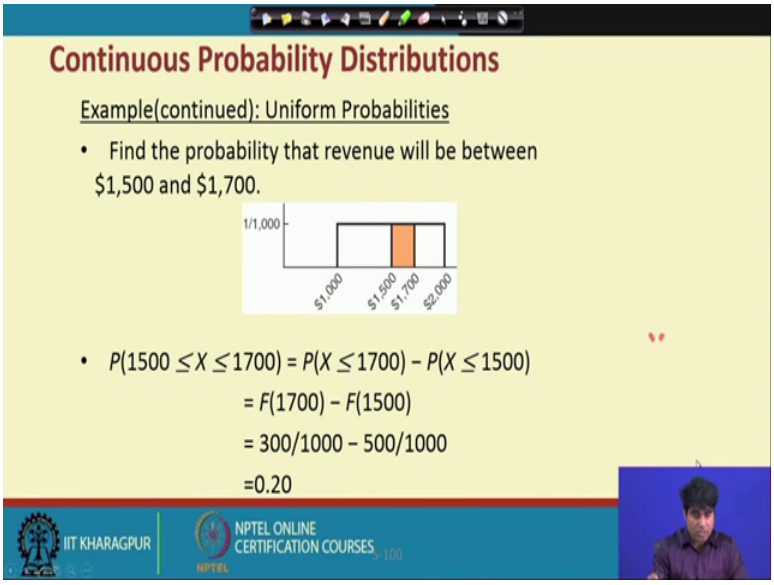

And then I will take you to the examples so this is the actually the kind of you know distribution which you need very frequently for any kind of you know business analytics that is called as you know normal distribution.

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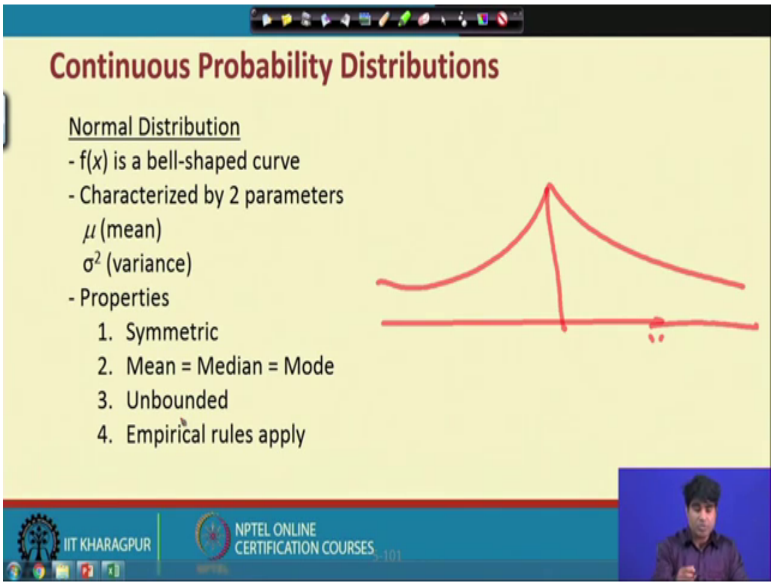

And it is a bell shaped curve and you know understanding is with respect to two parameters mu and sigma squares that is called as you know mu mean and variance sigma square. So, usually the normal density function will be followed by a kind of you know structure where it will be show you this series kind you know whether it is a symmetric or you know kind of you know skew. So, in a kind of you know normal distributions usually the structure is symmetric, and where mean median mode will be coincide and in fact it is a bell shaped and the end part of this particular curve will be typically called as you know asymptotic in natures.

So, the usual structure of the normal distribution curve will be like this. So, this will be the kind of structure. It will be asymptotic that means, a you know it will be parallel to you know x-axis in both the sides, but it will not touch, so that is how it is called as you know unbounded; and through confidence interval you have to predict the kind of you know probability depending upon the particular situations.

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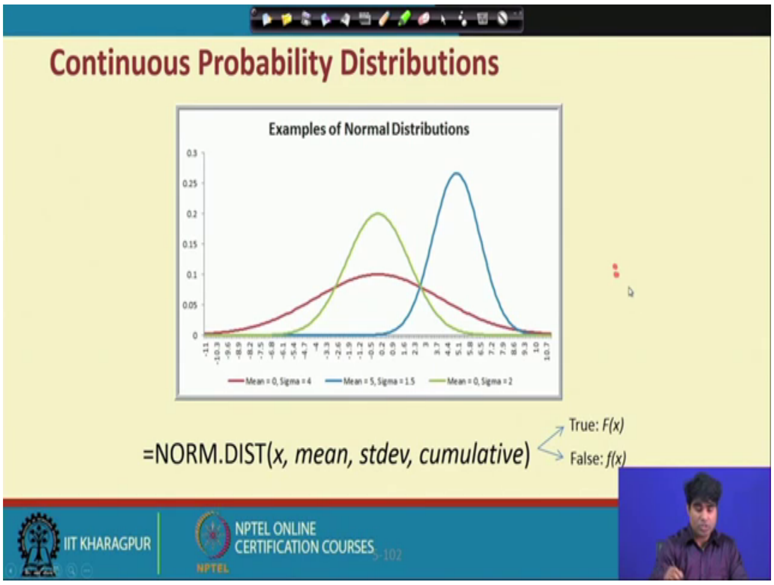

So, let me give you the kind of examples which you can actually used in the case of you know normal distribution. This is actually we have discussed earlier corresponding to oh kind of you know you know the discussion on you know descriptive statistics where you know we have pointed out the shape of the curve or shape of the particular in order to spreadsheet. So, whether it is a symmetrical or skewed whether it is a right skewed or left skewed kind of you know thing, so normal distribution give you better structure through which you can project the particular environment.

