

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY AND MANAGEMENT - KERALA

UNDER THE EDUCATION GRID OUTREACH EDUCATION PROGRAMS

Announces EDUCATION PROGRAMS Leading to the award of

**CERTIFICATE OF PROFICIENCY, CERTIFIED INSTRUCTOR
AND POSTGRADUATE DIPLOMA IN TECHNOLOGY ENHANCED LEARNING**

For teachers and interested professionals in IT and Engineering

Submitted to the Board of IIITM-K and Dept. of Higher Education

1. INTRODUCING THE OUTREACH EDUCATION PROGRAMS

Under the Education Grid, IIITM-K has developed several systems and processes relating to *Technology Enhanced Learning and Teaching (TELT)*. Some of these are accessible through the Education Grid Portal (www.iiitm.ac.in). The institute has also been a close partner in the MHRD funded *National Program on Technology Enhanced Learning (NPTEL)* project under which more than 300 Professors from the IITs and IISc have developed e-Content in the form of systematically *Recorded Video Lectures (RVL)* and/or web-content in over 200 courses broadly conforming to the AICTE syllabi and for use in the engineering colleges. Further, the institute has set up a number of facilities for effective e-content development, management, distribution and establishing TELT in desiring colleges. Using these Education Grid facilities, the institute announces the commencement of a suite of **Outreach Education Programs (OEP)**. **As part of the OEP, IIITM-K hereby announces the launch of Certificate of Proficiency Program as the first level and the Certified Instructor Program in the second level for the teachers in the universities and colleges. Our initial focus will be on the teachers in the engineering colleges across Kerala and neighboring region.**

1.1. ACADEMIC COLLABORATION AND OPPORTUNITIES FOR UNIVERSITIES

IIITM-K intends to work closely in collaboration with the universities, premier institutions and invite their academicians therein to collaborate in this OEP and associated Certificate/PG Diploma programs and in other joint degree programs through flexible learning engagements. While IIITM-K by itself is in a position to conduct programs in IT and some related subjects like Computer Science and Computational Sciences, **the same Education Grid TELT platform is available for universities and premier institutions of Kerala** to expand the range of subjects and conduct Certificate Courses and PG Diploma in Engineering programs. The institute will request the necessary authorities in the state and its universities to accord recognition to the courses and certificates being offered under this OEP as part of an enlarged collaborative activity under their QIP and Academic Staff College programs. **The principal intent of this OEP is to make Kerala the first state to provide ‘Quality Education to all independent of Geography’ through Technology Enhanced Learning and Teaching’. This is to be achieved by engaging all the universities and premier institutions in the state to collaboratively work and offer OEP in as many subject areas as possible.** IIITM-K is also keen to get the necessary support and facilitations from the relevant Government Departments or

Directorates for the promotion of these programs and make this to build a bas for quality higher education in the state. Such programs will simultaneously modernize the teaching-learning processes and bring in effective use of TELT in the state's Higher Education. This is essential for the state in the context of the pressures on the Higher Education System to raise the standards, be competitive in a global knowledge driven economy and ensure quality educational opportunities for all in the state.

Here below is an outline of the first phase of the programs to be offered under the OEP.

2. PROFICIENCY CERTIFICATE PROGRAMS (PCP) FOR TEACHERS

The main objective of the PCP is to equip teachers with better grasp of foundations and enhancing their capacity to communicate the concepts in the subject they teach. They will undergo a full course in the subject as per its NPTEL (or IIITM-K)'s RVL augmented by supplementary content in the form of practice problems, learning activities and exercises supported by the Education Grid Course-Wiki. The course will be managed by an associated Learning Management System. The course will be conducted using ***Tutored Video Instruction (TVI) and weekly tutorial classes*** as explained later in this document.

PCP is offered as a suite of refresher courses for teachers and interested scholars in need of strengthening their foundations in different core engineering sciences and technology related courses, particularly those for which e-Content in the form a full suite of ***Recorded Video Lectures (RVL)*** are available. Under NPTEL, or, IIITM-K. Teachers in colleges with B.Tech., MCA or M.Sc. degrees and all those who teach subjects in which they wish to have greater proficiency will benefit through this Proficiency certificate. Research scholars in postgraduate programs, such as those doing Ph.D., or working in projects, under different research grants and looking for refresher courses in the subjects being offered will also benefit. Each course will have a fee as approved by the Board of IIITM-K. The fee against each course will be available in the Education Grid web-site.

