Six Sigma
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Lecture – 01
Brif Overview of the Course

Hello friends, I am Doctor Jitesh Thakkar from Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur. I welcome you to the very first lecture of our Six Sigma journey. And this lecture is extremely important because I will give you the brief overview of the course and the complete blue print that we will try to cover in the next say 62 lectures. So, please try to appreciate the overall contained and how we will move ahead, and what are some of the important issues in executing this particular course.

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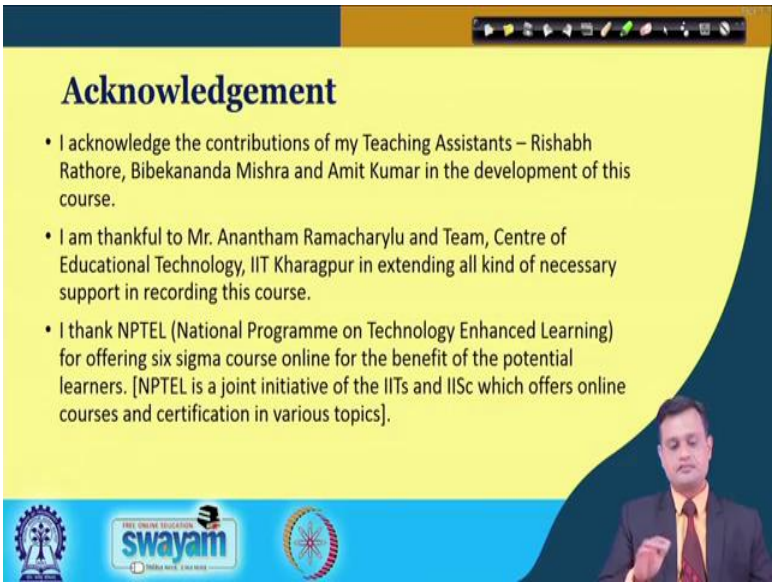

So, before I begin I would sincerely like to acknowledge the people who have supported this particular course, recording, execution and because of that this course has basically reach to a large mass in India and other countries for benefitting them with this six sigma methodology.

So, I acknowledge the contributions of my teaching assistance Rishabh Rathore, Bibekananda Mishra and Amit Kumar in the development of this course. I am thankful to Mister Anantham and team they are with centre of education technology at IIT,

Kharagpur in extending all the necessary support in recording this course. I would also like to mention that this team has really put an extensive effort and many a times they have worked up to 8 o'clock, 9 o'clock in the night to record the videos and also on Saturday and Sunday the recording took place.

So, I really and sincerely thank this team for their effort and supporting me in recording this course and delivering this course for the benefit of a larger mass. I thank NPTEL, National Programme on Technology Enhanced Learning for offering six sigma course online for the benefit of the potential candidates in industry as well as university students. And I would like to mention that NPTEL is a joint initiative of the IITs and IISC which offers the online courses and certification in various topics.

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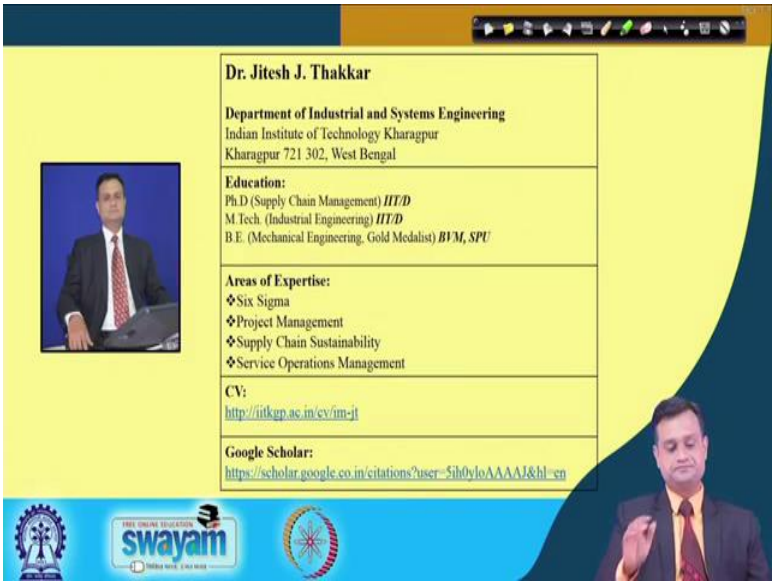

I would like to share my profile so that you can appreciate the kind of work I am doing and for any query or collaboration you can easily approach me.

So, I am Doctor Jitesh J Thakkar with Department of Industrial and Systems Engineering, IIT, Kharagpur. My education includes PhD in Supply Chain Management from IIT, Delhi; M.Tech in Industrial Engineering from IIT, Delhi and I did my B.E in Mechanical Engineering with gold medal from the Oldest Government Engineering College, Birla Vishvakarma Mahavidyalaya Sardar Patel University located in Vallabh Vidyanagar, Gujarat.

My areas of expertise include six sigma, project management, supply chain sustainability and service operations management. You can see my CV and the various details related to my work. At this particular link you can also visit the Google scholar, and you can access my all the publications. You can also see the publication which is relevant to you specific to your industry and mainly I have worked with the case study approach and this would really be beneficial to industry professionals and university students. You can also see the papers which are receiving good citations and you can download it, and refer it for your own understanding or the application.

So, this is a little bit about myself. I would also be happy to share my publication profile.

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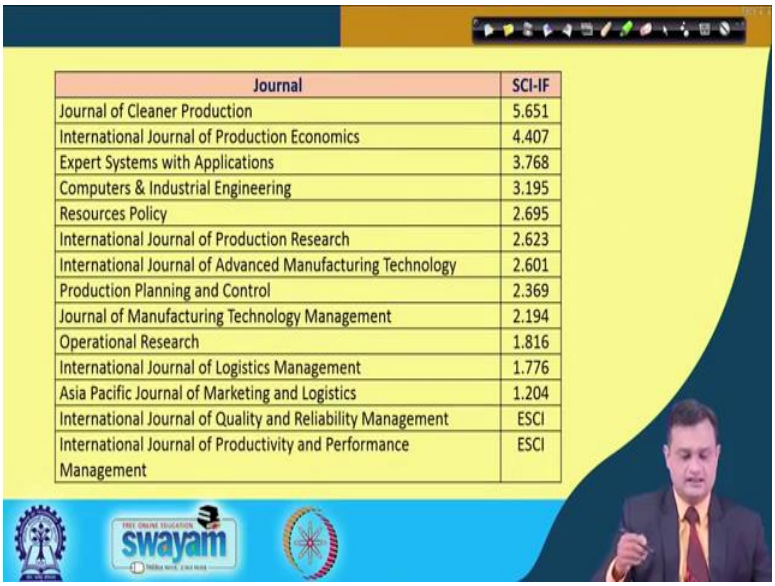

In last 15 years I tried to contribute and publish my research in the various leading journals of operations management, and the research papers have been published in journal of cleaner production with SCI impact factor 5.651. International journal of production economics with SCI impact factor 4.407. Expert system with application with SCI impact factor 3.768. Then computers and industrial engineering, resources policy, international journal of production research, international journal of advanced manufacturing technology, production planning and control, journal of manufacturing technology management, operations research, international journal of logistics management, Asia pacific journal of marketing and logistics, international journal of

quality and reliability management, and international journal of productivity and performance management.

I do extend my services as a editorial board member for three journals, one is international journal of productivity and performance management, second is international journal of quality and reliability management, and international journal of lean six sigma.

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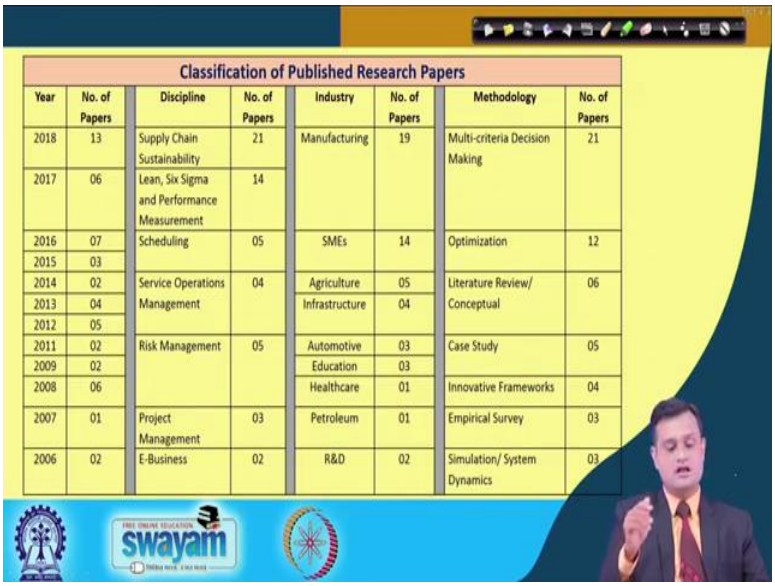

I would also like to share the various areas I have address through my research with a more practical orientation case study based orientation, and as a researcher I could evolve in terms of my number of publication in last say 12 to 13 years in this way.

