26 Digital Initiative of Government of India in Higher Education

Study of Education

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1. e-PG Pathshala

e-PG Pathshala is an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) being executed by the UGC. The content and its quality being the key component of education system, high quality, curriculum-based, interactive e-content in 70 subjects across all disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences, linguistics and languages have been developed by the subject experts working in Indian universities and other R & D institutes across the country. Every subject had a team of principal investigator, paper coordinators, content writers, content reviewers, Language editors and multimedia team.

2. SOS Tools

Software and simulation packages are useful tools for the analysis of systems and solving problems by the students of Science, Social Science, Engineering, Management and related disciplines. Many commercial software packages are available for the above. But many of these software packages are quite costly and require yearly license fee for updates and maintenance. Many open source softwares are available which can perform similar functions but are not user friendly and do not have proper documentation. Beside these, adequate manpower to teach students to use these packages are not available.

The objective of this project is to develop software tools for analysis of systems and computations, create adequate manpower to teach students to use open source software and to develop simulation tools. The developed software should be user friendly and properly documented. Such packages, tailored to suit the needs of our students will be ported on Sakshat for making freely available to any student, teacher or institution willing to use them.

3. SWAYAM (Study Webs of Active Learning for Young Aspiring Minds)

Under the 'Digital India' Initiative of Government of India, one of the thrust area is 'Massive Online Open Courses (MOOCs)'.MHRD, Government of India has embarked on a major initiative called 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM), to provide an integrated platform and portal for online.

4. SWAYAM PRABHA

The SWAYAM PRABHA is a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar. The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal.

5. E-Shodh Sindhu (eSS)

The MHRD has formed e-Shodh Sindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium to provide access to peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines to the Research and academic community in the country.

6. Virtual Labs

Virtual Labs project is an initiative of Ministry of Human Resource Development (MHRD), Government of India under the aegis of National Mission on Education through Information and Communication Technology (NMEICT). This project is a consortium activity of twelve participating institutes and IIT Delhi is coordinating institute. It is a paradigm shift in ICT-based education. For the first time, such an initiative has been taken-up in remote-experimentation. Under Virtual Labs project, over 100 Virtual Labs consisting of approximately 700+ web-enabled experiments were designed for remote-operation and viewing.

7. National Academic Depository (NAD)

The vision of National Academic Depository (NAD) is born out of an initiative to provide an online store house of all academic awards. National Academic Depository (NAD) is a 24X7 online store house of all academic awards viz.certificates, diplomas, degrees, mark-sheets etc. duly digitised and lodged by academic institutions / boards / eligibility assessment bodies. NAD not only ensures easy access to and retrieval of an academic award but also validates and guarantees its authenticity and safe storage. National Academic Depository comprises of two interoperable digital depositories viz. CDSL Ventures Limited (CVL) and NSDL Database Management Limited (NDML). These digital depositories have ensured hardware, network facilities and software of prescribed quality for smooth and secured operationalisation of NAD.

7. National Digital Library of India (NDL India)

National Digital Library of India (NDL India) is an all-digital library that stores information (metadata) about different types of digital contents including books, articles, videos, audios, thesis and other educational materials relevant for users from varying educational levels and capabilities. It provides a single-window search facility to access digital contents currently existing in India as well as other digital sources under a single umbrella.

8. e-Yantra

Project e-Yantra is an initiative to spread education in Embedded systems and Robotics by IIT Bombay sponsored by Ministry of Human Resource Development through the National Mission on Education through ICT (NMEICT). This project was conceptualized by Prof. Kavi Arya and Prof. Krithi Ramamritham of the Department of Computer Science and Engineering at IIT Bombay.