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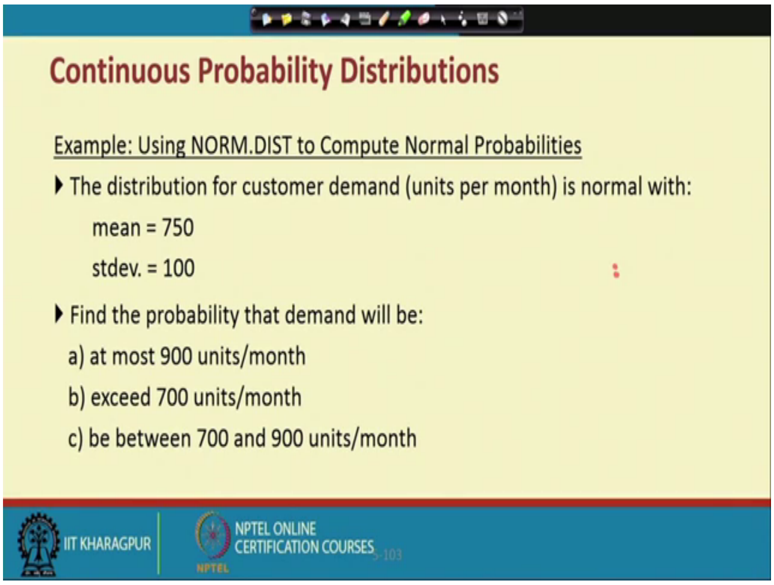

This is continuous probability distribution case, where mean and standard deviations will be give hints, then with respect to a particular requirement you have to calculate the probability.

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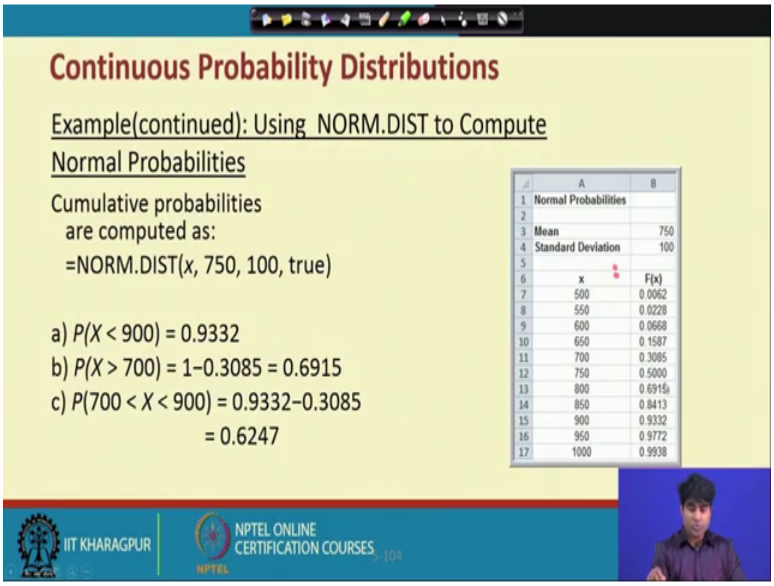

So, likewise we have and this is what the typical you know structure about the normal distribution case. And here you have to calculate the individual probability, and then you have to connect with you know cumulative probability. And these are the typical examples or specific you know then through density function you have to calculate the kind of you know requirement. So, this is what actually the kind of you know continuous process. So, again I will take you to the excel sheet and you know so you have that (Refer Time: 28:29) will be coming.

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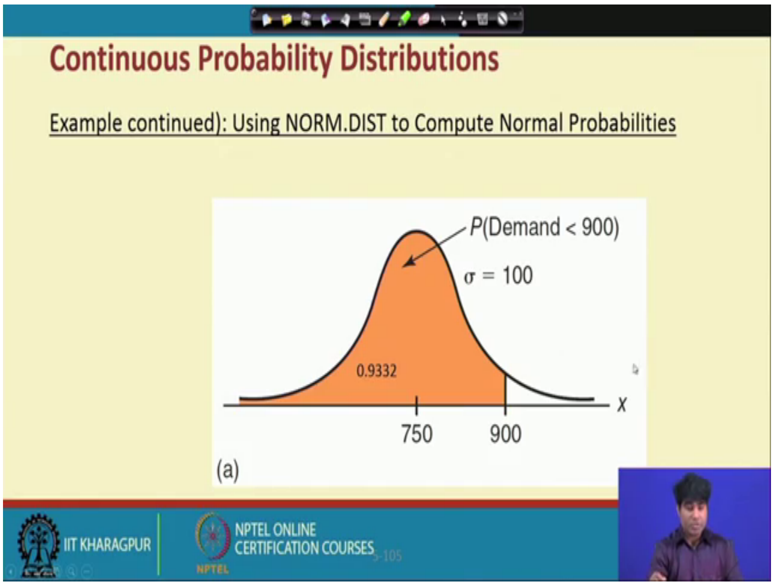