So, I have ensured my research productivity with the very good students I get at IIT, Kharagpur. I worked in the various disciplines supply chain sustainability 21 papers are published, lean six sigma and performance measurement 14 papers are published, scheduling 5, service operations management 4, risk management 5 and project management 3, E-business 2. So, discipline wise also I have classified my research. If I look at the industry then I have specifically published 19 papers for manufacturing industry, SMEs 14, agriculture 5, infrastructure 4, automotive 3, education 3, healthcare 1, petroleum 1 and research and development 2.

So, I tried to diversify my research in terms of the discipline of OM operations management as well as in terms of see various industry segment so that I can really get a depth into the critical issues specific to different industry. I have also used the methodologies to tackle the different kind of problems and you will find that my 21 papers they are based on multi criteria decision making like AHP, ANP, VIKOR(Refer Time: 08:16) and many others.

Optimization, integer programming and other OR tools we have used say for 12 papers literature review and conceptual papers are very important in order to look into the literature and develop the new researching gaps and insights. So, 6 papers were contributed in this dimension, case study 5, innovative frameworks 4. So, you can find couple of innovative frameworks I proposed like I 2 NOC and this framework is derived based on the typical setting of a patient hospital and doctor. So, it is a qualitative framework just like your sword and paste, but it has integrated those spirit of both and I 2 NOC is proposed. So, you can review and refer this particular paper.

Another innovative framework I proposed is EBM wrap. It is again a kind of qualitative framework to investigate the issue right at the exploratory stage and identify the various role player's factors important or influencing the situation. The another framework which I proposed was say based on 4 bar linkage and this framework was proposed to evaluate the supply chain learning for SMEs, and the idea of 4 bar linkage was borrowed from the domain of mechanical engineering.

So, likewise I tried to be innovative in my research and couple of papers are published and you can refer it on the Google scholar or you can find the title in my CV this suggested link. Empirical survey free papers and simulation in system dynamics some free papers we tried to publish. So, I hope this would help you to appreciate the overall areas of expertise, and how I really do the research and in what way I tried to bring the real life issues in my research and propose some frameworks for the solution as well as the recommendations for the improvement in the company.

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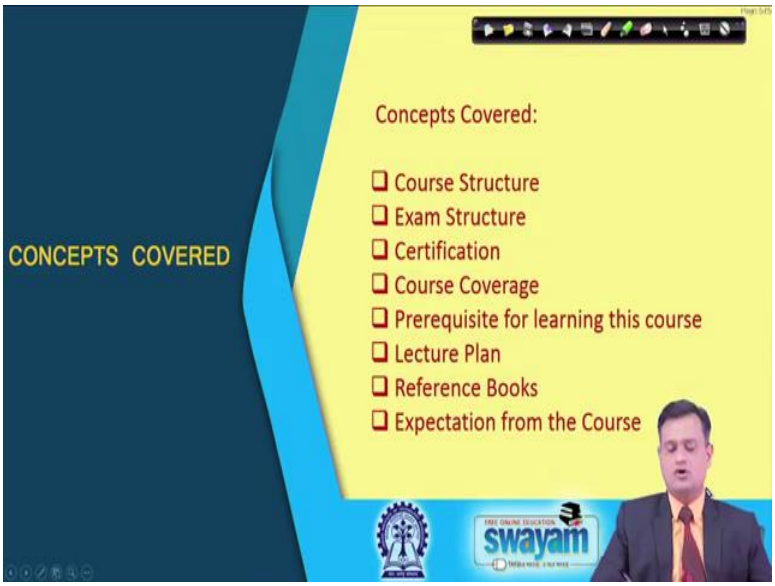

I would like to discuss couple of very very important issues as a part of this lecture 1: what is the course structure? You will have many questions what will be covered, how this course will be executed, then what is the exam structure. So, right at the beginning I am sensitizing you that what will be the course structure, what will be the exam structure so that you have total comfort and convenience in learning this course. You will have couple of question certification. So, this part also I will try to explain course coverage in detail, all the lectures that we will cover phase wise I will try to cover I will try to as represent as a part of this lecture 1.

Prerequisite for learning this course, this is very very important, if you really want to take the outstanding advantage of this online course. You must follow the suggested prerequisite and once you have some fundamental knowledge in that particular area typically statistics you will really be able to appreciate this course. Lecture plan in detail, reference books I am recommending and expectations from this course. So, let us try to discuss all these issues one by one in a greater detail so that you are remaining journey remains quite comfortable and you always feel like following a particular structure.

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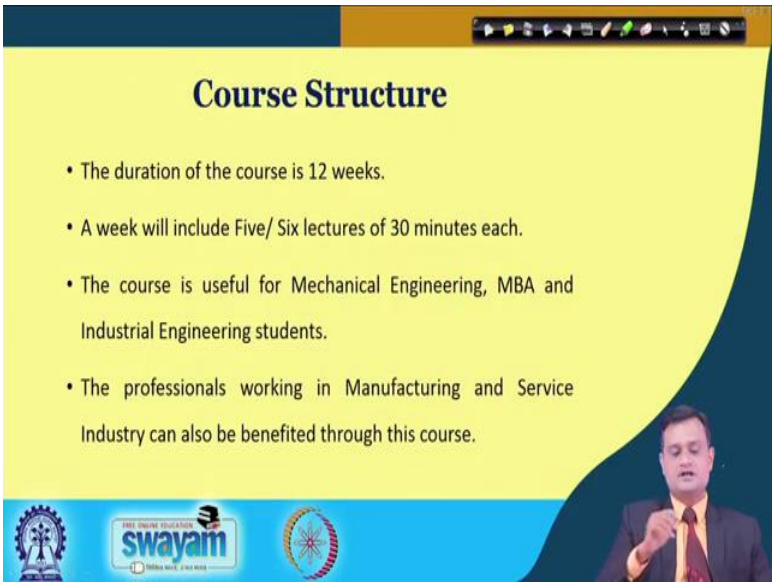

So, course structure would be like this the course will be delivered in 12 weeks, the duration of the course is 12 weeks, every week there will be 5 or 6 lectures more or less, the each one would be of 30 to 40 minutes. The course is useful for mechanical engineering, MBA, industrial engineering students. And six sigma is such a methodology that all engineering branches student can be benefited.

The professionals working in manufacturing and service industry can also be benefited through this course and the content of this course is designed in such a way that it will immensely benefit university student as well as industry professionals in service and manufacturing both.

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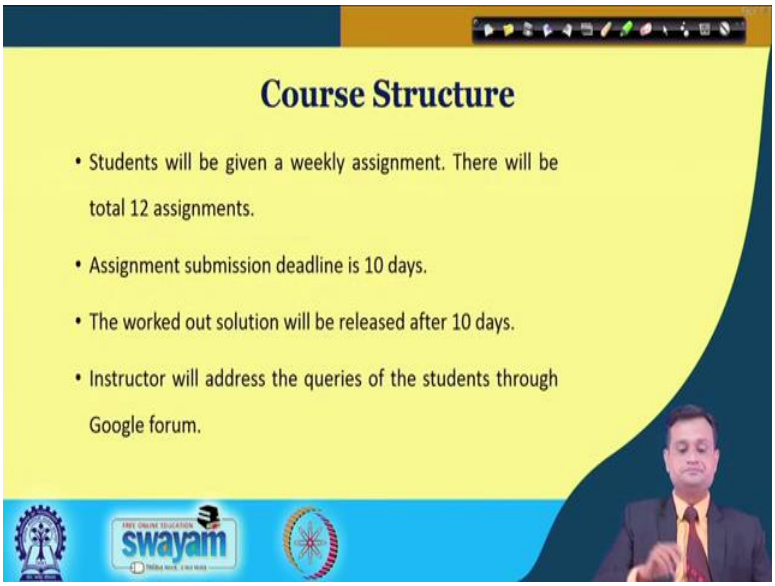

Students will give be given a weekly assignment. There will be total 12 assignments. Assignment submission dead line is 10 days and the workout solutions will be released after 10 days. Instructor will address the queries of the students through Google forum.

So, we will have quite an interactive say platform so that we can discuss various issues and I can help you to resolve your queries.

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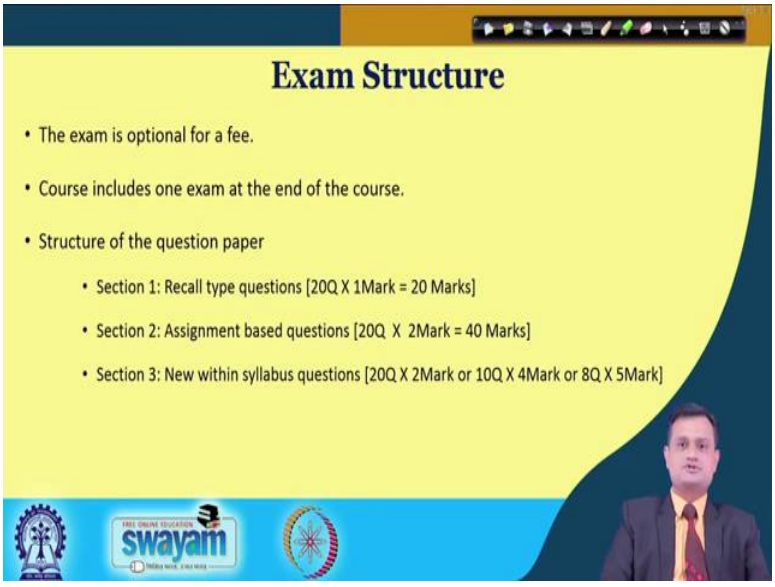

Exam structure many a times you are very much concerned so exam for this particular course is optional, not necessary that you appear for the exam, but the exam is optional

for a fee and course includes one exam at the end of the course there will be only one exam, if you wish to appear. The structure of the question paper would be very simple section 1, recall type question 20 question each one would be a one mark, so that is 20 mark. So, you need to recall couple of concepts which we would be covering in this particular course. Section 2, assignment based question, 20 question each one would be of 2 marks, so 40 marks. So, you would be had say attempting various assignments and based on this assignment couple of questions would be asked.