9. Talk to a Teacher program

A-VIEW is part of Talk to a Teacher program coordinated by IIT Bombay and we are funded by the Ministry of Human Resource Development (MHRD) under the Indian Government's National Mission for Education using Information and Communication Technology (NME-ICT) along with various other projects in Virtual Labs, Haptics and Natural Language Processing. A-VIEW is now deployed at several IITs, NITs and other leading educational institutions across the nation.
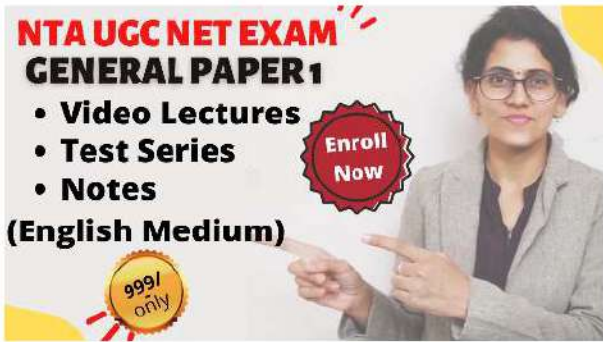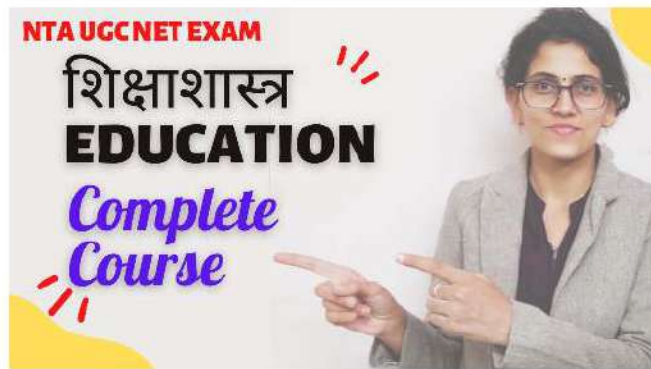
10. FOSSEE (Free/Libre and Open Source Software in Education)

FOSSEE (Free/Libre and Open Source Software in Education) project promotes the use of FLOSS tools to improve the quality of education in our country. We aim to reduce dependency on proprietary software in educational institutions. We encourage the use of FLOSS tools through various activities to ensure commercial software is replaced by equivalent FLOSS tools. We also develop new FLOSS tools and upgrade existing tools to meet requirements in academia and research.

The FOSSEE project is part of the National Mission on Education through Information and Communication Technology (ICT), Ministry of HumanResource Development (MHRD), Government of India.

11. Vidwan

VIDWAN is the premier database of profiles of scientists / researchers and other faculty members working at leading academic institutions and other R & D organisation involved in teaching and research in India. It provides important information about expert's background, contact address, experience, scholarly publications, skills and accomplishments, researcher identity, etc. The database developed and maintained by Information and Library Network Centre (INFLIBNET) with financial support from the National Mission on Education through ICT (NME-ICT). The database would be instrumental in selection of panels of experts for various committees, taskforce, established by the Ministries / Govt. establishments for monitoring and evaluation purposes.

12. E-acharya Integrated e-Content Portal

A portal to host all e-content project, developed/funded under the National Mission of Education through ICT. There are more than 70 projects on e-content under NME-ICT which are developed/being developed in various subject disciplines (Science, Arts, Engineering, Social Sciences, etc.) through various Indian institutes/universities/colleges. The portal would provide facility to search and browse all hosted content wherein a learner can easily access the desired material including audio/video learning material, textual material, multimedia enriched materials etc. through a single interface. Moreover, features of faceted search, syllabus-based search, usage statistics, personalized learning experience with provision for "my account" and "my space", etc. would be incorporated in this portal.

13. E-Kalpa

This project on 'Creating Digital-learning Environment for Design' also called 'e-kalpa' is sponsored by the Ministry of Human Resources, Government of India as part of the National Mission in Education through Information and Communication Technology.

14. Spoken Tutorial

The Spoken Tutorial project is the initiative of the 'Talk to a Teacher' activity of the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India.

Spoken Tutorial is a multi-award winning educational content portal. Here one can learn various Free and Open Source Software all by oneself. Our self-paced, multi-lingual courses ensure that anybody with a computer and a desire for learning, can learn from any place, at any time and in a language of their choice. All the content published on this website are shared under the CCBY SA license.

The Spoken Tutorial project is being developed at IIT Bombay for MHRD, Government of India.