So, this is a typical future of you know normal distribution. Obviously, in any kind of you know distributions, so the picture will be remain same. So, the probability will be positive and it will be follow a kind of pattern. And if you know add up all the individual cases, then the sum will be exactly equal to 1; whether it is a binomial distribution, whether it is a Poisson distribution, whether it is a kind of you know uniform distribution, or whether it is a kind of you know normal distribution.

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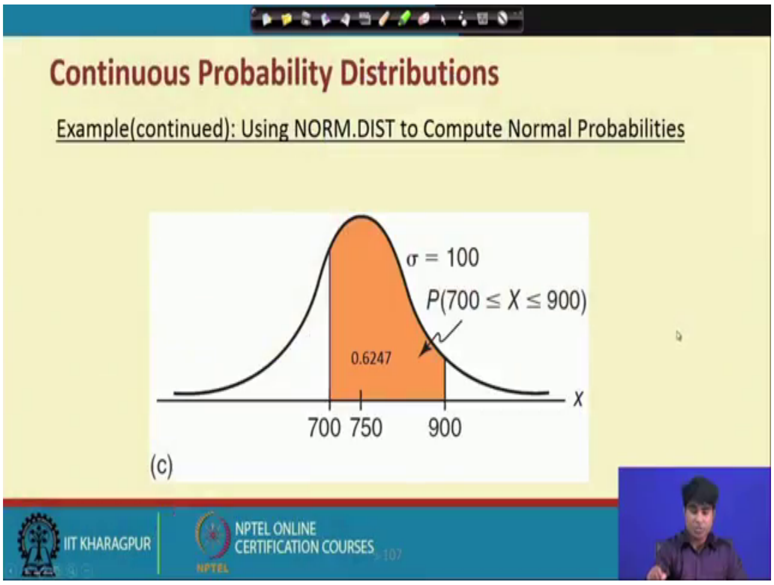

So, the principle is almost all same, but you are supposed to actually these are all specific different kind of you know cases through which you have to observe the particular you know structures.

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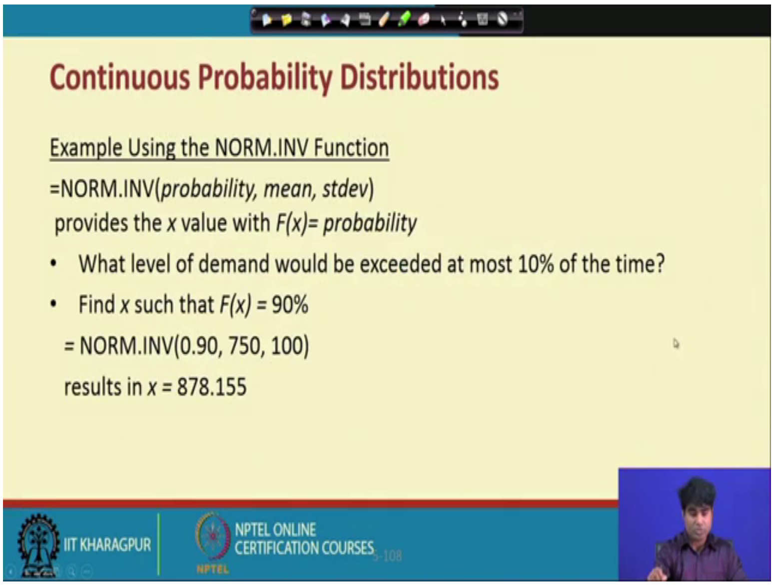

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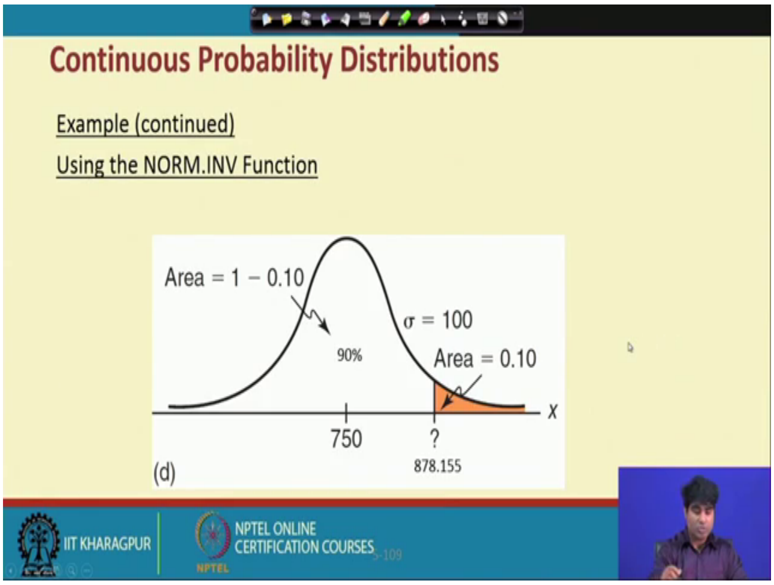

So, let me take you to the particular you know example then I will show you how actually it works altogether.

