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Report Submitted by **Mr Gajendra Sharma, Asst Professor, Dept of Electronics and communication & Engineering, MITS**

The Department of Electronics and communication & Engineering, and III Cell organized a two day guest lecture on '**Projects Work and Real Time Systems'** for the III Year students from 8th and 9th March 2017 under **TEQIP-II** by the resource person **Prof. M. Radhakrishna** Prof. and Head (Retd.), Indian Institute of Information Technology Allahabad.
Prof. M. Radhakrishna was picked up from the Railway Station at 5:00 am on 8th March and was dropped in the hotel. He was briefed about the planned schedule of activities for 8 and 9 th March. Transport was sent to the hotel to pick up him and bring him in the college.

He was introduced to Dr. C.Yuvaraj (Principal), Dr. G. Hampamma (Vice Principal - Academics), Dr. V. Ramchandra Prasad (Co-ordinator TEQIP & Dean IIIC), Dr. B. Venkata Raman (Dean R&D), and Dr. A. R. Reddy (Dean - Recognised Research Center). After preliminary discussions, Prof Radhakrishna was taken to conference hall to meet the senior faculty and exchange ideas. The discussions were focused on the work that is going-on in different departments. Prof Radhakrishna spoke on projects of interest (most of them are real time systems). At the end of discussion, Prof. M. Radhakrishna was taken for a visit round the institute, see the labs and have the discussion with faculty members of the department. Prof. (Dean R&D) has accompanied Prof Radhakrishna to shows the labs and the experiments that are being done. In this process. They have visited mechanical department and associated labs.

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From there, he was taken to EEE labs and EEE faculty explained the projects and sought suggestions. At 2.30 P.M prof. M. Radhakrishna addressed student of ECE, on project selection and the issue of execution. He has explain the difference between hard and soft real time systems and given example for such topics. Then he discussed a couple of real time systems and the issues in designing such systems.

A group of five research scholars of ECE department met Professor and discussed their problems and challenges and sought guidance.

In the evening Prof visited some of the labs of ECE and discussed with the faculty regarding progress of work and possible approaches to the problems.

It was resolved that visits and interactions would continue on 9th.

Day – 2

Professor was taken to Horselly hills from 6.30 to 9:20 am. Discussed the possibility of performing certain experiments related to Wireless Sensor Networks in that area. We reached the college at 9.20 AM. Lab visit and faculty interaction continued with the ECE department. Few faculty members of Physics and chemistry department also joined the interaction. He identified lab requirements for ECE core research lab. The lab may provide the following capabilities - RF signal transmission processing, Fibre optics, Sensors and Instrumentation, embedded systems Building Embedded processors (Using micro controllers or FPGA chips). While discussing he suggested that FPGA processor can be used for real-time systems design. He discussed the needs of optical fiber communication lab. Regarding simulation, he pointed out the need for emphasis on model design and model verification. Model verification may often need data about ground truth. He also emphasized the need for using the Low powered devices/ the use of low power instrumentation has important role in the real-time system design.

The problems to research in various areas like image processing, biomedical engineering communication engineering, embedded system design and VLSI technology were discussed among the faculties. Concentration on the fundamentals, model design and verification are very important if we have to harness the power of simulations.

In the session for ECE students, Prof. M Radhakrishna discussed applications that could motivate students and analyzed the system to extract the technologies involved. He emphasized the need for motivating the student to take up the problems of the society that is around us. The passion for research is to be fostered. Students interacted with the professor and discussed the problem in real time system design. He suggested that we do projects and research not - for the certificate but address the needs of the society. He analyzed a few problems to show the technologies involved and the challenges. The use of various processors as such Arm, MSP430, and DSP kits in implementing the solution was discussed. At the end, a few faculty members from Computer science, MCA department and in charge of innovation center have discussed the problems and their approaches for feedback from the prof.

Closing ceremony

Dean IIIC discussed next course of action and move forward. Some research projects were suggested by Prof. M Radhakrishna and agreed to visit the institute when needed.

Development of experimentation platform is needed for RF, Embedded lab, fibre optics, microcontrollers was discussed.

Sensor network, Internet of things (IoT) focused lab setup, where equipment and component can be kept and made use of for projects.

An integrated mechanical workshop, electronic workshop and computer workshop are needed to develop products. Often group work motivates the student. He said that Multilevel and Multi-disciplinary research teams are essential to solve the problems around us.

Discussion about the funding resources for projects took place

Prof M. Radhakrishna was focused on the startup of the projects and then ask to funding agencies to organize the research.

Making small research group in the institute to discussed more focused research problems. A purely research lab keep it open for the student project.

Dean R & D suggested a plan to make a group of three members for more focused projects. After all discussion was completed and session was closes at 4 pm on 9/03/2017.