On successful completion of a full course, IIITM-K will offer a Certificate of Proficiency in the course undertaken. We expect that those who get their proficiency certificate and the colleges in which they work will gain in several ways. Firstly, they will be able to teach with greater confidence. They will understand TELT systems and processes for the effective use of e-Learning in their own classes. Further, the teachers will be invited as members of the Education Grid Web-Community of teachers in the subject to participate in curricula and supplementary content development that will help enhance quality and modernize teaching in their own subjects.

3. CERTIFIED INSTRUCTOR (CIP) AND PG DIPLOMA PROGRAMS (PGD)

IIITM-K, under Education Grid will offer further opportunities to teachers who have obtained the proficiency certificate in a subject to become a certified instructor (CI). The objective of the CI award program is to build the necessary breadth, awareness, articulation and communication skills that are necessary for the teachers to be effective in their profession. To obtain a CI in a course a teacher will have to complete the following.

- (i) Complete a Certificate of Proficiency (CP) in the chosen course.
- (ii) Under an appropriate guide from a panel of approved academicians, they will choose a topic for a bibliographic survey and term paper.

- (iii) Complete a bibliography and professional activities survey and write a state-of-the-art paper in the topic.
- (iv) Design and develop a module in a course-wiki area as supplementary content of relevant learning activities for teaching the concerned topic.
- (v) Submit a professionally written term paper in the chosen topic.
- (vi) Present the bibliographic survey and the term paper in a seminar and in front of panel of subject experts. The experts-panel will also conduct a short oral examination on the term paper and related areas to ascertain the comprehension, articulation and communication capabilities of the teacher.

On the successful completion of the above activities and their assessment by the expert panel, the teacher will be awarded the Certified Instructor status.

In due course, the institute plans to offer Postgraduate Diploma to those teachers and scholars who credit a suite of relevant courses in specific streams as announced by IIITM-K. To get the PG Diploma, the teachers will complete a suite of 6 such courses and also get a Certified Instructor award in at least one of those courses.

4. OUTREACH EDUCATION PROGRAMS AND PROPOSAL FOR VISTA

Since NPTEL has many subject-disciplines, there are many courses for which IIITM-K does not have subject experts. In such cases, the proposed PC and CI Programs will request the universities and premier institutions in the colleges to lend the services of subject experts in conducting the certificates. IIITM-K will provide the Education Grid and other logistics support services for all such courses. These will also be treated as part of the OEP executed under collaboration mode.

Over time, we expect the academicians in Kerala's universities and institutions will also come forward to create e-content and/or able to offer courses in new subject areas using the TVI method. We shall also recommend that all collaborating universities and premier institutions collaborate under a state-wide '**Virtual Institute of Science, Technology and Arts**' (**VISTA**) that may be formalized by the Govt. of Kerala as the state's Virtual University under the open universities act of the Parliament. VISTA will result in improving the quality of education in our colleges and also provide the base for open supported learning any resident in Kerala. We shall request all the universities and premier institutions jointly present this proposal to the Govt. of Kerala for implementation.

5. WHAT IS TUTORED VIDEO INSTRUCTION (TVI)?

Tutored Video Instruction was a methodology introduced by Prof. James E. Gibbons of Stanford University in 1972. He was awarded the IEEE Medal for Education for this innovation in 1981. Since then it has been adapted under a variety of distance learning situations and extensively studied for its effectiveness. There are variants of this method. Several studies on the effectiveness of TVI find that when imaginatively applied and managed, it is more effective than the traditional classroom instruction. The method is particularly adaptable to effective TELT driven instruction. In India, Prof. A.K. Ray of IIT Kharagpur evolved and deployed TVI in the IIT Kharagpur's ElNet-3L initiative that ran successfully for some years. Now IIT Kharagpur and IIITM-K are adopting TVI in parts of some courses. Here we quote Prof. Richard Anderson of the University of Washington [1], "*Tutored Video*

Instruction is a novel mechanism for taking advantage of archived educational materials in the classroom. The idea is to facilitate discussion around pre-recorded materials – so students can reach an understanding of classroom content with the help of their peers and a tutor. This method of instruction was developed at Stanford in the 1970's by Jim Gibbons and his colleagues. They demonstrated very impressive results in terms of learning outcomes by students at remote sites.”