Section 3, new but within syllabus not outside the syllabus, new within syllabus questions, 20 question each one would be of 2 mark or 10 question each one would be of 4 mark or 8 question each one would be of 5 mark. So, whatever pattern we may follow. So, in total you will have 20 plus 40 60, plus 40 total 100 marks. So, I am making it crystal clear that what will be the exam structure and now you can appreciate that there would be recall type question, there would be assignment based question, there would be some new question. But within syllabus and you can prepare likewise.

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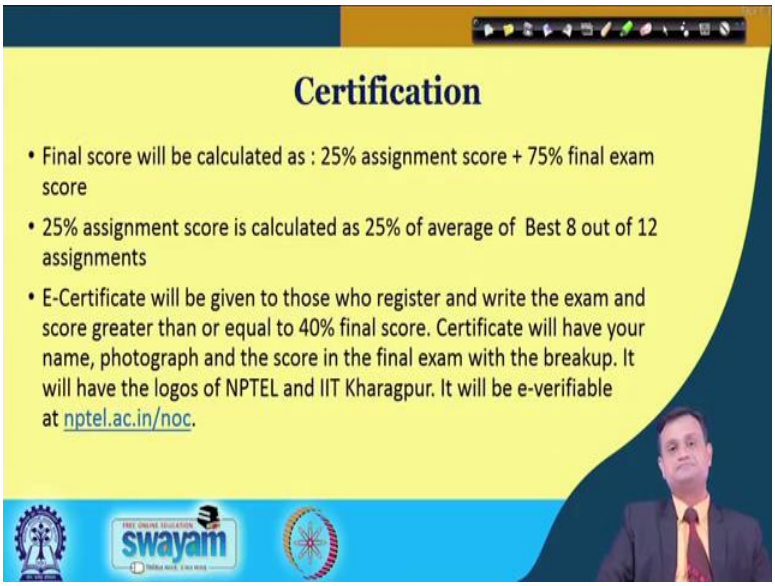

Now, many students they have some questions that what kind of certification we will get and typically for such kind of course, six sigma which has many professional certifications offered by international bodies like American Society for quality ASQ, and many others are available. So, here, so far this course is concerned final score will be calculated as 25 percent assignments score plus 75 percent final exam score. You will be

having assignments 25 percent weightage will be given to your total score in the assignment and 75 percent weightage will be given to the final exam. 25 percent assignment score is calculated as 25 percent of average of best 8 out of 12. So, again we are giving you lot of liberty. So, we will consider bast 8 out of 12 and 25 percent of that will be considered for your final score.

E-certificate will be given to those who register and write the exam and score greater than or equal to 40 percent. So, 40 percent is the passing mark which is quite reasonable and certificate will have your name, will have your photograph and the score in the final exam with the breakup. So, it will have the logo of NPTEL and IIT, Kharagpur. So, this certificate would be issued by NPTEL with a logo of NPTEL and IIT, Kharagpur and the complete breakup of your score would be given and minimum qualifying marks passing marks is 40 percent.

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The course coverage will mainly say focus on the six sigma philosophy and ideology, and various tools and techniques specific to six sigma which mainly targets the customer centric approach through a systematic DMAIC cycle, D stands for define, M stands for measure, I stands for improve, your A stands for analyze, I stands for improve and C stands for control.

So, define measure analyze improve and control. So, there are total 5 phases which would be dealt in detail as a part of this course.

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So, we will also have the application of Minitab and majority of the topics which would be explained in a greater detail through a concept as well as example. We will also try to say show the application of Minitab for majority of the problems so that you can easily analyze, and you can feel extremely comfortable in taking up the six sigma project. Specifically university students who are doing some project or the industry professionals we have large amount of data to deal with, such kind of mini tab software can really help. And Minitab is widely used software across the world for six sigma implementation.

So, we will also have the application of Minitab and that would really help you to get hold on the computation calculation and you can divot more time on the interpretation of results.

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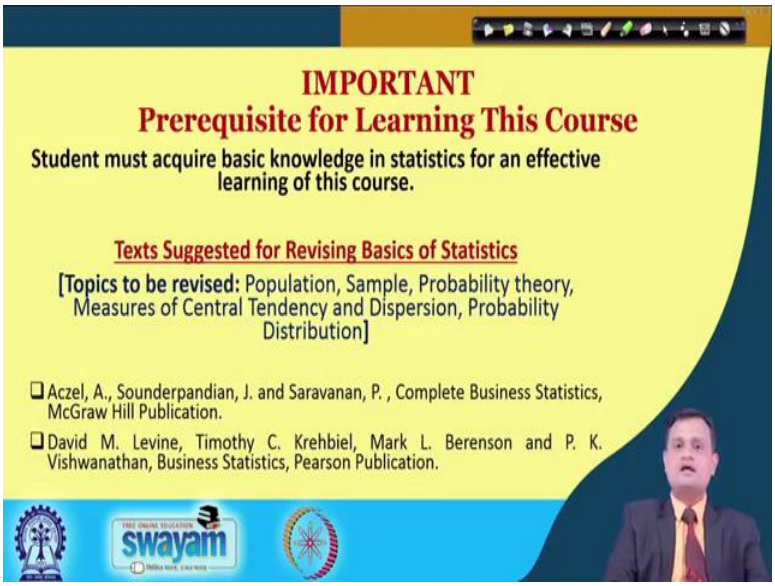

This like is very very important. Can you read the title of the slide? Important prerequisite for learning this course, you start your day, you finish your say daily routine activity, take breakfast get ready and then you go to school or college or your office. So, there is a prerequisite that you need to complete this much of activity before actually taking up your outside activity.

Same applies to this course six sigma. This course would be taken by many people with the background of engineering or non-engineering, whatever it may be I must tell you very clearly write at the beginning that you must satisfy some bare minimum prerequisite otherwise as you will progress in the course and we will have some say mathematical component you may not feel comfortable. So, right at the beginning I am questioning you that prerequisite for learning this course is that student must have basic knowledge in statistics, statistics for an effective learning of this course and for this I am recommending you text for your quick revision or learning of basics of the statistics.

So, couple of topics that you need to refer from the suggested books here is population, sample, probability theory, measures of central tendency, dispersion, probability distribution. And the books are Aczel complete business statistics published by McGraw Hill, David M Levine, another author's business statistics Pearson publication. You can purchase any one of this book it is available in Indian edition not very costly and you must go through first 6 chapter of any of this book.

So, once again I am repeating, I am cautioning that the prerequisite for this course is the basic knowledge in statistics and for this you must go through at least first 6 chapter of either of this book and this books are easily available in Indian edition and the cost is not that high. So, you must prepare yourself for this course, in order to appreciate the content and the intricacies of the course in very great detail and the prerequisite is that you purchase at least one of the book, and try to go through the first 6 chapter that will set the basis for learning this course. So, I hope this is extremely clear and you would really follow my advice.

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Let us try to look at the lecture plan. Here I would like to share one very very important note. The lecture plan is developed as per DMAIC cycle of six sigma as per the ASQ American Society for Quality, internationally prescribe reference book: T. M Kubiak and Donald W. Benbow, The Certified Six Sigma Black Belt Handbook and whatever edition you may use second or third edition Pearson publication.

So, this syllabus is developed based on the internationally recommended and recognized book for black belt six sigma. What is the advantage? We are following the structure and all the topics given in this book in the total 63 lectures of this particular course and you can be assured that if you will go through this course then you can definitely appear for the certified exam conducted by ASQ internationally recognized professional certificate you can obtain.

I would like to mention that in order to opt for such kind of exam conducted by ASQ international body you need to satisfy some prerequisite and this includes at least you should have completed two project in six sigma industry project and you must submit the certificate and project to this body.

Once you satisfy this prerequisite, then only you can appear for the online exam conducted by ASQ and you will get a professional black belt certificate. If you want to first go for only green belt, then the course maybe 40 percent of this course will be good enough. If we are going through the full course this particular online course six sigma it will satisfy your black belt requirement and I guarantee you that you can easily clear this exam by going through this course.

So, I wish you all the best that this course will immensely help you in getting even such kind of say professional certification and for that you need to first prepare yourself by going through first 6 chapters of the suggested book as a prerequisite. And step by step attend the course, be with me and try to see that what changed it will bring in your attitude or change it will bring in your learning capability and then you can opt for any such kind of ASQ professional examination.

