

# QUALITY IMPROVEMENT PROGRAMME

*Sponsored by*  
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION  
(A Statutory Body of the Government of India)

STATUS REPORT  
2003-2004



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

## PREFACE

The report summarises the activities of the overall Curriculum Development Cell and the Quality Improvement Programme at IIT Guwahati during the year 2003-2004.

Four nos. of QIP short-term courses were conducted during the year on different topics.

The overall guidance of the Director and Dy. Director in the CDC activities is highly respected. The valuable support of the members of the Advisory Committee is also greatly acknowledged. Thanks are also due to the staff of the QIP and the administrative and accounts staffs of the Institute, without their active cooperation, the activities of the QIP/CDC would not have been successfully carried out. The financial support of AICTE is also gratefully acknowledged.

(Dr. R. Tiwari)

Coordinator, QIP

# **Quality Improvement Programme**

## **Objectives & Programmes**

Quality Improvement Programme (QIP) of the Ministry of Human Resource Development, Department of Education, Government of India, under the sponsorship of All India Council for Technical Education, New Delhi has been in operation at the IIT Guwahati since year 2003-2004. This programme has mainly three components:

- M. Tech. and Ph. D. Programmes
- Short Term Courses
- Curriculum Development

These three are pursued vigorously at the Institute, with active participation from the faculty of all the Departments.

The Programmes (M.Tech. and Ph.D.) are aimed at improving the quality and standard of members of the faculty of AICTE recognized engineering institutions.

An Advisory Committee for QIP activities was formed by the Director with the following members:

1. Dr. R. Tiwari, QIP Coordinator (Chairman)
2. Dr. P. K. Bora, Dean, Academic Affairs (Member)
3. Dr. A Chottopadhyay, Assoc. Prof., Dept. of Chemistry (Member)

Information on Short Term Courses 2003-2004 under QIP:

Sl. No.	Name of the course coordinator and Department	Duration	Course title
1	Dr. Arup Sarma, Dept. of CE	Dec.,1-5, 2003	<p><b>GIS and Remote Sensing Application in Water Resources</b></p> <p>Teachers and the professional engineers need to know about the fundamentals of GIS and Remote Sensing. GIS and Remote Sensing application can enhance studies and investigations done for development of Water Resources. Data of inaccessible areas can now be obtained from highresolution satellite imageries. To utilize these facilities a course of this nature is very much needed. Based on the exposure to these new fields through a short-term course of this nature one can build up his knowledge and can start working with these state-of-the-art technologies.</p> <p><b>COURSE OBJECTIVES</b></p> <ul style="list-style-type: none"> <li>◆ To introduce these upcoming areas to the participants.</li> <li>◆ To spread knowledge regarding present status of GIS and Remote Sensing application in India and abroad.</li> <li>◆ To make Water Resources engineers and hydrologist aware about the vast scope of using GIS and Remote Sensing data in Water Resources Development</li> </ul> <p><b>COURSE CONTENTS</b></p> <ul style="list-style-type: none"> <li>◆ Fundamental of GIS</li> <li>◆ Fundamental of Remote Sensing</li> <li>◆ Advanced spatial analysis in GIS</li> <li>◆ Image Processing of Satellite data</li> <li>◆ Application of GIS and Remote Sensing to Water Resources</li> <li>◆ Hands on ERDAS and ArcInfo GIS.</li> <li>◆ Case Studies</li> </ul>

2	Dr. P. K. Bora, ECE	Jan. 19-27, 2004	<p><b>Signal Processing and its Application</b></p> <p>Digital signal processing (DSP) is concerned with processing the information bearing signals in digital form and uses computers or special purpose digital hardware either to extract that information or to transform the signals in useful ways. Over the years there have been considerable development in the field of DSP and such techniques are being applied to a wider variety of fields. Moreover, VLSI architectures to realize the DSP algorithms have also matured and DSP technology is nowadays commonplace in such devices as mobile phones, multimedia computers, video recorders and CD players The objective of the course is to familiarize the participants with the foundation and latest developments in the field of DSP and its applications.</p>
3	Dr. S. Natesan, MA	Mar.8-16, 2004	<p><b>Computational Methods for Differential Equations</b></p> <ul style="list-style-type: none"> <li>◆ To provide fundamentals of differential equations</li> <li>◆ To make aware of various techniques in the analytical and numerical areas</li> <li>◆ The applications of differential equations in other fields of Science and Engineering</li> </ul>
4	Dr. S. K. Dwivedy & Dr U S Dixit, ME	Feb.16-20, 2004	<p><b>FEM in Manufacturing</b></p> <p><b>CONTENTS</b></p> <ul style="list-style-type: none"> <li>◆ Introduction to Finite Element Method</li> <li>◆ I-D FEA with <math>C_0</math> and <math>C_1</math> Continuity Element</li> <li>◆ FEM Formulation for Plane Stress and Plane Strain Problems</li> <li>◆ Direct Integration Methods for Finite Element Analysis of Dynamic Problems</li> <li>◆ Finite Element Application in Metal Cutting</li> <li>◆ Finite Element Modelling of Cold Flat Rolling</li> <li>◆ Finite Element Modelling of Welding and Molding Processes</li> <li>◆ Error analysis in Finite Element Method</li> <li>◆ An FE based Rigid Plastic Formulation for Die Design of 3D Generalised Shape Extrusion</li> </ul>