TVI is a powerful method of instructional delivery that brings new dimensions in distance learning. It is based upon sound pedagogic principles and instruction management [2, 3]. It is a hybrid form of education where a mix of both ‘distance learning’ using e-content and closed interactions by way of weekly tutorials are conducted in the courses. TVI is being adapted using pedagogically effective instruction management with appropriate ***Technology Enhanced Learning and Teaching (TELT) processes*** developed to drive a learning centered education for the students. Basically it involves students listen to recorded video lectures (RVL) delivered by eminent professors/experts, discuss on the lecture, post their comments and doubts in a Learning Management System (LMS). Further a weekly tutorial will be held by a trained local instructor for providing feedback to learners on their doubts, solve problems, discuss case studies and carry out continuous evaluation.

At its core, TVI assumes classrooms are conducted as discussions around pre-recorded lectures and learning material. Secondly, there has to be a well-designed system for students feedback in the context of the course system that is managed by the local teacher acting as a learning facilitator. It is particularly suited in a ‘TELT’ environment. **For TVI to be successful and effective, we need to do considerable course design work prior to the commencement of the course itself.** The designs center on clearly defining the learning goals and desired outcomes in each of the topic. We also need to orient the local teacher on these before he/she gets ready to conduct the class. Once the initial effort is done, TVI produces remarkably effective results in the students who undergo the study. Here we propose the following approach to commence TVI for teachers training in the colleges under NPTEL and Education Grid.

IIITM-K has further innovated on this TVI approach by adding course-specific wiki in its Education Grid portal (www.edugrid.in) that allows for continued development and access to supplementary content and real-time management of events in the course. The institute is commencing will be announcing its TVI driven open supported learning based outreach education programs for teachers in the engineering colleges and professionals in industry and other organizations in a few courses. Courses by IIITM-K will be offered using content generated under the NPTEL and also those developed under the institute. The details of the announcements will be available in the institute portal www.iiitm.ac.in, and the Education Grid portal.

Through the institute’s Education Grid outreach services will also help other universities and institutions set up infrastructure facilities and training of personnel and help them to commence their courses using TVI and TELT processes.

6. ABOUT NPTEL AND EDUCATION GRID

Under the MHRD funded National Programme on Technology Enhanced Learning (NPTEL: <http://nptel.iitm.ac.in/>), almost 350 eminent faculty members from the IITs and IISc have prepared e-content in about 240 courses. The first version of NPTEL content is being released in the open for use by the colleges. Video recorded lectures by eminent academicians are being released under NPTEL in about 100 courses over the next several months. The content of these courses broadly conform to AICTE recommended syllabi.

IIITM-K (www.iiitm.ac.in) has been closely associated with the developments under NPTEL since its proposal to MHRD. Concurrently IIITM-K developed the Education Grid Portal (<http://www.edugrid.in/>) and associated content development systems with initial support from Dept. of Higher Education, Kerala. The institute is also consolidating the video studio and associated editing and web-studio facilities. Under the Education Grid, the institute has developed effective collaborative e-Learning systems and course management processes. Together, both NPTEL and Education Grid are ready to commission the use of NPTEL (and other web-accessible) content effectively through appropriate **TELT processes** in a networked environment. As the first step to improve the quality of education in the large number of engineering colleges that lack experienced teachers, IIITM-K proposes to offer **TVI** based training to teachers in the different subjects for which content is available with NPTEL or IIITM-K in the form of recorded video lectures.

NPTEL and Education Grid of IIITM-K are working together to disseminate the NPTEL content and build the necessary systems and capacity in the engineering colleges for their effective use. IIITM-K has submitted a proposal to the AICTE to develop requisite systems and processes for effective use of the NPTEL content through in TELT in the engineering colleges. As a warm-up to regular outreach education programs, the institute is announcing its outreach education program to teachers in engineering colleges and for employed professionals in Technopark and other industries or organizations in a few courses. The subjects to be offered will be announced time-to-time in the institute and Education Grid portals.

ON SPECIFIC COURSE ANNOUNCEMENTS

IIITM-K will be announcing available and new courses time-to-time through its institute and education grid portals. The portals will also spell out the details of course fee, regions where it will be made available and other relevant details.

References

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