

Prof. Mangala Sunder Krishnan NPTEL: Enriching Engineering Education in India

*In a recent E-Learning Conference, I had the opportunity to meet **Prof. Mangala Sunder Krishnan** from IIT Madras, who is the **coordinator and head** of the **NPTEL** initiative from the Ministry of HRD, Government of India. NPTEL is a joint initiative of the IITs and IISc in providing free online courseware. Here, you will find hundreds of e-learning courses offered through the web and video formats in Engineering, Science and Humanities streams. The mission of NPTEL is to enhance the quality of higher education in the country by providing free content that can be used as reference and supplementary material in various courses. I'm glad to share this conversation that touches upon some important aspects of the NPTEL program.*



Now that NPTEL has moved to Phase 2 we have content being added in several subjects, in different formats...what steps are being taken to create awareness about NPTEL across various colleges?

We've been circulating many brochures to colleges. I conduct workshops, we also have two or three partners, who are now taking it forward through the website, and also through their networking management processes. They run large scale workshops and also advertise through the workshops. They involve students by conducting contests, which sort of brings the students into it, and from the students it spreads into other institutions.

So when the students come to the website, do they look at it as reference material?

Yes, for most of the students, it is reference material. These days AICTE is also encouraging colleges to get NPTEL as a digital library material, in fact, it has made it mandatory for colleges to have it. This way, AICTE is also helping us to advertise

Is the content relevant mostly for IITs or can it be used by other engineering colleges as well?

Well, it is not just for IITs alone, it targets everybody. The course contents are currently provided by or developed by faculty who are well-experienced in their subjects. At the moment 90% of these course contents are done by faculty from IITs. Faculty from other universities have been contributing to these courses. They are invited to contribute for courses for which we do not have volunteers from IITs, and this is an open invitation on the NPTEL website.

In one of my interactions with some teachers, I heard that since the content is targeted at IIT level, it becomes difficult for non-IIT institutions to make use of it. What is your opinion on it?

No, the content is not targeted at IIT level. The content is created with professors who have experience in the IITs, who have been teaching these subjects. While developing the content, we have also often indicated to the professors that these courses are meant for the university students. **We have taken steps to make sure that we do not dilute the content and reduce the level of technical expertise in the process.** For example, if some lectures are

about the NPTEL content. We provide the material free of cost to colleges. Earlier, colleges had to pay for it, because we were not clear about the funding issues, but now since MHRD is fully supporting this project and it's our mandate to make it free, colleges can actually get people to our site. Colleges can download everything from the website as the videos are now in free download format. They can directly download or they can take it in the hard disk. We copy it for them free of charge and we help them in case they need to set an Intranet in their colleges.

Now moving on to the teacher's perspective, we understand that most of them are new to using technology in classroom, they may feel inhibited. What initiatives are being taken to make the teachers feel comfortable in using the NPTEL content?

Yes, it is a good point. We have teacher orientation workshops where we inform the teachers, with the help of subject matter experts, on the specific topics of their interest. **We run two kinds of workshops, one of them is what I offer, pertaining to general awareness: this deals with topics like, 'where the material is', 'what it is useful for', or 'how the syllabus is organized', and so on. The second type of workshop is for specific teachers who teach a particular subject.** They may interact with the professor who created the course one to one for a day or two. This kind of faculty/course specific workshop we have been running in all the IITs. We are also encouraging private institutions to run such course specific workshops not for their institution alone but for a community of institutions, that's how NPTEL supports teacher empowerment.

difficult, many professors are willing to add additional material supplementing the lectures. In addition, students are always encouraged to send the questions on specific topics, often professors respond to them. They are welcome to submit questions either directly by email to the professors or they can send it to the NPTEL website. Once the query reaches the NPTEL website, it triggers a contact mechanism to the professor in charge.

How is the response to NPTEL content? Is there anything specific you wish to mention?

The response is positive and encouraging. There are approximately 5000 comments on YouTube in the public domain, of that 5000 comments, more than two or three thousand specifically refer to the fact that they could not get such teaching, learning material elsewhere free of charge without any hesitation whatsoever. We received comments saying that the content is presented in a systematic manner from beginning to end. In fact I've even received positive comments for the Chemistry course lectures I've given. Students and faculty have sent their comments such as "thank you very much for the lectures you provided, when are you going to add more of them. We like the way in which the content is presented. It's quite unique. It is not a normal classroom or a standard format; it's also different with respect to our styles and teaching. It looks like you teach a lot in a small interval of time reasonably clearly." We would like to hear more of such comments. People are using the content and we are happy about it. Rural students may think it's at a slightly higher level, but they need an intermediate mentor who would help them, that mentor/facilitator can be their college teachers or students among themselves as a group. If students learn from each other, I think NPTEL will just fly off; it's a peer to peer interaction which is needed for the process to be completed.

Thank you.