15. BAADAL

Baadal: A MHRD initiative developed as NME-ICT Cloud for academic purpose.

Baadal is a cloud orchestration and virtualization management software initiated by MHRD under NMEICT scheme and developed and maintained by IIT Delhi. It ensures optimum utilization of the infrastructure and speeds up the development and deployment of eGov applications for academic needs.

It is hosted in NIC data-centre. Some of the main features of Baadal are:

- Dynamic resource scheduling and power management.
- An integrated workflow system for request and commissioning of virtual machines.
- Facilities for suspend, resume, shutdown, power off, power on and specifying resource requirement of virtual machines.
- Dynamic resource utilization monitoring.

Under this project, we help government and semi Government institutes to accommodate their infrastructure needs without taking care of management issues.

As Baadal is open source project, we help institutes to setup their private cloud.

16. Global Initiative of Academic Networks (GIAN)

Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.

In order to garner the best international experience into our systems of education, enable interaction of students and faculty with the best academic and industry experts from all over the world and also share their experiences and expertise to motivate people to work on Indian problems, there is a need for a Scheme of International Summer and Winter Term. During the 'Retreat' of IITs with Minister of Human Resource Development Smt. Smriti Zubin Irani on 29th June, 2014 at Goa, it was decided that "A system of Guest Lectures by internationally and nationally renowned experts would be evolved along with a comprehensive Faculty Development Programme not only for new IITs, IIMs, IISERs but also other institutions in the country.

17. National Institutional Ranking Framework (NIRF)

The National Institutional Ranking Framework (NIRF) was approved by the MHRD and launched by Honourable Minister of Human Resource Development on 29th September 2015.

This framework outlines a methodology to rank institutions across the country. The methodology draws from the overall recommendations broad understanding arrived at by a Core Committee set up by MHRD, to identify the broad parameters for ranking various universities and institutions. The parameters broadly cover "Teaching, Learning and Resources," "Research and Professional Practices," "Graduation Outcomes," "Outreach and Inclusivity," and "Perception".

18. IMPRINT- (IMPacting Research INovation and Technology)

IMPRINT is the first of its kind MHRD supported Pan-IIT + IISc joint initiative to address the major science and engineering challenges that India must address and champion to enable, empower and embolden the nation for inclusive growth and self-reliance. This novel initiative with twofold mandate is aimed at:

(a) Developing new engineering education policy
(b) Creating a road map to pursue engineering challenges

IMPRINT provides the overarching vision that guides research into areas that are predominantly socially relevant.

19. SAKSHAT: A One Stop Education Portal

The pilot project SAKSHAT: A One Stop Education Portal launched on October 30, 2006 by His Excellency, the then President of India to facilitate lifelong learning for students, teachers and those in employment or in pursuit of knowledge free of cost to them. The content development task for 'SAKSHAT' was looked after by the Content Advisory Committee (CAC) for the respective subject, which consisted of representatives from educational institutions like IGNOU, Delhi University, Kendriya Vidyalaya Sangthan (KVS), Navodyaya Vidyalaya Sangthan (NVS), National Institute of Open Schooling (NIOS) and National Council for Educational Research and Training (NCERT) and prominent academicians in the field. In addition, some NGOs had also provided the contents developed by them free of cost for this portal.

The vision is to scale up this pilot project 'SAKSHAT' to cater to the learning needs of more than 50 crore people through a proposed scheme of 'National Mission in Education through Information and Communication Technology (ICT). The scheme is to provide connectivity to all institutions of higher learning to world of knowledge in the cyber space, to leverage the potential of ICT, in providing high quality knowledge modules with right e-contents, to address to the personalized needs of learners, in order to take care of their aspirations. These modules are to be delivered through 'SAKSHAT'.

20. Atal Ranking of Institutions on Innovation Achievements (ARIIA)

Atal Ranking of Institutions on Innovation Achievements (ARIIA) is an initiative of Ministry of Human Resource Development (MHRD), Govt. of India to systematically rank all major higher educational institutions and universities in India on indicators related to "Innovation and Entrepreneurship Development" amongst students and faculties.