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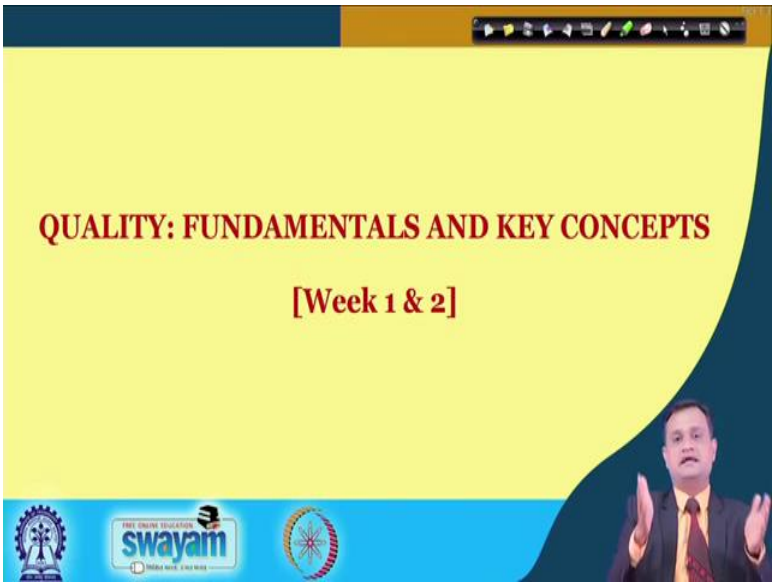

So, let us try to go through the lecture plan which is based on this suggested book by T.M Kubiak internationally prescribed ASQ book. So, we will first begin with the

quality fundamentals and key concepts. As you have a prerequisite organization also has a prerequisite before they really actually implement the DMAIC cycle of six sigma.

So, we will discuss in week 1 and 2 some prerequisite necessary condition and organization must satisfy in order to say going to the DMAIC improvement cycle. So, we will cover quality fundamentals and key concepts in week 1 and 2.

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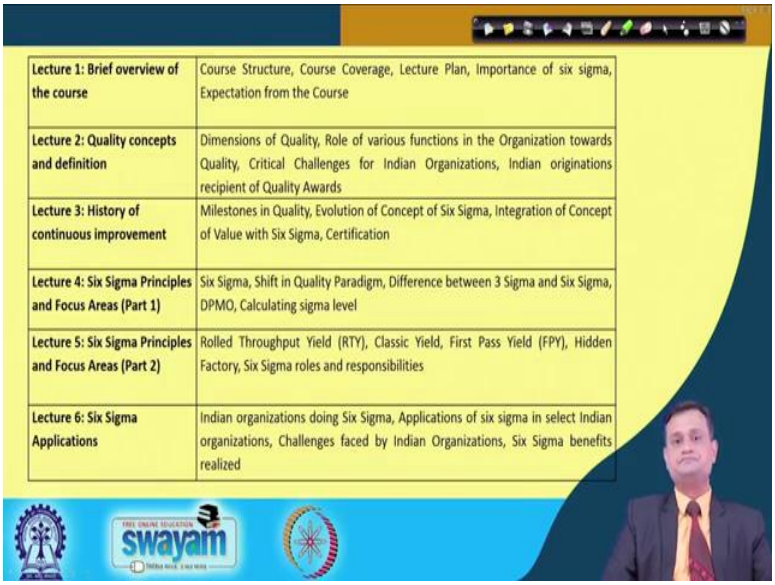

Week 1 will help you lecture 1 brief overview of the course that we are doing right now. Lecture 2 quality concepts and definitions given by various authors Crosby, Juran and Ishikawa. Lecture 3, history of continuous improvement. So, we will see the how in last 100 years this journey of quality improvement took place and what were the critical milestones.

Lecture 4, six sigma principles and focus areas, part 1 we will see the concept of six sigma, three sigma, DPMO and the how to calculate the sigma level. Lecture 5, six sigma principle area focus area part 2. This lecture 4 and lecture 5 are very very important that will help you to really understand that what exactly six sigma means, how do we calculate, and what are the critical measures. So, in part 2 we will try to see rolled throughput yield, classic yield, first passed yield, hidden factories, six sigma and responsibility.

Lecture 6, six sigma applications to motivate you I will discuss couple of applications in or in for the organizations in India and what kind of benefits they have realized.

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Week 2, we will have lecture seven on quality management basics and key concepts. Lecture 8, fundamentals of TQM total quality management and the prerequisite for implementing the six sigma. Lecture 9, cost of quality very very important, you can never sensitize the people and management unless you measure the quality in terms of a cost and you can have appraisal cost prevention cost internal failure cost external failure cost and this part we will discuss in detail in lecture 9.

Lecture 10, voice of customer this is the first and foremost requirement how do you capture the voice of customer. Lecture 11, quality function deployment a cross functional team based approach. Lecture 12, management and planning tool we will discuss affinity diagram tree diagram, process decision program, charts and other. And again lecture 13, management and planning tool part 2.

So, matrix diagram, prioritization matrices, activity network, pace prioritization and others. This say initial tools can really help us to go deeper into the problem and identify the real causes which are responsible for a problem under investigation.

Now, we will begin from week three our DMAIC cycle and week 3 is devoted to D that is define.

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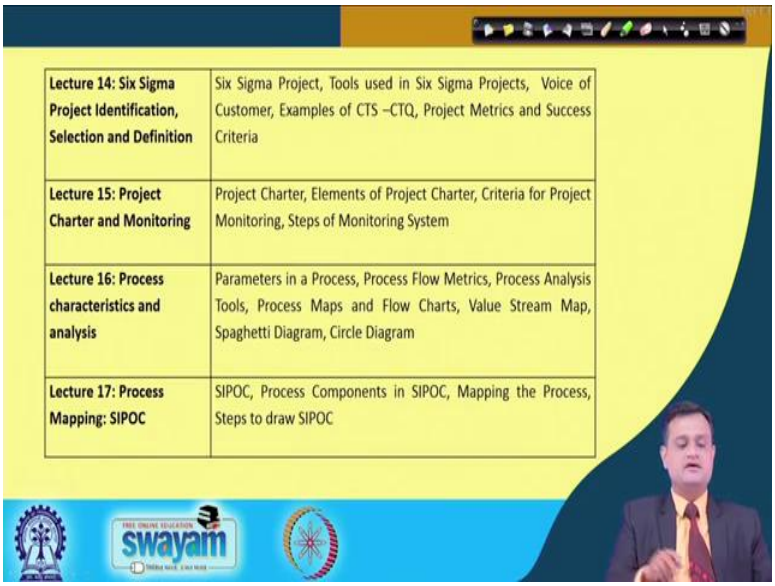

So, week 3, we will talk about lecture 14, six sigma project identification selection and definition. Lecture 15, project charter and monitoring you need to have a blueprint defining the role of the people and this is very very important. Lecture 16, process characteristics and analysis, flowchart value stream map and couple of other things. Lecture 17, a very important tool for process mapping right from the supply to customer that is SIPOC.

Then, we will enter into the second phase of DMAIC that is measure we will cover this phase in week 4 and week 5.

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So, week 4, we will have lectures on data collection and summarization part 1, lecture 19 data collection in summarization part 2. This is very important unless you have the data properly collected you cannot analyze it. Lecture 20 measurement system fundamentals and lecture 21 measurements system analysis gage, R & R study. If you have not collected the data which is accurate and precise it follows the GIGO principal garbage in garbage out. So, I need to have a sound measurement system and we will discuss this part in lecture 20 and 21. Lecture 22, fundamentals of statistics, I suggested you to go through the first six chapter of the suggested book either Aczel or Levin and we will also try to cover, but in a quiet comprehensive manner.

Lecture 23, would be on probability theory, we will see the probability distribution and other concepts.

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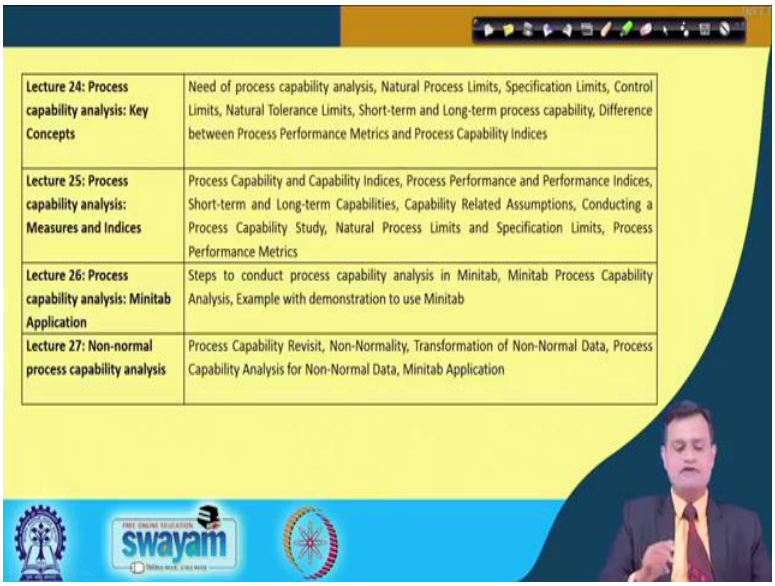

Week 5, we will talk about process capability analysis key concepts. Lecture 24, I must see to what extent my process is capable. Lecture 25, process capability analysis measures an indices cp, cpk, cpm, pp, ppk, ppm and other thing. Lecture 26, process capability analysis using Minitab, so that you feel comfortable in conducting the analysis. Lecture 27, non-normal process capability analysis, the Minitab application for this is included in this particular lecture itself.