## Information on Curriculum Development Cell 2003 - 2004 under QIP:

The following CD Cell projects for financial year 2003 – 2004 under QIP Scheme were undertaken:

Sl. No.	Name of Dept.	Type of project	Title of the project	Expected time of completion
1	Dr.P.K.Bora, ECE	Lecture notes	Statistical signal processing	One year
2	Dr.D.Maity, CE	Course material	Advanced Structural Design	Two years
3	Dr. K. Srinivasan, ME	Course material	Website development for course Mechanical measurements	One year
4	Dr. S. Talukdar, CE	Preparation of text book	Text book on Building Materials	Two years
5	Dr. R. Tiwari, ME	Lecture notes	Finite element analysis and identification in rotor-bearing systems	Two years
6	Dr. B. Bhusan, HSS	Instructional material	Cognition	One year
7	Mr. U. Barua, DoD	Documentation & lecture notes	Traditional form and colour in contemporary design prevailed in NE-a design perspective	One year
8	Dr. C. Mahanta, CE	Preparation of text book	'Sustainable development technologies for water resources	Two years
9	Dr.R.Bhattacharjee ECE	Lecture notes	Lecture notes on microwave Engineering	One year
10	Dr.M.Guruprasad & Dr. N.Sevaraju, Maths	Lecture notes	Course material for calculus	Two years

## Early Faculty Induction Programme (EFIP):

The quality of technical education basically depends on the quality of teachers. Adequately qualified, highly competent and motivated faculty is becoming scarce in technical institutions all over the country. The shortage of faculty has become more acute due to rapid expansion in technical education. AICTE is giving a high priority to attract bright young persons to teaching profession. In order to attract bright engineering graduates to teaching, MHRD operated the "Technical Teachers Training Scheme" in 1950's and 60"s. With similar objectives, AICTE has taken an initiative to launch a revised programme "Early Faculty Induction Programme (EFIP)" with distinct features. The scheme aims at attracting bright young graduates in Engineering & Technology pursuing PG Programme to take teaching as their career by providing certain incentives.

In the Early Faculty Induction Programme, bright young Engineering & Technology students pursuing in their PG programme ( M. Tech. or Ph.D) will be selected and will be given an opportunity to take up teaching career in Engineering Colleges.

The EFIP scholar selection Committee with the following members were formed:

1. Dr. R. Tiwari, ME, EFIP Coordinator, Chairman
2. Dr. P. K. Bora, Dean Academics, member
3. Dr. M. K. Das, Assoc. Prof., ME, member
4. Dr. S. V. Rao, Assoc. Prof., CSE, member

The interview took place on 22-02-2004 and the following EFIP scholars were finally selected:

Sl.No.	Name	SC/ST	Remarks if any
1	Kola Vidya Sagar	SC	CS
2	Raju Vijaykanth	-	CS
3	Trivedi Uday Dharendra Kumar	-	CS
4	Shaik Azeez	-	CS
5	Uday Singh Rathore	ST	EC

6	Tapan Borah	-	EC
7	Sai Ram Prasad Morta	-	EC
8	T. Chandra Sekhar Babu	-	EC
9	Srinivas Ganeboina	-	ME
10	K. Saran Kumar Reddy	-	ME
11	Hillol Kr. Roy	SC	ME
12	Atal Bihari Harichandan	-	ME
13	Mobinuddin	-	ME

### **National QIP Coordination committee (NQCC) meeting:**

The 120<sup>th</sup> NQCC meeting was held on 9<sup>th</sup> Jan., 2004 at IIT Guwahati. All the QIP Coordinators from other IITs and IISc attended the meeting. The main agenda was the CD cell activities to be taken up by major QIP centers. Prof. G. Barua, Director IIT Guwahati addressed the members & stressed the need for reducing Ph.D. contact period duration during the advance admission period under QIP scheme.

### **Workshop attended by the QIP coordinator & local experts**

1. A 3-day international workshop on “Engineering Curricula for the 21<sup>st</sup> century” was attended by Dr. R. Tiwari, QIP Coordinator, at IIT Delhi during Nov. 7-9, 2003. It was organized by UNESCO, AICTE and IIT Delhi.
2. IIT Bombay & AICTE organized a workshop on “Curriculum Development for Postgraduate studies in Engineering Colleges”. Theme papers on “Curriculum Development for Postgraduate studies in Engineering Colleges” was presented by Dr. R. Tiwari, QIP Coordinator and Prof. Bibha Das Saikia (an expert from local engineering college), Civil Engg., Assam Engineering College, Guwahati.