

**PROPOSAL FOR
INDUSTRY INDUCTION TRAINING PROGRAM
FOR GRADUATES OF ENGINEERING AND
POSTGRADUATES IN SCIENCES
UNDER VISTA**

Draft to be

**Submitted to the
Department of Higher Education
Government of Kerala**

**Project Report Prepared by
Prof. K.R. Srivathsan, Coordinator – Kerala Education Grid
and Director IIITM-K**

Feb. 2005

1. ABOUT THE PROPOSAL

This proposal is submitted in response to the concerns expressed in a meeting of key Government officials, Vice Chancellors, representative experts of the academia and members of the GTech / CXOs of IT industry in Trivandrum. The Hon. Chief Minister along with the Education Minister hosted the meeting on 3rd Dec. 2004 at the Government Guest House in Thycaud, Trivandrum.

The proposal targets at training of graduates chosen by the Technopark and Kerala based IT industries.. The target group will be graduates of Engineering in all subjects, MCA, M.Sc. in Computer Sciences/IT, Physics, Chemistry or Mathematics. The proposed training duration will be 15 weeks. It will be held at the IIITM-K facilities in Technopark. The candidates for the training will be selected by the concerned industries and deputed to IIITM-K. By the end of the training period, they will be absorbed by the respective industries that sent the candidates in the first place.

The broad training outline is given in this document. The training will have substantial practice orientation in soft skills, written and spoken communications, software engineering and IT industry processes.

2. OBJECTIVES AND OUTLINE OF THE TRAINING PROGRAM

The objectives of the training program are to equip the trainees with a mix of attitude, aptitude and skill-sets needed to solve real-world problems and to inculcate the work-ethics required in the IT industry. The following are the list of training modules.

- i) Managerial analysis, presentation and communication skills.
- ii) Personality development, values, ethics, attitude and soft skills.
- iii) Principles and spirit of programming with examples from common programming languages like C, mark-up languages and Java.
- iv) Servers and Systems
- v) Software engineering, maintenance, quality processes and project management
- vi) Team Project.
- vii) Company specific orientation.

Each training capsule will be further divided into learning modules. Each learning module will be taught by the best experts available in the area with support for practice and monitoring by professionals deputed for the program under VISTA. Instructors will be chosen from the IIITM-K faculty, industry experts from Technopark companies or visitors

from premier organizations elsewhere. Infrastructure for e-learning, digital library, access to advanced information systems and Internet, will be provided for the program.

The training program will be conducted for 9 hours per day for six days a week over a period of 15 weeks. Except for Sundays, national holidays and important local holidays, no breaks will be given during the course of the programs. In order that candidates use the network and e-learning facilities intensively outside the class hours, catering for dinner and late night transportation will be provided to all the candidates. The training will be immersive and the candidates will not be allowed any break to visit home or for any other matter except on extraordinary grounds. In such extraordinary cases where the candidate has to take a break, he/she must complete the module in the next available opportunity, only after which the candidate will be given the certificate of completion.

The details of each of the above training capsule areas are spelt out in the next section.

3. DETAILS OF TRAINING CAPSULES

There are a total of five training capsule, one team project and one company specific orientation program. They are further broken into learning modules. Each learning module will be conducted immersively within a week's duration with associated lectures, web-based and Internet exercises as well as practice, group sessions and evaluation being completed in the same week. We first list the learning modules associated with each training capsule. Learning Modules are simply referred as LM.

CAPSULE - 1: Managerial Analysis, Presentation and Communication Skills

Present IIITM-K has considerable experience in teaching this capsule. Rich web-content, infrastructure for presentation records and review, digital library and library facilities are available. The same will be augmented. Typical curriculum will be

(i) Reading and writing skills in English; (ii) Speaking and Presentation skills using PowerPoint, attitudes in presentation design and speaking; (iii) spreadsheets, (iv) Reading of specifications, (iv) awareness of common journals, societies, magazines and news-magazines in paper and over web; (v) Web blog maintenance; (vi) introduction to finer aspects of word processing – introducing open office; (vi) Basics of Latex and html; (vii) Documentation and documents versioning; (viii) Web-pages publications and maintenance; (ix) Technical writing.

CAPSULE - 2: Personality Development, Values, Ethics, Attitude And Soft Skills

(i) Positive and open attitude; (ii) Team playing; (iii) Transactional Analysis and Neuro Linguistic Programming; (iv) Conversational skills, body language; (v) Understanding values, ethics and their roles in personal behaviour, lessons from different scriptures; (vi) Maslow's hierarchy and effective attitudes for better organizational behaviour; (v) How to be a Life-Long Learner - nature of organizational and personal learning; (vi) Role and practice of group discussions; (vii) Facing Customers and understanding their needs, communicating honesty and sincerity of purpose, writing effective customer requirements reports; (viii) Understanding and respecting customer's culture, nature of customer negotiations; (ix) Positive attitudes in working with fellow team members, superiors, junior staff, visitors and society.