Then we will enter into the third phase of DMAIC and this is analyze. So, in the third phase analyze I will divot week 6 and week 7.

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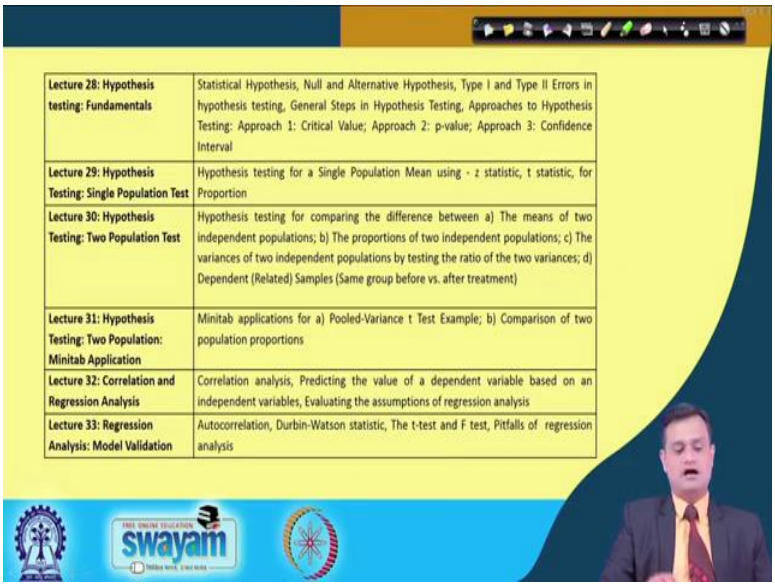

Week 6, we will cover the lecture 28 hypothesis testing fundamentals. Lecture 29, hypothesis testing single population, hypothesis is my claim about the population I want to check it I want to infer it through a statistical procedure. So, lecture 29 would be for single population, lecture 30 would be for two population, 31 will demonstrate the Minitab application and 32 will correlation and regression analysis, 33 we will try to validate some line assumptions linearity, independence, normality and equal variance for the regression model.

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Then week 7, we will go ahead and there are some limitations of conducting say paired say comparison for two populations, you may have to compare more than two means or three means for the population and the previous procedure of hypothesis testing for two mean, paired comparison is not actually beneficial. It will increase some error in the analysis and that we will discuss.

So, we would like to go for another approach to overcome this error and lecture 34 will be on one-way ANOVA. Lecture 35 would be on two-way ANOVA. Lecture 36, will be on Multi-vari analysis. It is typically graphical technique, which help me to screen out the important factors and then it can be used as a complementary technique for ANOVA. Lecture 37, would be failure mode effect and analysis and I would like to analyze the critical failure mode through say calculating the risk priority number which is basically the multiplication of severity occurrence probability and detectability. So, we will see this in detail.

Then we will enter into the fourth phase of DMAIC and that is improve. So, week 8 and week 9, I will discuss improve phase of DMAIC cycle.

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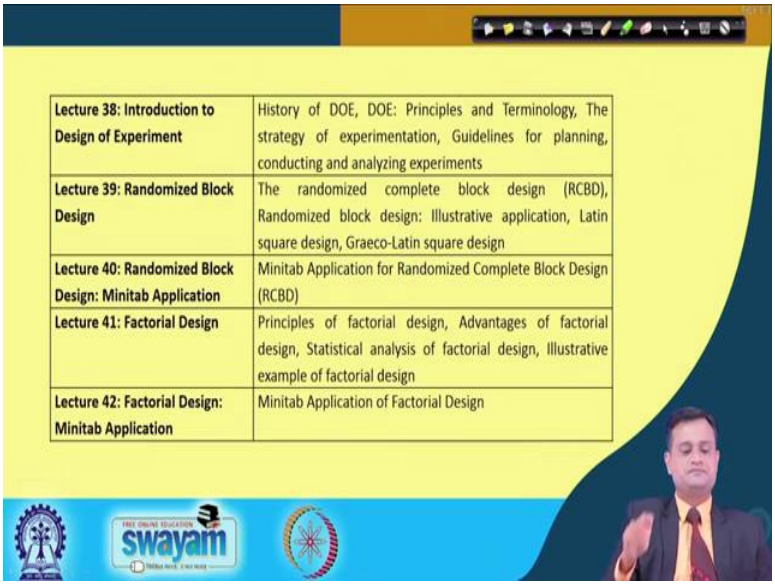

So, week 8, I will talk about lecture 38 introduction to design of experiment that will give you some fundamental definitions what is factor, what is level, what is treatment, what is blocking replication, then nuisance factor, reproducibility and likewise. Lecture 39 randomized block design we will talk, then lecture 40, randomized block design with

Minitab application. Lecture 41, factorial design I would like to consider the interaction effect you will appreciate it when you will discuss and that part we will try to cover through factorial or full factorial design. Then we will have lecture 42 factorial design Minitab application.

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Week 9, again I will go further in my design of experiment improvement phase. Lecture 43 will be fractional factorial I cannot afford to conduct the full factorial because the resources in terms of material operator time is limited, so I need to divides the strategy which is fractional factorial we will see it lecture 43. Lecture 44, Minitab application for fractional factorial. Lecture 45, some key concepts on Taguchi design which is the robust design methodology emphasizes on signal to noise ratio. And lecture 46, I will discuss some illustrative application of Taguchi method.

Finally, we will enter into the fifth phase say DMAIC and this fifth phase is control. So, we will talk about control in week 10 and week 11.

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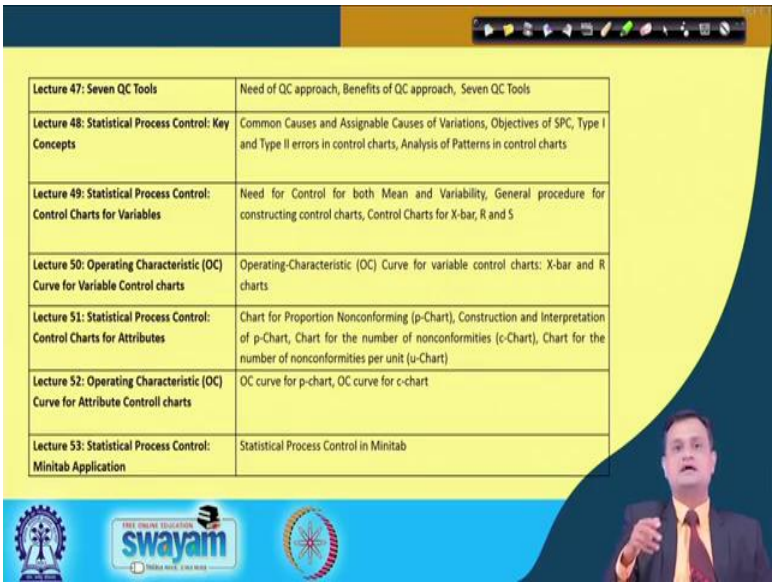

Week 10, you will have seven QC tools like Pareto chart, scatter plot, histogram and mainly quality control say statistical process control charts. 48, we will talk about statistical process control key concepts what is transpose, what is assignable cause, what is type one error, what is type two error. Lecture 49, we will talk about statistical process control, control charts for variables. 50, operating characteristic curve for variable control chart. 51, statistical process control, control chart for attributes, and 52 operating characteristic curve; curve for say attribute control charts. 53, we will talk about statistical process control Minitab application for industry professional and university student executing the projects.

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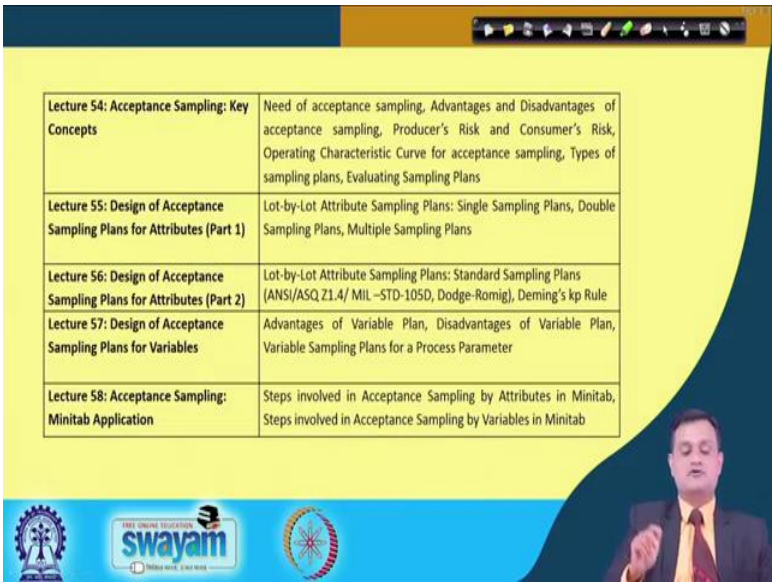

Week 11, we will see the second pillar. When you talk about the statistical quality control there are two pillars number 1 is statistical process control, number 2 is acceptance sampling. In this week we will talk about acceptance sampling and lecture 54 would be acceptance sampling key concepts, 55 design of acceptance sampling plans for attributes part 1 and part 2 will be presented in lecture 56. Lecture 57 design of acceptance sampling plans for variables and 58 acceptance sampling plan for Minitab application. Then finally, we would wind up our journey and say close our journey with some discussion on six sigma implementation challenges in week 12.

