

# NPTEL AND THE ONLINE CERTIFICATION PROGRAMME

## About NPTEL

The National Programme on Technology Enhanced Learning (NPTEL) was initiated by seven Indian Institutes of Technology (Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati and Roorkee) along with the Indian Institute of Science, Bangalore in 2003. Five core disciplines were identified, namely, civil engineering, computer science and engineering, electrical engineering, electronics and communication engineering and mechanical engineering and 235 courses in web/video format were developed in this phase.

The main goal of NPTEL Phase II (2009-14) was to build on the engineering and core science courses launched previously in NPTEL Phase I. An additional 600 web and video courses were created in all major branches of engineering, physical sciences at the undergraduate and postgraduate levels and management courses at the postgraduate level. Several improvements such as indexing of all video and web courses and keyword search were implemented.

## Some highlights:

- Largest online repository in the world of courses in engineering, basic sciences and selected humanities and social sciences subjects
- Online web portal <http://nptel.ac.in> – more than 890 million views
- Youtube channel for NPTEL – most subscribed educational channel, 1.5 million+ channel subscribers
- More than 50000 hours of video content
- Most accessed library of peer-reviewed educational content in the world

NPTEL has been one of the most successful multi institutional projects to be implemented since 2003, in its 16<sup>th</sup> year now.

It is hugely successful on various counts:

- **1500+ courses** – content available on the website in 23 disciplines, primarily engineering; This is much more than what most educational portals in the world have – especially this being in the space of UG/PG technical education
  - The current format of online courses offered every semester is adding anywhere between 120-150 new courses to this repository
- All the course contents are available on nptel.ac.in – **for FREE**, and distributed under the **CC-BY-SA license (Creative Commons by Distribution Share Alike)**. This allows anyone to view, download and copy the contents without asking for permission from NPTEL and also distributing it. The whole project stands on the premise that Knowledge shared is knowledge multiplied.
  - These contents are copied by NPTEL for free if hard disks are sent and more than 2000 institutions/companies/training institutes have done this and have the content on their local machines.
  - Current size of NPTEL content (MP4 format) – 19TB
- In spite of so many institutes hosting content locally, whose views/analytics are not collected, the number of **NPTEL website+YouTube views exceeds 800 million** and is growing. 80% are from India and remaining from all over the world.

- The number of **YouTube subscribers to the channel exceeds 1.5 million** – which is an Ads free, higher education video content hosting channel – that has videos that cover fundamentals in depth in various topics/disciplines and not just populist courses.
- **Text transcripts for 50000+ hours of videos**
  - More than 50000 hours of videos- all transcribed and subtitled

NPTEL was the trailblazer in getting the technical content videos transcribed and putting in the process for the same, to the extent that about 3000+ hours are created every semester in recent years and vendors transcribe the same – given as notes to the learners.

### **NPTEL Local Chapters – a big movement bringing together various educational institutes**

NPTEL is working with more than 2400 colleges in the form of Local Chapters with each of them having a Coordinator, who is the Brand Ambassador of NPTEL in the college. This initiative was started in 2015 and the growth has been phenomenal in this initiative. This has been a primary reason for the NPTEL MOOCs initiative to not just sustain but increase rapidly while world over MOOCs is seen to be on the decline.

NPTEL looks upon the colleges as its partner in delivering MOOCs more effectively to the learners and to reduce the distance of the learner from the knowledge which one normally sees in MOOCs programmes. This is effected by bringing in group enrolment/study mechanisms within the college that associates with NPTEL as a Local Chapter. When multiple students from the same college enrol to the same course, support and guidance through faculty members as mentors, ratings and recognition of Local Chapters that perform well at the end of every semester, etc. are made possible.

NPTEL wishes to create an inclusive atmosphere where the colleges feel they are also part of the education ecosystem and are contributing to it and not feel threatened that they are being replaced. This entire initiative involves no financials, where the college does not pay anything to become a Local Chapter and NPTEL also does not financially compensate the coordinators, but the relationships are well nurtured as NPTEL knows the importance of the colleges in getting students and faculty enrol and learn from the MOOCs while the college managements realize the value of the courses from the IITs in terms of the content delivered and the brand value.

### **NPTEL – one of the most successful Government sponsored projects**

NPTEL has been completely supported financially by MHRD since 2003 and this has been one project that has always delivered more than what it had promised, year after year, which is what has kept the funds coming. In terms of impact and use, especially after the online certification courses have been launched, it is clearly one of the most successful educational projects of MHRD.

