Lecture - 01
Course Overview

My name is Shiva and I have been really looking forward to meeting all of you. Most of you would have seen me in the introduction to biomimicry snippet in the NPTEL, you know, the website. This has been a meeting that I have looked forward to for a very long time. So thank you for joining us. Thank you for wanting to learn something. Thank you for, you know, wanting to learn together. Let me introduce myself.

My name is Shiva. I am a guest faculty at IIT Madras. I am the faculty for this course. Very quickly my background, I used to be a lawyer. I was an advocate in the Madras High Court. I spent about 20 years at TCS. For the last seven years now, I teach various subjects at IIT Madras, ranging from creative thinking to biomimicry. We do a very interesting subject, which is to help the campus person understand corporate life.

So that is one of the more popular programs that we do. Alright, now coming to biomimicry, you will see that the, you know introduction in front of you, we have Mrinalini, myself, professor Sivakumar and professor Satya Seshadri, who will be doing this course. Let me go to two important aspects for this course before we actually start teaching. One is the contents of the course and the other is the structure of the course.

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As far as the contents are concerned, that is the content, right? So we have purposely put, look at the title, it says start your biomimicry journey right, which means you are now standing in the train station. And this train is going to take you on a long journey using these as content. These are probably you can symbolize them as stations right, station one, station two, station three.

And each of you will decide when the train will stop. For me and Mrinalini and Siva and Satya, the train has not stopped because this is one of the stops for us, teaching all of you. For some of you it will stop soon. Some of you it will stop later. I am guaranteeing, for most of you the train will never stop. The journey to biomimicry, once you get on to the train, you cannot stop. So what are we talking about in this course?

We will talk about of course essentials of biomimicry, which is so important, which will help you understand the basics of biomimicry. What is biomimicry, what is not? You will also learn what you are mimicking, right, what is it that you are mimicking. I am not going to get into the definition of biomimicry, because that is for a later stage. I am only talking to you about the course contents.

When you learn something as to what is something, you also need to learn why is something, right? So therefore why biomimicry. This portion, the second portion is probably one of the most interesting, important critical things to learn in biomimicry, which is function, strategy and context, the interconnections and the nature's design

principles. Nature's design principles. If you are wondering what it is, that is do not worry. In about, in a few minutes' time, you will know what it is.
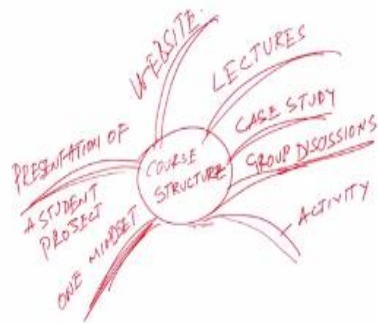
One of the highlights of this program that we have got feedback about from students and other people is that we are probably the only program that are linking biomimicry and the UN Sustainable Development Goals, simply because you will notice that the UN sustainable goals completely will expand your mindset right, will expand your mindset to think about new problems to the world. We are also got to do systems thinking.

Systems thinking, again is one of the fundamentals of thinking tools. My life has actually changed after I started learning systems thinking. I have started to understand why things happen. I know I cannot prevent things from happening, but you can start to understand why things happen. And of course, the biomimicry process, that is how do you go from identifying a problem to actually designing a solution, right?

So you will learn that because there is no point in just telling you what is biomimicry and leaving you like that. It is also important that all of us learn, fine, I want to solve a problem, but how do I now reach the solution? So this is the basic contents of the course. As far as the structure of the courses, right, you cannot just say content. So how have we designed it? One of the things that we really have been very committed to is engagement of the learner.

We, you know, it is very difficult to speak on a platform like this and wonder whether we are engaging the learner. So we said okay let us put all our thoughts into it and find out how is it that we can keep you engaged. We understand that the human mind cannot concentrate for more than a few minutes, right? Which is why we said, okay, let us have several things in the structure of the course to help you.

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So I am going to, this is the blank screen in front of you. I am going to put a circle. And I am going to say course structure, right? And then what I do, just watch what I am doing because you will learn how to do it yourself later. And then I have one branch. Here, there will be lot of lectures. Let me try and erase this. My handwriting is improving, right? There will be lot of lectures. And so therefore, this is about all the classes will have these things.

There will be lectures, there will be a case study. Why case study? Because, you know, it is not just enough to tell you something. It is also important to know that someone in the world has actually used the principles of biomimicry and come to a solution which is working, right? That will give you the confidence that what you are learning works. So there will be case study.

There will also be group discussions. So I will have a bunch of experts, students, people who are interested, people who have come, you know, as part of the biomimicry program. We will discuss important topics that are probably going through your mind. And that is what will happen if I was in front of you, I would have asked you some questions, we would have discussed with each other. Now what are we going to do?

We are going to use the opportunity of the platform to actually discuss those questions that are probably happening in a learner's mind and use that opportunity to discuss

certain points and all that. So group discussions. And then there will also be, there will be let us say, there will be a presentation from a student's work, presentation of a student project. We have about three batches of biomimicry at IIT, Madras.

We have had about 80 students go through our program. And each of those students has picked up a United Nations Sustainable Development Goal and come back with a solution. So what we are going to do, we are going to present that solution to you. Just to help you understand how that student has tackled that problem using biomimicry. And we are also going to discuss one mindset for biomimicry.

Because we have learned that it is not enough that you learn something, every subject needs a particular mindset, right? Some subjects need lots and lots of hard work, attitude and you should really work hard. Some subjects need a lot of thinking, some subjects need a lot of talking, some subjects need a mindset that says these are the one or two or three or four things I need in order to become a bio mimic. That term should now get familiar to you.

So we have got lectures, case studies, group discussions, mindset, student project, presentation of a student project, and we also have an activity that we will suggest you do in every class, right? And then we are also going to have a, we will also have something very interesting for you. We are also going to take you through important websites. We are not going to teach you from a website.

We are only going to make it interesting for you to browse the website because many times what happens is you tell the student that there is a website and he just keeps it like that, right? He does not do anything about it. So we are saying there is so much of information on our website, right? Some people have really worked hard to create it, and the website can be a great learning tool.

So we are going to help you go through the website, we will go through the important aspects of the website so that you never know we may actually ask you a question from the website. So you know, alright. So that is what the course structure is. So we

what we saw was the contents of the course, we saw the course structure, and welcome to the biomimicry course once again.