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So, lecture 59, will talk about some other formats of conducting six sigma, that is DMAD, DMADOV and DFX. In detail in lecture 60 we will talk about various acts like reliability, maintainability, sustainability, serviceability, manufacturability as a part of DFX. Lecture 61 which is very important you cannot execute any project or six sigma project without a proper team management and we will try to see the communication team dynamics and another issues in lecture 61. Lecture 62, I will discuss the small case study to give your confidence how we can execute the DMAIC cycle. And finally lecture 63, will try to check that how we have gone through the journey and what we have delivered as a part of this particular course. So, it would be a summary of the entire course.

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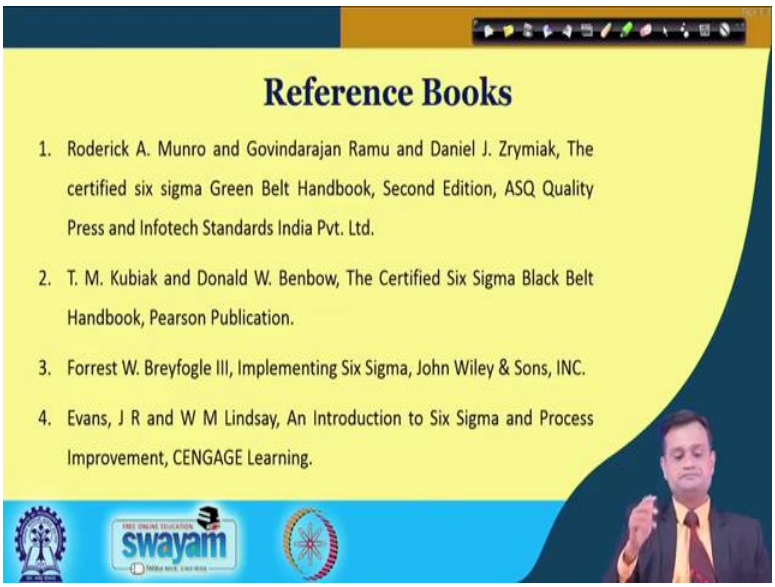

I am suggesting the reference books Roderick Munro the certified six sigma green belt, T.M Kubiak black belt, Forrester implementing six sigma, Evans an introduction to six sigma.

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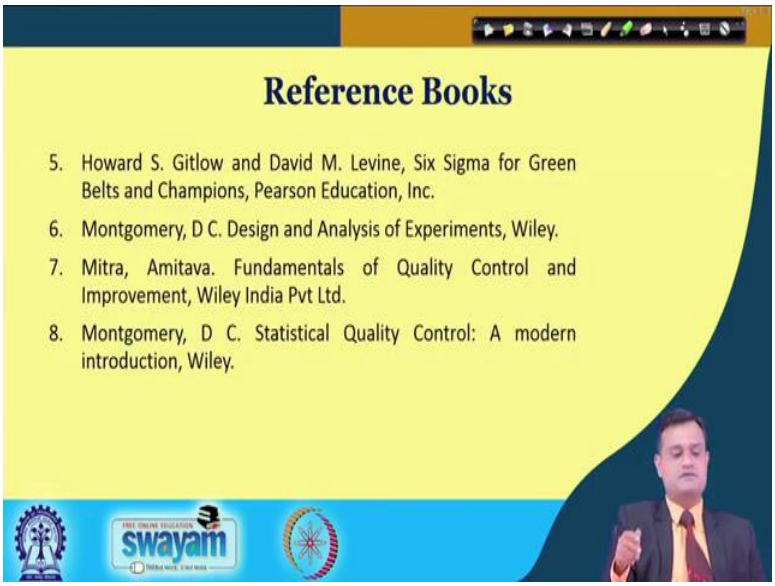

Howard Gitlow six sigma for green belts, Montgomery design and analysis of experiment, Mitra fundamentals of quality control and Montgomery statistical quality control.

So, you should helps the copy of couple of books or whenever you have difficulty you can you can refer this book I extensively use this material.

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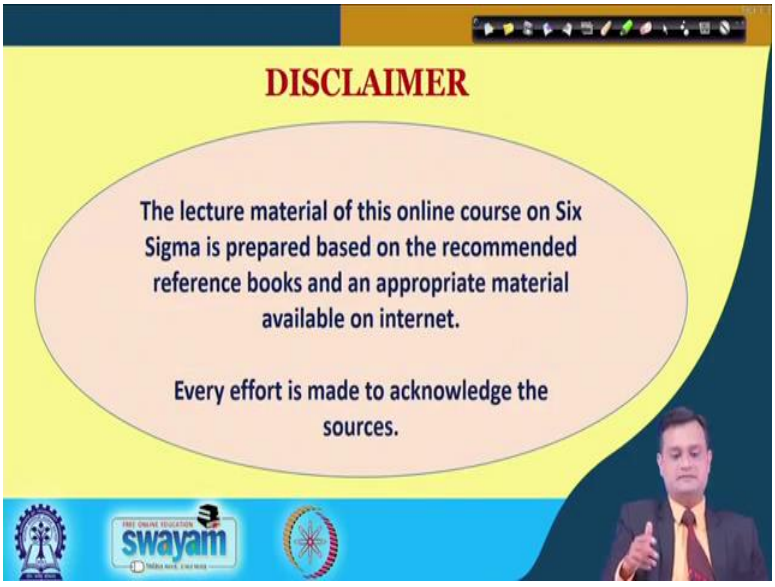

I would like to present my disclaimer. This particular lecture material of six sigma online course is presented on prepared based on the recommended reference books and an

appropriate material available on the internet every effort is made to acknowledge the sources. However, I acknowledge the contributions of the people in the domain of quality and six sigma and I acknowledge the sincere contributions of all these people which as really help me to develop this course.

Why six sigma is important? Let me just give you a flavor before I close this session.

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We have an obsession for quality. Quality has not remain the winning factor it is a qualifying factor your entry to market. You cannot say that I am giving you the quality product, so you come to me that is the bare minimum thing you must offer in the competitive scenario.

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We had the old paradigm like conformance to specification external say customer, product quality, we have new paradigm satisfaction of the customer and loyalty external and internal customer orientation, and product quality, process quality and service quality. All three needs to be integrated and we are exactly trying to achieve these through six sigma.

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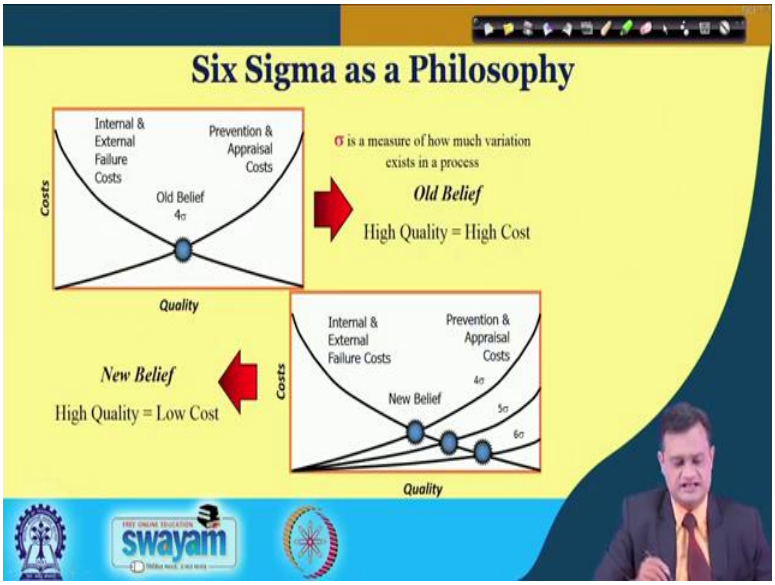

If you just see the difference in the old belief and new belief it is very clear. Old belief is high quality high cost if you want high quality you have to spend more. This is a big cross.

The new belief is high quality low cost and how it is achievable just see you have the internal and external failure cost, and you have the prevention and appraisal cost when you are moving from four sigma to five sigma to six sigma, it means your process variability is going down.

Your processes are becoming more centric towards the mean you are basically saving upon prevention and appraisal cost and you can see that you are say break even cost with respect to internal and external failure cost is going down. So, six sigma says that high quality as low cost, target the variability if you can get hold on the variability this is achievable. So, this is a something that we will try to appreciate.