CAPSULE – 3: Principles and spirit of programming

(i) Programming in today's context – Differentiate between coding and programming; (ii) Introduction to elementary concepts in programming using C and Java; (iii) Linking, Loading, and Compiling programs; (iv) Exercises in code reading, debugging; (v) Compilers vs. Interpreters – examples from common languages; (vi) Scripting and its applications; (vii) Introduction to open source software, code libraries, membership of important open source developer communities; (viii) Building systems using open source software libraries through case study; (ix) Software version control, CVS, testing, debugging, alpha and beta site testing.

CAPSULE – 4: Servers and Systems

(i) Exposure to different kinds of servers; (ii) Important Network Systems – Routers, Proxy, DNS, Web-Servers, Mail Servers; Client network configuration, (iii) Ethics of systems administration – respect for confidentiality and privacy; (iv) Network administrators as a community of practice; (v) Archival discipline and system recovery; (vi) Concept of middleware and web-enabling approaches – Introduction to Tomcat, other popular middleware platforms; (vii) Enterprise Integration – exposure to a sample integration platform; (viii) Learning Management Systems as a web-enabled application platform; (ix) Introduction to ERP.

CAPSULE – 5: Software engineering, Quality Processes, Project Management And Software Maintenance

(i) What is quality software? Why Software engineering is not like other engineering – need for software to be reliable, modifiable, maintainable, portable, extendable, efficient, trustable, etc. (ii) Discipline in software development process – the software development life cycle – the waterfall model; (iii) Basics of OODA, CASE Tools and exposure to Rational Rose; (iv) Software documentation and versioning; (v) Team approach to software development – Project Management principles; (vi) Understanding customer requirement, importance of abstracting the right problem; arriving at software requirement specifications; (vii) Case studies, lessons from software development failures – are we providing solutions to the wrong problems? (viii) Exposure to CMM, PCMM, ISO 9000-2000, Malcolm Baldrige Quality certification; (ix) Issues in software maintenance, cost of software maintenance.

CAPSULE – 6: Team Project

The trainees will be grouped into 4 member teams and given a project to download some open source software and integrate them to form a system. They have to demonstrate the working of the system, document, prepare a user manual, present the project and undergo an oral examination.

CAPSULE – 7: Company Specific Training

The company that selected the candidate will undertake company specific training for one day in every week during the training period.

4. BUDGET REQUIREMENT AND TIMELINE TO ESTABLISH THE PROGRAM

The present IIITM-K premises can accommodate 20 students batch. The program may be commenced by June 2005 for the first batch of 20 students. We need to prepare a site of about 6000 Sq. ft. in Nila premises for admitting up to 100 students per batch. E-learning, Internet and Digital Library services will be augmented to support the program.

The following is the provisional requirement for establishing the program.

Non-Recurring

- | | | |
|------|--|-------------|
| (i) | Site preparation and conditioning
of 6500 Sq. ft. of Space in Nila Basement | Rs. 50 Lakh |
| (ii) | Lab Equipment, servers, access computers, networking | Rs. 50 Lakh |

Recurring (Annual)

(i) Core staff of 5 persons, salaries, site /equpt. maintenance	Rs. 40 Lakh
(ii) Honoraria, TA/DA costs of visiting faculty/ experts	Rs. 20 Lakh
(iii) Consumables, Stationery, Library, etc.	Rs. 10 Lakh

We propose to charge Rs. 30,000 per candidate. The training will be carried out in the present IIITM-K/VISTA premises. With 100 candidates every 4 months, expected revenue of Rs. 80 to Rs. 90 Lakh per annum will meet the expenses and also cater to modernization.

Proposed Timeline

First batch 20 candidates to be admitted	-	June 2005.
Site preparation work to be completed	-	Aug. 2005.
Second batch of 50 students	-	Oct. 2005.
Capacity of 100 students from 3 rd batch	-	Feb.2006.

The courses will also be packaged and made available to the colleges for use in orienting their students in their final year. Later some of these courses may be offered via Edusat as and when such infrastructure becomes available.

[K.R. Srivathsan]

Submitted to

Principal Secretary – Higher education

Secretary IT

Director of Technical Education

Director of Collegiate Education

Vice Chairman - Planning Board