NPTEL has been far ahead in designing and tailoring MOOCs for the Indian scenario, the biggest strength and USP being the proctored exams at the end of every course which the candidate has to attend IN PERSON. The exams are organized in more than 130 cities across the country currently. This lends huge credibility to the certified candidates, resulting in the government announcing policies where these can be taken for credit transfer in UG/PG degrees and by faculty for Career Progression Points. This is again something that no other MOOC portal in the world does.

## **NPTEL and SWAYAM**

SWAYAM is the National MOOCs portal of India which is expected to be the one stop shop for courses related to any field of study, hosting lectures from the best faculty in the country and NPTEL is the National Coordinator for Engineering courses under SWAYAM.

NPTEL is now the architect of the next version of SWAYAM and coordinating its development, based on the experience gained in the last 5 years of offering MOOCs and overcoming the challenges and bringing out solutions. SWAYAM 2.0 will be highly scalable, robust, efficient and optimised with features that will help integrate it into the educational scene of Universities and colleges.

### **What else does NPTEL do?**

- NPTEL did not choose to stop with creating content but went on to offer courses for certification to leverage the content created.
- NPTEL did not stop with creating just videos but also decided to transcribe the same for subtitling and to distribute as notes.
- NPTEL did not stop with English transcripts but is now translating the same into regional languages to effect better penetration of the subject knowledge to learners who have been educated in Indian languages and are not proficient in English.
- NPTEL did not stop with just certifying, but thought of what more for the learners and launched the Internship with Course Instructors programme.
- Did not stop with this but launched the Industry Associate Programme to facilitate not only employee reskilling/upskilling but also to harness their expertise in courses and explore possibility of internships/employment opportunities for NPTEL learners.
- NPTEL wanted to leverage the content and courses to provide access for learners from economically weaker backgrounds to prepare for GATE and thus was born the idea of the portal.
  
- NPTEL chose to create an educational ecosystem that was inclusive towards colleges in the country and the faculty there, rather than isolate them.
- NPTEL thought of the faculty doing courses – what's in it for them apart from the course certificate – and thus was born the AICTE-NPTEL FDP MOU.
- NPTEL brought in the "Sponsor a SPOC to a conference" scheme – to reward SPOCs of Local Chapters such that this initiative also furthers their research aspect, apart from being an incentive.
  
- NPTEL works on a non-profit mode in terms of collecting the fees for the exam and trying to match costs incurred. And when it realized the plight of financially weak students challenged to write the exam owing to the fees, took it as a challenge and solved it partially by the CSR funds providing for waivers.

### **IMPACT OF NPTEL:**

Last 4 semesters 2017-2018

Number of courses has been 289 in 2017 and 489 in 2018

2019 – we expect to offer more than 600 courses

Course enrolment since March 2014 – crossed 65 lakhs

Number of exam registrations has increased from 40k to 1.61 lakhs in a semester

The exam registration/Enrollment percentage has increased from 6% to 12% (world over normally this is between 2-4% for other MOOCs portals)

Feedback has been amazing with many learners benefitting in various ways, which can be found in various social media sites of NPTEL – facebook, quora.com, etc.

We are also planning for a more detailed impact analysis to be carried out in colleges, to assess the effect of the online certification courses. This will be with colleges who have participated for more than 2 years – at 3 levels – students, faculty and at the institution level.

#### **Domain certifications:**

Going one level upward from course level certification, we have introduced domains, which will help guide learners on what is to be learnt to specialize in a particular area. A domain entails about 3-4 core courses and 2-3 elective courses collectively coming to more than 50 weeks of learning. 3 domains have been currently identified as Data Sciences, Artificial Intelligence and Stack Developer. We plan to define more domains in areas of Management, all disciplines of Engineering, etc very soon.

All the above has been achieved with **staff strength of less than 120 and a very frugal budget.**

#### **Accounting for funds received**

The accounts and funds move through IITM Audit and Accounts and hence the usage and papers related to any expenditure would be well tabled and maintained.

The funds given to NPTEL through CSR for any initiative are used for learners all over the country right from Jammu to Andaman and North East to Gujarat; hence it has a huge geographical impact and is not localised.

It is a project that impacts students in colleges and these courses, from the IITs, have the potential to change their future by making them more ready for a job or for higher education.

**The relevance of this project may not be immediately apparent, but the impact is a slow percolation of good quality content effecting an improvement in the quality of the engineers/learners that would go towards building a stronger and more technically sound nation in a few years.**