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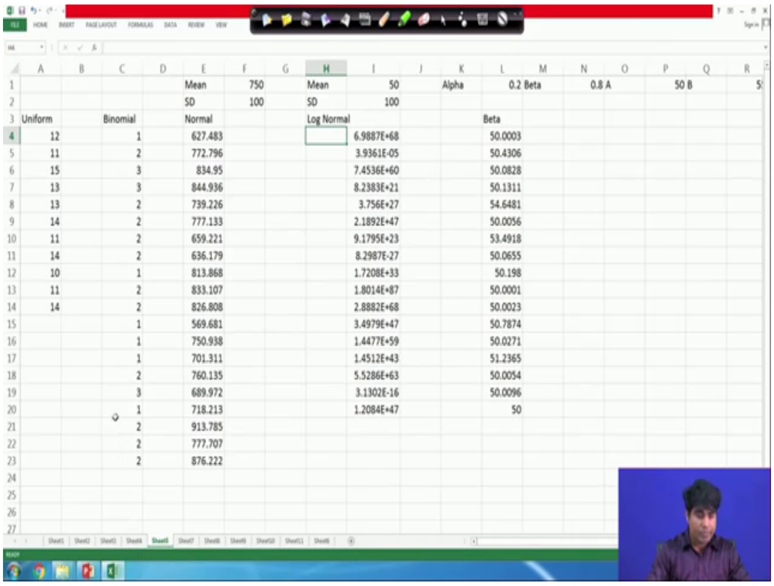

So, now see here.

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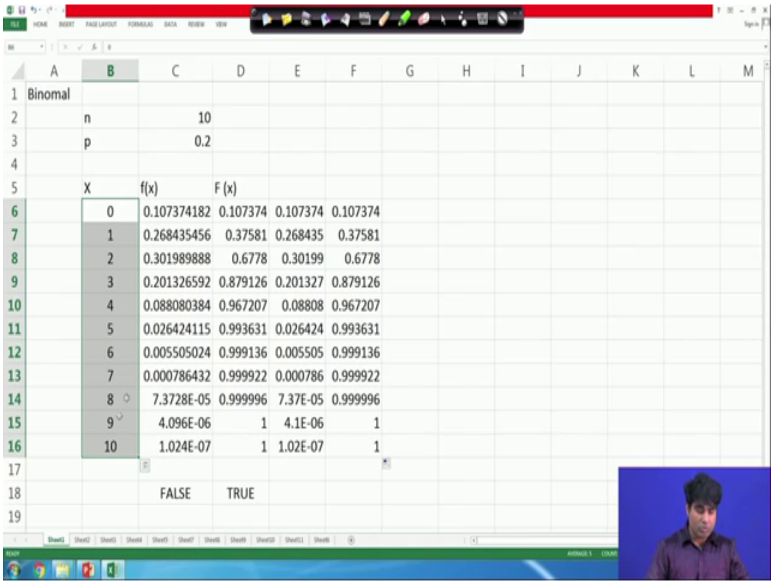

So, I will take you to the particular case let us say binomial distributions. We have already discussed the case of you know binomial distribution the probability mass function will be n c x b n to the u to the power n minus x and then accordingly you have to calculate. So, let us say that you know x is a random variable and the x you know structure will be followed by like this. So, let me little bit you know make it big. So, see here. So, in the binomial distribution the parameters are n and p. So, this is you know a sample kind of you know case and this is the probability below.

And here if you put actually this is actually binomial distribution what you will do here you just put actually let us say I will just show you how it is actually coming. So, let us say this is actually put equal to signs then you put actually binomial kind of distribution. So, by default binomial distribution will be coming like this. So, it will ask you to put the numbers that is n, which is nothing but actually a 10. So, this is actually no this is. So, let me start once again. So, this is actually yes. So, here actually variable description is required so binomial distribution. So, this is binomial distributions just put double click then the variable actually here the requirement actually number means this particular you know number.

Then put actually you know indications then the trials will be a 10 here then probability will be 0.2 here. So, then you have to give actually whether you need actually particular probability case or you need a cumulative let us say first you start with the probability particular case. Click there, and then close the loop, and then enter. So, this will be for you know x equal to 0, when x equal to 0, then probability a normal binomial distribution case, the probability structure will be 0.11. Then if you drag down then it will be generated up for you know all the x. So, this is actually you remove this one. So, this is up to 10. So, this will be follow a kind of you know distribution.