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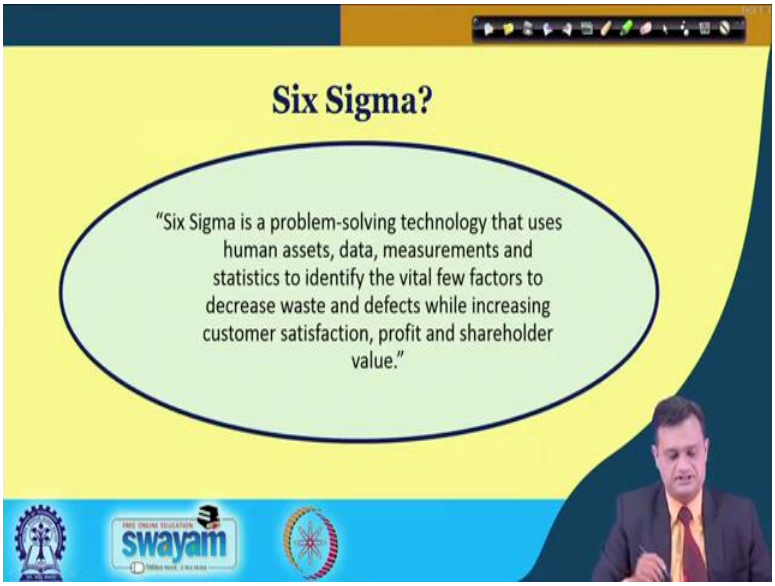

And six sigma basically is a problem solving approach, set of tools and techniques, to execute the DMAIC cycle and make my processes organizations more customer centric.

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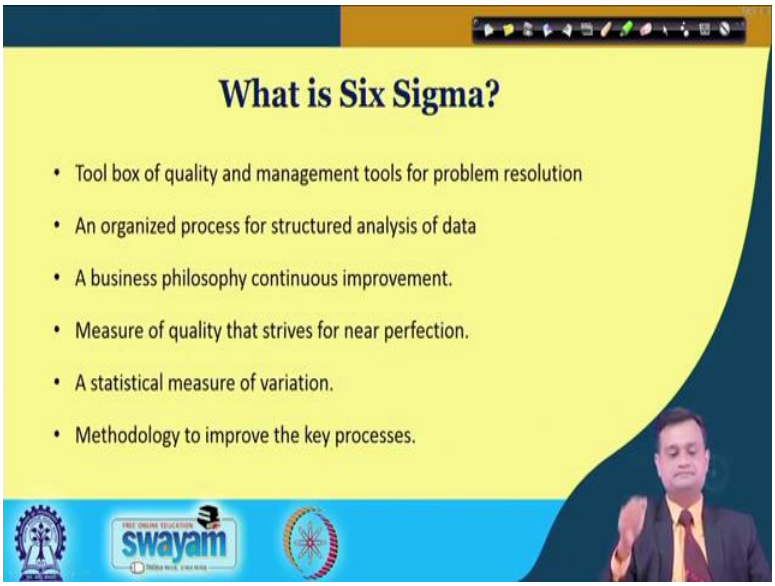

So, six sigma as I said its systematic journey of DMAIC and basically it is a quality management tool; that are integrated in order to achieve the significant reduction in the variability of the process and hence is significant reduction in the defect rate.

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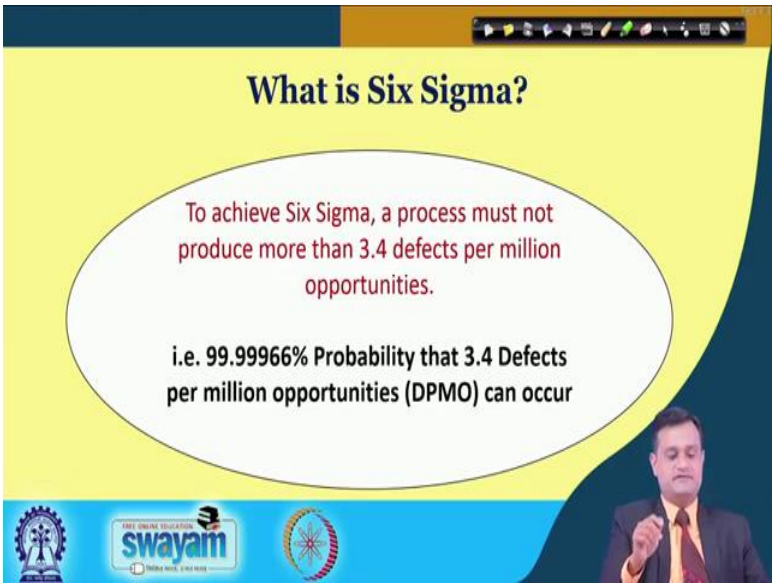

In a more technical way you would say that to achieve six sigma a process must not produce more than 3.4 defects per million opportunity, just see this 3.4 million per three point defects per million, so it is almost like zero and this is achievable.

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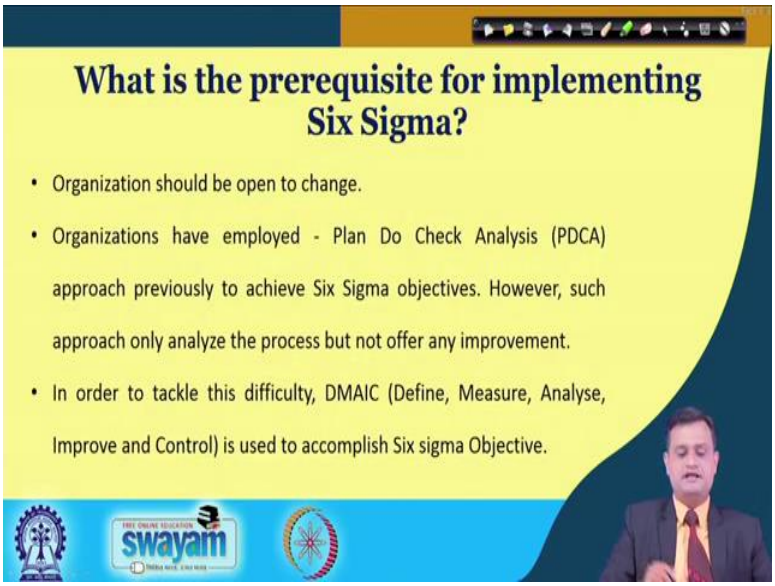

So, many as I companying they have executed six sigma and they have realize the immense benefit. So, there are some prerequisite that you need to prepare the organization and typically once you have that culture resistance has gone down for change the culture and right attitude prevails you are ready for six sigma.

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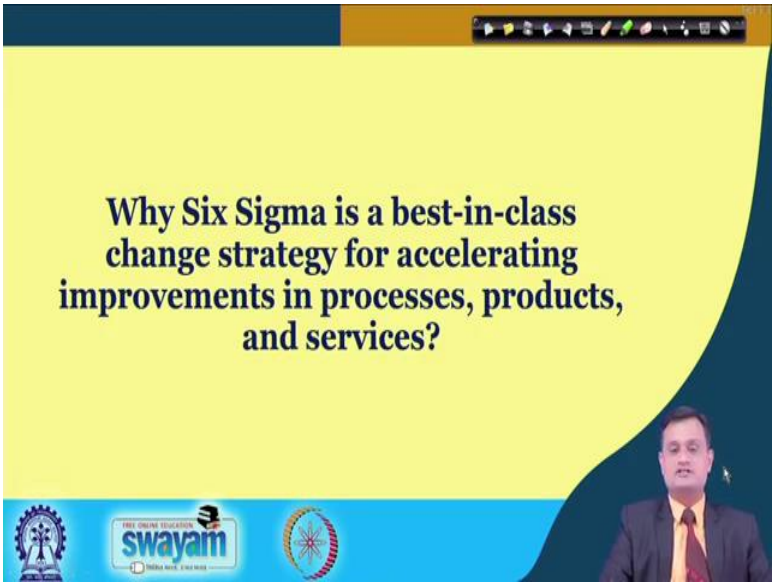

So, why six sigma is best in class?

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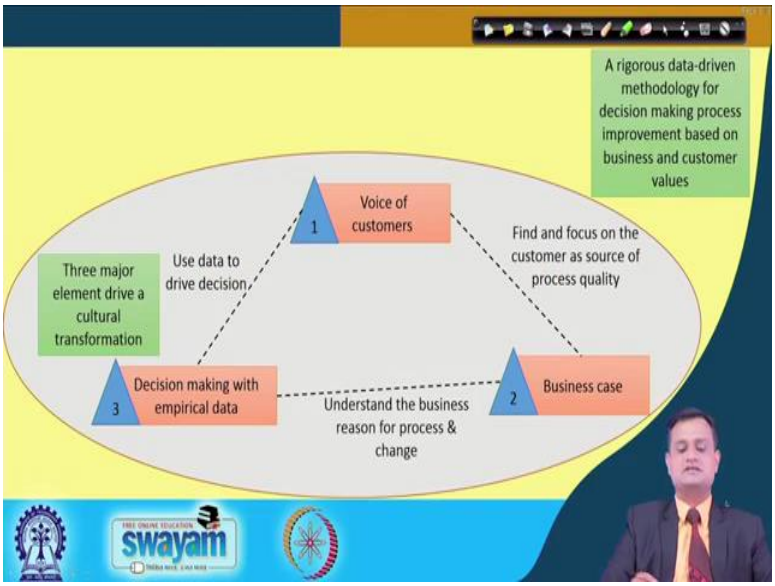

Just see this it has three pillars, you capture the voice of customer, you go to the business case, understand the business reasons for process and change and then you try to make the decision with the empirical data fact base management. And this is how it helps the company to achieve the six sigma level.