Major Indicators for consideration

Assessment of innovation and startup ecosystem in HEIs will be based on Seven parameters with certain weightages allocated as below.

- Budget, Expenses to Support & Revenue Generated   (20 Marks).

- Infrastructures & Facilities to Support Innovations and Start-ups (10 Marks).

- Awareness Activities for Promoting Idea Generation and Innovation   (20 Marks).

- Promotion and Supporting Entrepreneurship Development   (20 Marks).

- Intellectual Property (IP) Generation, Technology Transfer and Commercialization   (14 Marks).

- Innovative Learning Methods & Courses   (10 Marks).

- Innovations in Governance of the Institution   (6 Marks).

21. DigiLocker

The main technology components of the DigiLocker system are:

DigiLocker is a platform for issuance and verification of documents & certificates in a digital way, thus eliminating the use of physical documents. Indian citizens who sign up for a DigiLocker account get a dedicated cloud storage space that is linked to their Aadhaar (UIDAI) number. Organizations that are registered with Digital Locker can push electronic copies of documents and certificates (e.g. driving license, Voter ID, School certificates) directly into citizens lockers. Citizens can also upload scanned copies of their legacy documents in their accounts. These legacy documents can be electronically signed using the eSign facility.

- Repository: Collection of e-documents that is exposed via standard APIs for secure, real-time access.
- Access Gateway: Secure online mechanism for requesters to access e-documents from various repositories in real-time using URI (Uniform Resource Indicator).
- DigiLocker Portal: Dedicated cloud based personal storage space, linked to each resident's Aadhaar for storing e-documents, or URIs of e-documents.

22. The National Programme on Technology Enhanced Learning (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.

23. OSCAR (Open Source Courseware Animations Repository)

Project OSCAR (Open Source Courseware Animations Repository) provides a repository of web-based interactive animations and simulations, that we refer to as learning objects (LOs). These learning objects span topics in science and engineering at the college level, and maths and science at the school level. Students and teachers can view, run and download these learning objects.

24. ShodhGangotri

"ShodhGangotri", research scholars / research supervisors in universities are requested to deposit electronic version of approved synopsis submitted by research scholars to the universities for registering themselves for the Ph.D programme. The repository on one hand, would reveal the trends and directions of research being conducted in Indian universities, on the other hand it would avoid duplication of research. Synopsis in "ShodhGangotri" would later be mapped to full-text theses in "ShodhGanga". As such, once the full-text thesis is submitted for a synopsis, a link to the full-text theses would be provided from ShodhGangotri to "ShodhGanga"

25. Virtual Learning Environment

VLE, an online environment of e-resources caters to several disciplines taught at undergraduate and postgraduate level. It is an initiative of Institute of Life-Long Learning, University of Delhi. Conceived in 2012, VLE today boasts state of art material that addresses emerging needs of a diverse student body, not only of Delhi University but other universities as well. Drawing from several successful Moodle models, the multi-media interactive contents loaded on VLE are categorized discipline-wise.

The lessons are developed by highly qualified faculty members across the universities and are continually edited and reviewed, primarily by discipline-expert Fellows employed to edit, oversee and coordinate the content. The content goes through several levels of rigorous peer reviewing and academic vetting to ensure quality and standardization. VLE also contains multimedia repository in form of audio, video and short films to expose students to new technologies in pedagogy.

26. Text Transcription of Video content

The text of video lectures has been obtained through manual processes and is therefore error-prone. There is no claim to accuracy on the text content provided in this site. We are working with many professors to correct their lecture transcripts so that they can become both verbatim transcripts as well as readable text help for those who have bandwidth limitations and cannot download full video courses. An audio file (mp3 format) is provided as download along with the transcript of each file. The transcribed files given as pdf are also being used to provide subtitles to the video (in English) and can be used in the future for providing local language translations. Please see the subtitles in the NPTEL website.

The text will be used to create metadata and search index and the time coding on the video will be used to provide markers on the video for easy search of the video content. These are activities in progress. The project to provide transcription of all videos published by NPTEL (currently more than 11,500 hours and will likely swell to about 20,000 hours in a year or so) is an on-going project and delays are unavoidable.