So, now if you need actually a cumulative structures then again you go to the binomial distribution and then you click here, then you first indicate the variables then followed by the trials that is actually you know any n, 10 then followed by probability that is 0.2 and then. So, you need actually you know indication about the false. So, we have already requested the false case, now we are reported the true case.

Then you just scroll it then you will get actually this is what actually called as you know cumulative frequency distributions. And this is what actually the you know you know excel spreadsheet will help you to calculate the binomial distribution corresponding to the parameters availability where n equal to 10, p equal to 0.2, and x is a random variable which moves from 0 to 10 right. So, it may be any kind of you know business problem, but the kind of you know prediction will be a follows you know this kind of structures.

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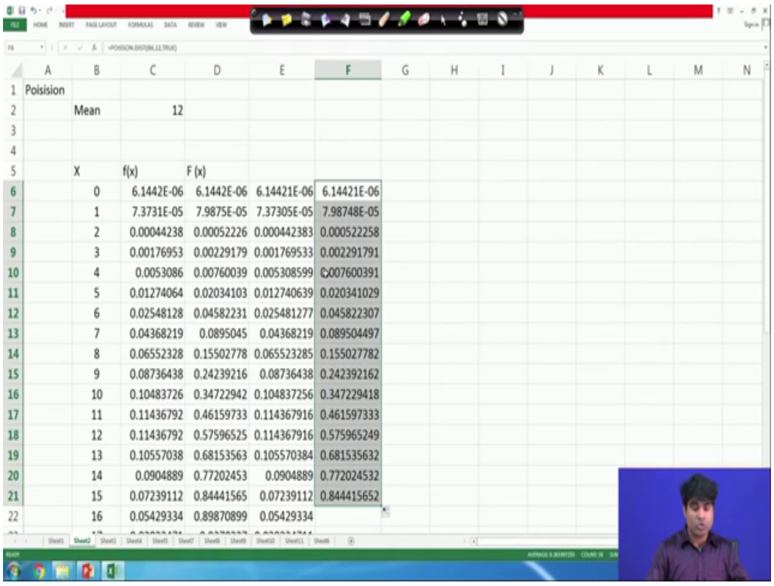

So, now corresponding to the binomial distribution you move to the kind of you know Poisson distributions. Here the Poisson distributions you know just against you go to the Poisson distribution put equal to signs then instead of binomial. So, you put actually

Poisson distribution, then you just double click again then it will ask you the x values, so that is nothing, but actually these random variables then it will be ask you to calculate the me you know report the mean value.

So, the mean value is given that is you know 12 here, so put here 12. Then again so it will ask you the false case and true case. So, that is nothing but you know the frequency and the cumulative frequency let us say put you know false case, then you know close the loop and put enter. So, it will you know give you the kind of you know probability. So, this probability is with respect to you know Poisson distribution. So, now, this will be generated.

And this is the case of you know false, again the same structure if you go by you know true then it will give you the cumulative frequency. So, again you put you know Poisson distributions, so click there then indicate the variable choice first, then put the mean that is it 12 then put actually the true case. So, then you close the loop then enters right. So, this will be give you the a kind of you know indication about the a cumulative structures. So, now, I mean say so this is how you know again excel spreadsheet will help you to understand the Poisson distribution depending upon the values of the random variable x and the mean of this particular you know parameters right.

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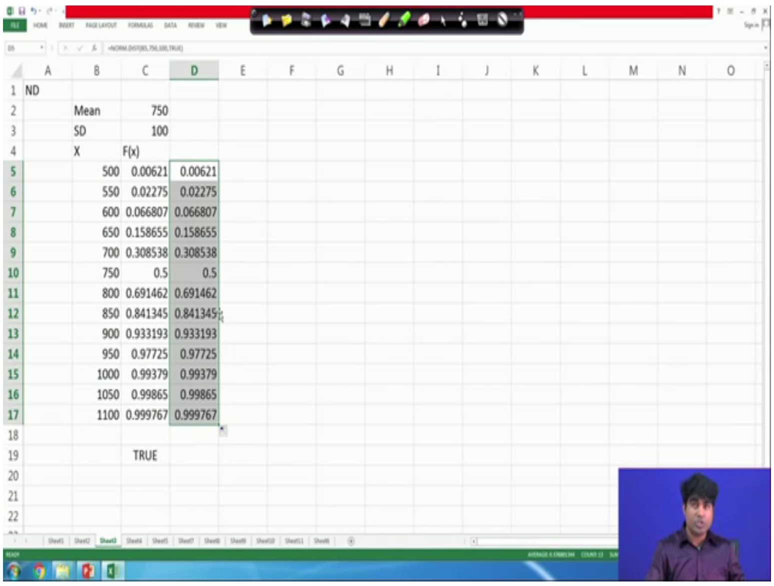

Again you go to the normal distributions. In the case of normal distributions, again same things here you have to you report the two parameters value mean and standard deviation, and the variable specification. Against I have actually specify here at the range of you know random variable x. Again the same structure you put actually equal to sign and then you put actually normal distribution functions. And here normal distribution by default will be coming. So, just click it then indicate the variable description here, then give the indication about the mean which we have already specified actual you know 750. And again so specify the 750, and specify the standard deviation that is actually 100.