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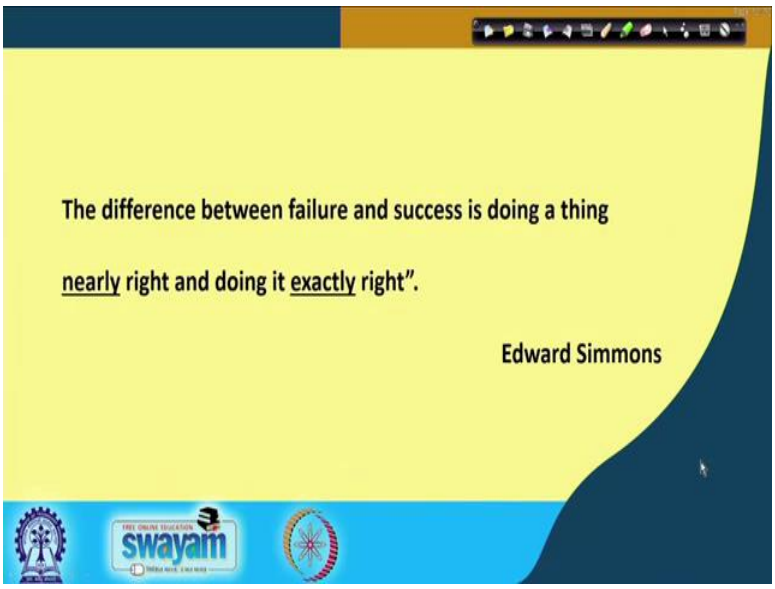

So, the difference between failure and success is doing a thing nearly right and exactly right. Edward Simmons, six sigma is about doing the thing exactly right, I am striving for the perfection.

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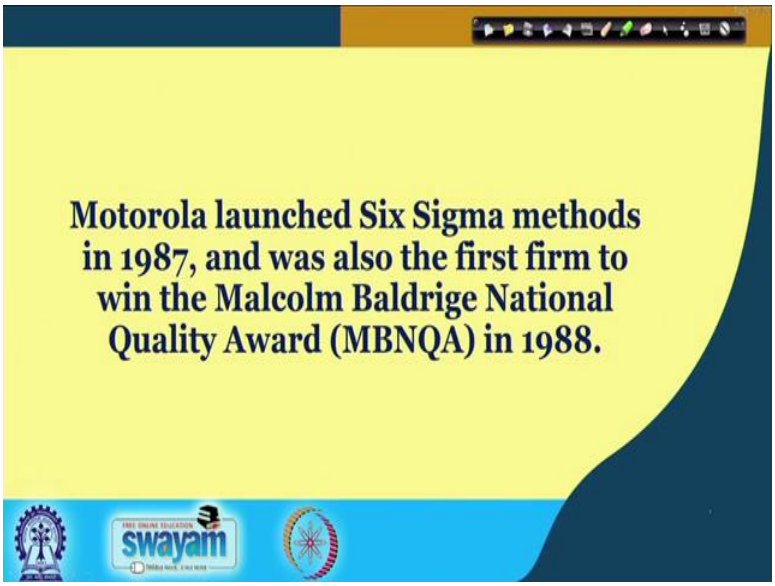

Motorola initiated this philosophy in 1987 and then this particular company also received a quality award Malcolm Baldrige quality award in 1988. So, this company had set the benchmark and an eye opener approach for all the industry organization manufacturing or service and followed by that general electric gas realize the immense benefit in 1995.

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Indian organizations or you may say organizations operating in India doing six sigma General Electrics, Wipro, Tata Steel, Telco, Tata motors, Asian paints, L & T switchgear, TVS Suzuki, VIP industry, Tata Honeywell, Tata Consultancy, Pidilite

industries. These are just few to name otherwise the list is long, and companies they are really trying to set the international benchmarks through six sigma implementation.

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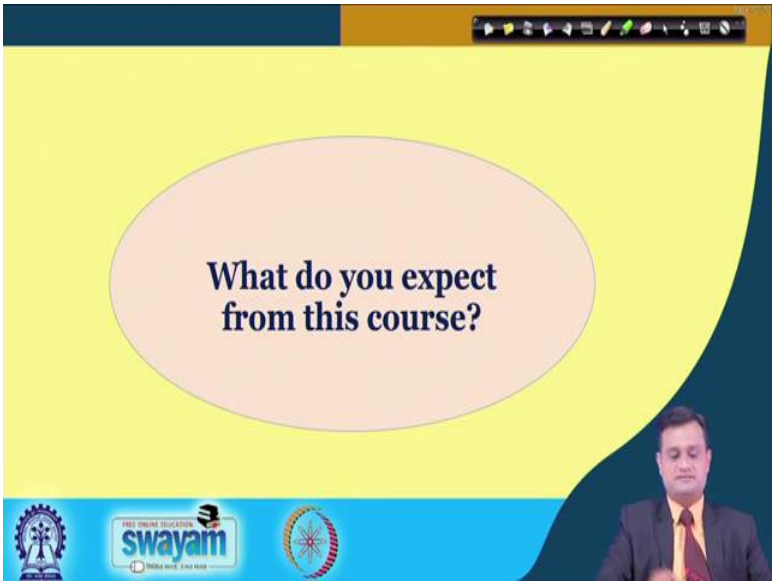

What do you expect from this course? You will be going through a lot of learning, and you must have thought something and what do you expect from this course.

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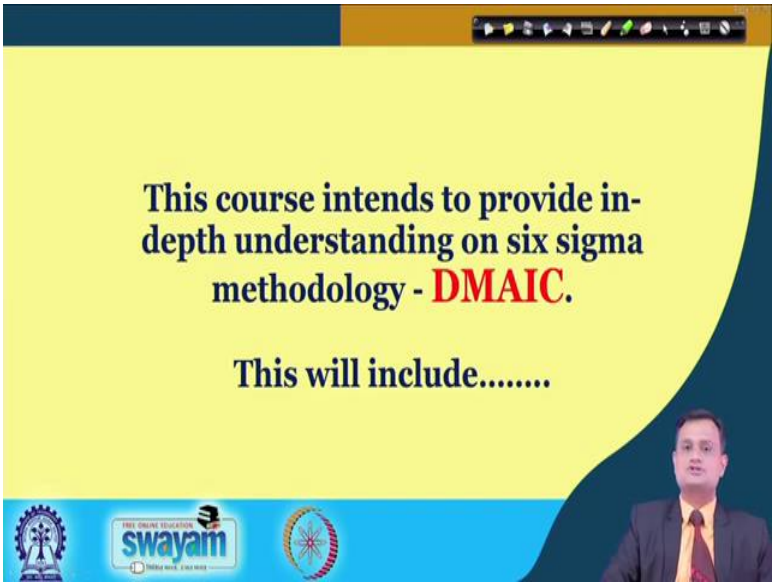

So, this course basically intends to provide in depth understanding on six sigma methodology DMAIC and typically this will include what is six sigma methodology, why to use six sigma, what are the various phases in DMAIC, and how to execute, what

is the tool kit of a six sigma and how to use, and how to address the six sigma implementation challenges.

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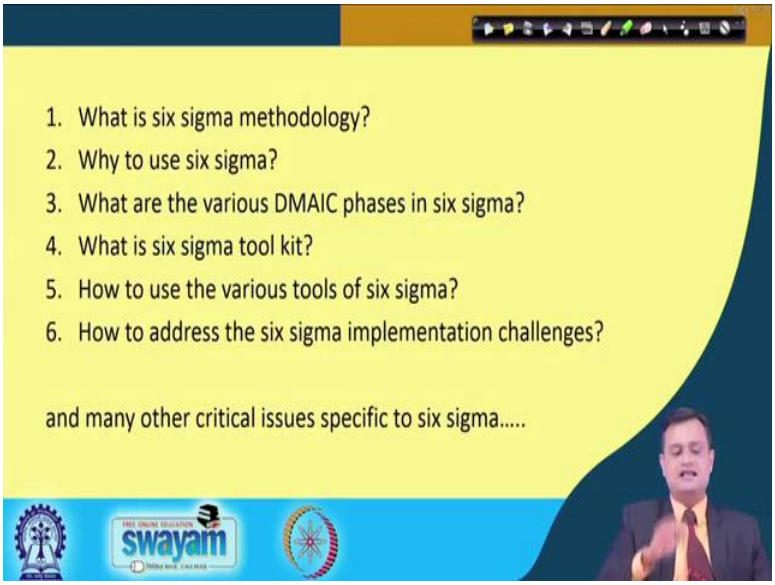

And many other critical issues we will discuss when you will go through this course attend you will really find that it is a marathon journey, and we have covered each and every topic in a critically and great detail and you would be immensely benefited.

So, thank you very much for your patience and interest in understanding the overall scope, overall structure, overall deliverable of this particular online course on six sigma. I still consider that this first lecture is very very important. If required listen it twice or thrice so that you can get the complete idea of your upcoming journey and you can proceed your journey, get hold on your journey, get control over your journey in a very very systematic and structured way.

So, we will continue our six sigma journey from the next lecture. And till that time I would say that look at the prerequisite go through first six chapter either of the book Aczel statistics or Levin , statistics and make yourself ready for digesting the content of this course. Thank you very much. Be with me. Enjoy.