And then you specify the kind of a particular requirement that is you put actually false then close the loop and enter. So, this will give you this specification. So, here actually it is better to put you know true because in the case of you know normal distributions, we need actually cumulative distribution. So, you write here true then you put the enter, so it will be give you the total probability 100 different situations right. So, this will be generated like this. So, this is the case of you know normal distributions.

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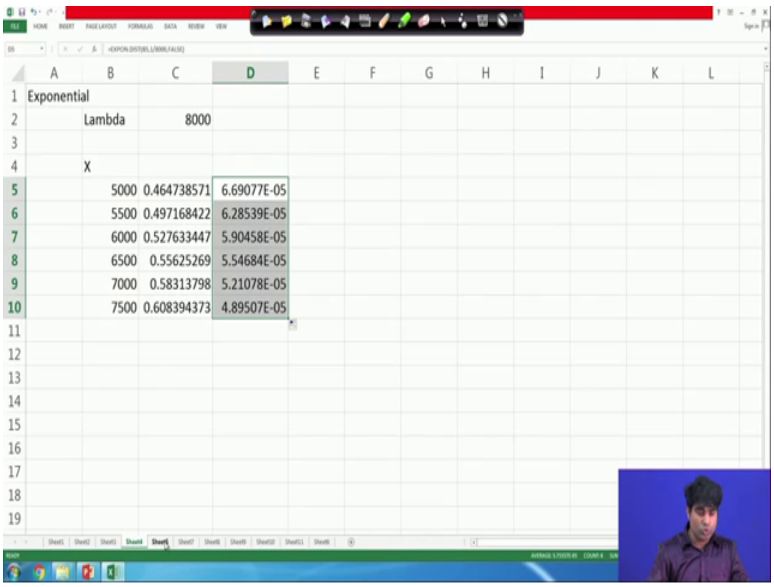

Again you go to exponential distribution case; here the parameter is in lambda. And the against you go to this kind of you know you know put this particular you know structure then you ask for you know exponential distributions and then exponential distribution. So, put here, so the requirement is actually variable indication again, first you put the variable indication, then the parameter value. So, the parameter value is here 8000. So, here the reporting will be 1 by 8000 that is as per the probability mass functions requirement. Then the kind of you know of false require indications then you just close this loop. So, this will be coming like this, this will be coming like this.

So, these are the kind of you know examples which you can cite in the case of you know various distributions. So, that means so what I would like to say that you know excel spreadsheet has a lots of you know advantage which I have highlighted earlier that you know we can predict the you know business environment or depending upon the particular situations or you know particular you know available information. So, now, in this case we have discussed various you know probability concept.

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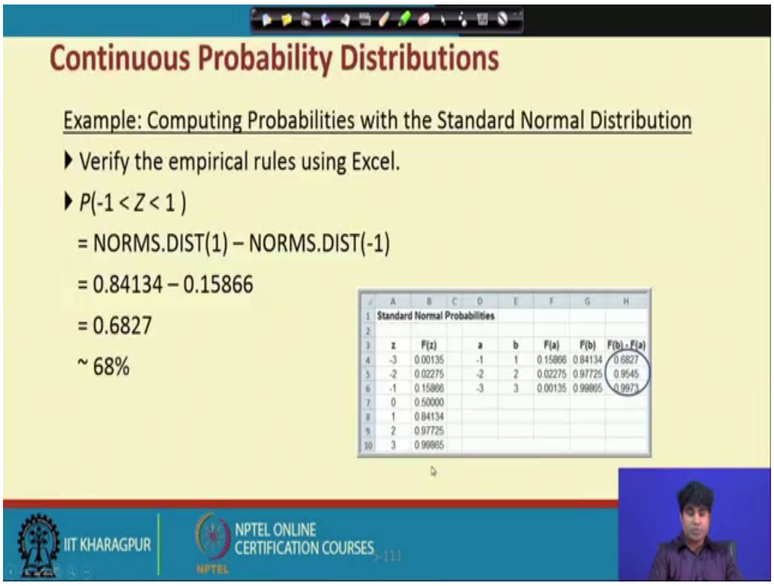

And various probability distributions to know the kind of you know requirement and to predict the a particular you know situations.

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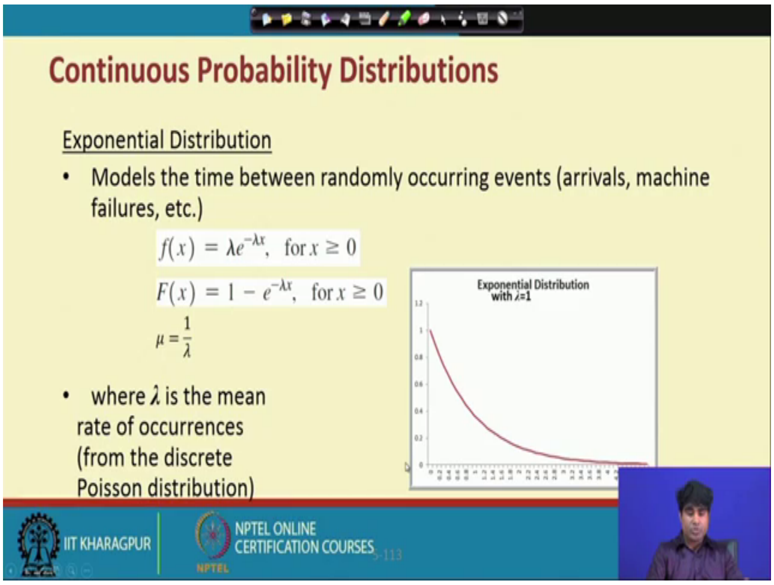

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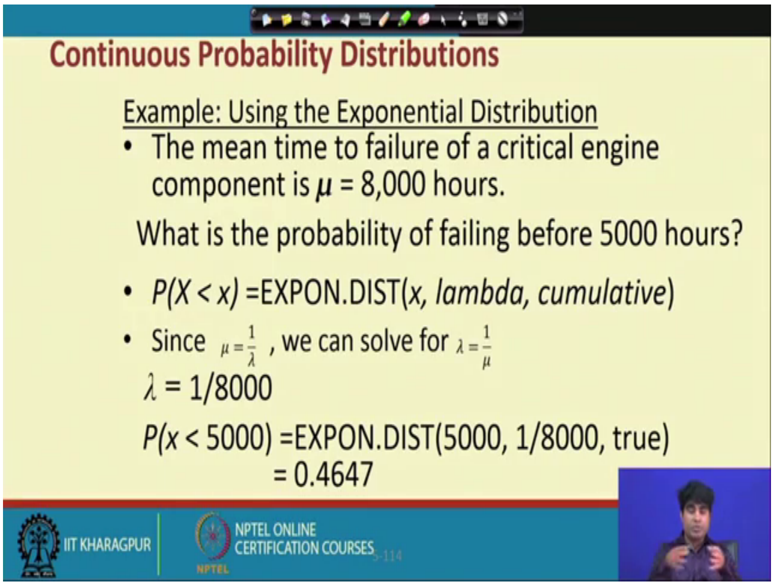

So that means, actually once you acquainted with the particular you know structures, whether it is a kind of you know case of you know binomial distribution or the kind of you know Poisson distribution or in the kind of you know normal distribution. Then you know once you will be acquainted with you all these concept and the kind of you know requirement and the kind of you know problem then obviously, excel spreadsheet will help you a lot to predict the particular you know environment.

So, here the only requirement is a you have to understand the particular you know probability and that to probability distribution. And then corresponding to a particular problem situation and the requirement so use the spreadsheet and you know very quickly you can get the output. And once you get the particular output that will help you lot to predict the business requirement.

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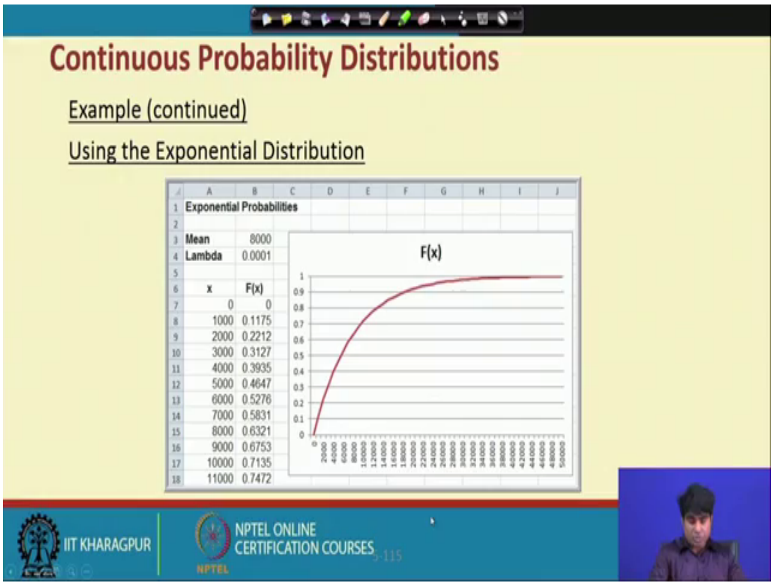

So, this is what we have actually discussed all these things. So, I am once again you know reporting how this is the case of you know exponential distribution which we have already highlighted. And again if you will be plot, then the nature of the curve will be coming like this. So, this follows a distribution pattern and that particular distribution is called as you know exponential distribution.

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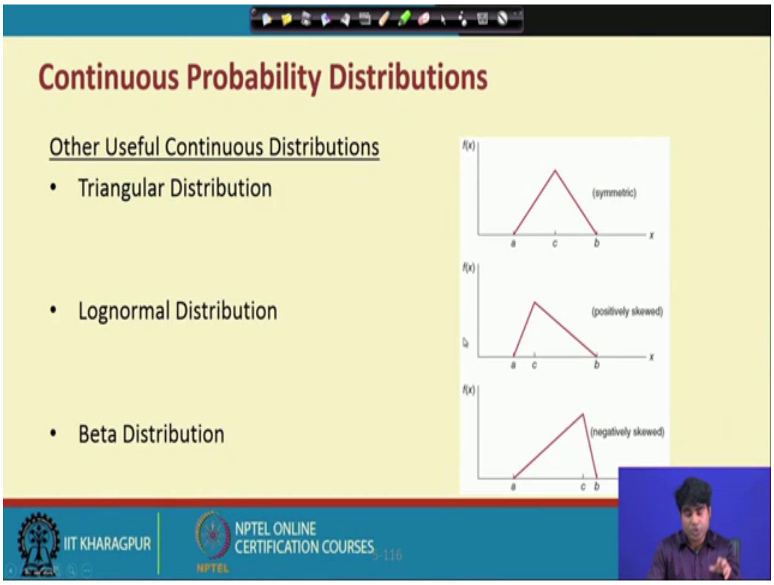

Corresponding to binomial distribution, Poisson distribution, exponential distribution, normal distributions we have actually so many other distributions. And you know here again three more specifications are there you know triangular distributions like this, log normal distribution like this.

Beta distribution like this so that means, actually in the in the kind of you know business games you like to know how is the particular business structure corresponding to the particular information and the business structure. So, you like to check how the distribution you know it follows. So, you know depending upon the particular requirement and situation, you have to apply a particular distribution and predict the environment as per your requirement.

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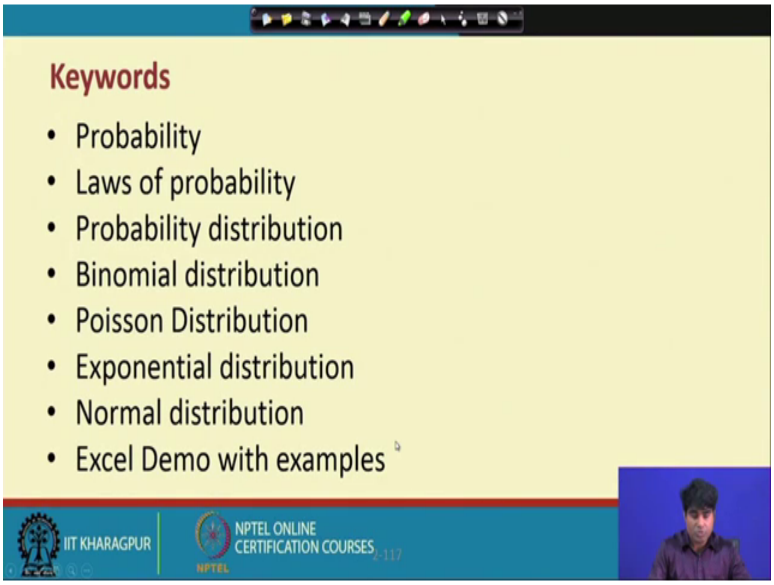

So, in this unit actually we have discussed various concepts of you know probability and the rules of the probability various you know theorems behind probability then probability distributions. And we have discussed something called binomial distribution, Poisson distributions, exponential distributions and normal distributions. And I have already discussed you know how these you know distribution can be applied and every distribution followed by a particular you know mass function.

And once you know the mass functions, and if you know the advantage and disadvantage of particular distributions then accordingly you can apply, because for a particular distribution the requirement is a specific. Once the requirement is repeated or you know available and depending upon the situation you can apply that particular distribution and predict the particular environment.

The idea is here in this probability concept that means, you have to you have to actually predict or you have to forecast what is the chance of you know possible kind of you know requirement. So, ultimately since it is a kind initially we have no idea of what should be the kind of feasibility or what is the kind of particular choice. So, the particular distribution and the particular concept and the particular structure will give you some kind of output through which you can take a decision, so that means, it will give you some kind of you know certainty from the uncertainty environment. Initially, you are not in a position to predict or you can you are not in a position to apply any kind of you know strategy.

So, now with the help of you know probability and probability distributions, by using you know either binomial distributions or Poisson distribution or exponential distribution or normal distribution, you are in a position to predict you know the business environment. So, that means, actually before you go to any kind of you know management problem, so I am very sure you know 90 percent of the problem, minimum 90 percent of the problem it will be for you know fitted under some kind of you know distributions.

Because it is a kind of you know data generating process and then; obviously with the help of a particular you know problem structure and the kind of you know problem requirement you have to feed the particular distributions and then accordingly you have to predict the particular you know environment.

So, the idea is that you know until unless you understand the concept. So, you know you may not in a position to predict. So, again the summation is that you have to understand the problems and you know understand the concept, and then connect the concept with the problems and then you predict as per the requirement and they need.

So, with this we will close this particular chapter. And then in the next chapters, we will discuss with the sampling and sampling distribution which is actually well connected with this probability and probability distribution. And whatever concept we have discussed here starting with the binomial, Poisson, exponential and normal distribution same distribution can be again analyzing the sampling and sampling distribution where this is just you know opposite. We have to create a kind of you know background and samples with the help of this particular you know distributions right, so that we will discuss in the details in the next class. And we will be stop here.

Thank you very much, have a nice day.