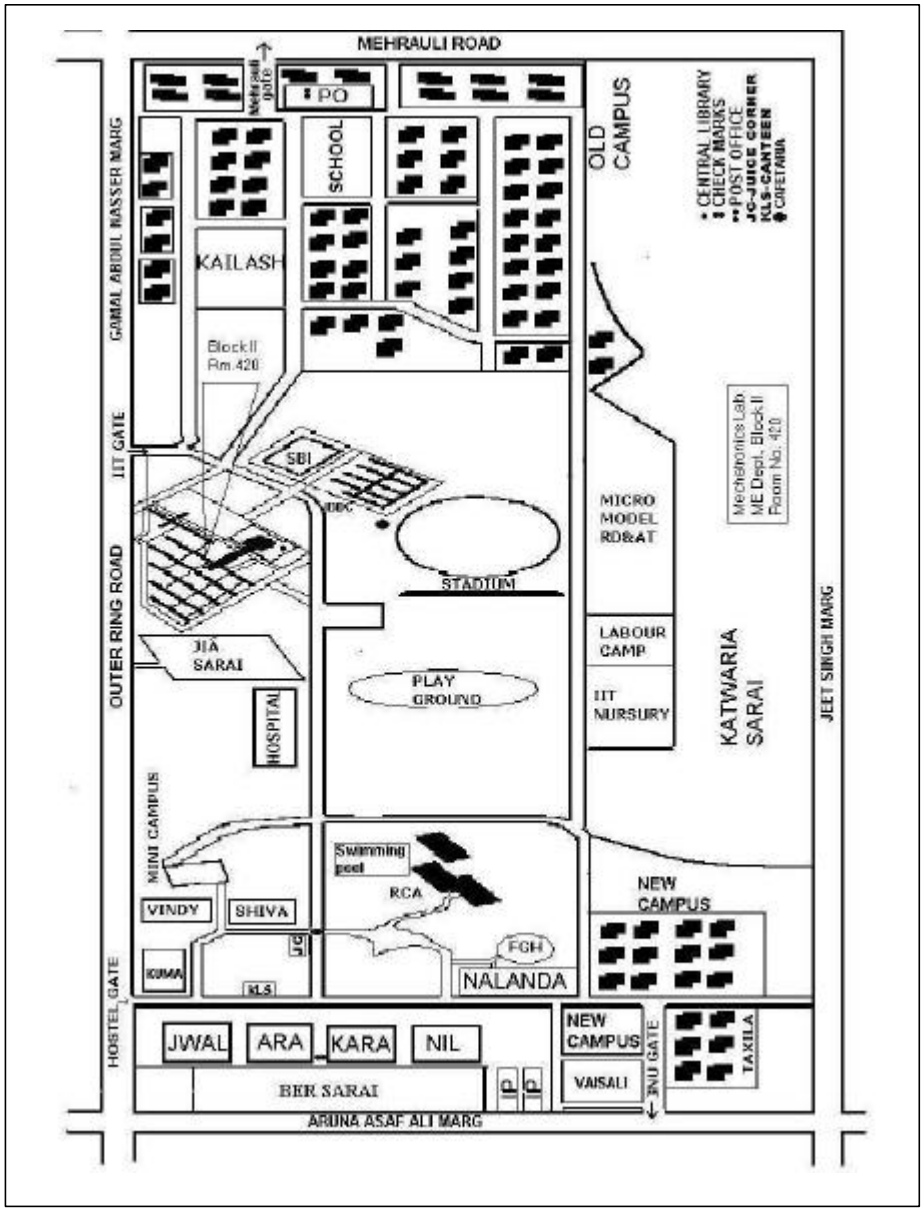
Locate us inside the Campus



Mechatronics Laboratory

2nd Annual Report

(July 2002-June 2003)

Block II, Room No. 420
Department of Mechanical Engineering
IIT Delhi, Hauz Khas
New Delhi 110 016
INDIA

Preface

Mechatronics Laboratory is proud to be in its 3rd year of existence since its establishment in July 2001. It had a series of events during the year 2002-03. For example, an Open House was organized in Oct. 30, 2002, followed by the practical experiments during two Training Programmes (Dec.'02 and Apr.'03) for the engineers of SAMTEL Color Limited, Ghaziabad, in collaboration with the Control Lab. of the Electrical Engineering Dept.. The lab also supported the ROBOMANIA competition using LEGO-MS kits during the students' festival TRYST 2003 in March. The competition attracted about 400 students in 133 teams participating in TRYST from various colleges of India. Two new robots, one indigenously developed from Systemantics India Pvt. Ltd., Bangalore, and another from Intelitek, Israel, have been added to the lab. Two new areas, namely, the `Lab Museum,' where the old non-functional equipment are kept with a small write-up, and the `Lab Library,' where the product brochures/catalogues, technical magazines, etc. are kept, have been identified for the benefits of the users. In its endeavour, the lab wants to be one of the most user-friendly labs.

Acknowledgements

The lab acknowledges the continuous support of the department without which it could not reach where it is today. We also acknowledge the contributions and support given by the faculty, staff, ex-Ph. D/M. Tech/B. Tech students, ex-project staff, and the present students of the department who helped us to maintain the lab software, hardware equipment, and other items.

Mechatronics Lab Team

8. Faculty

Faculty from different departments/centers of the institute have used the lab facilities during July 2002-June 2003 in the form of supervising student projects or using for the practical classes of their courses. The participating Departments/Centres are:

Departments

- Mechanical Engineering Department
- Electrical Engineering
- Physics
- Applied Mechanics
- Management Studies

Centres

- IDDC

For further details, please contact:

The Head/Dr. S.K. Saha
Department of Mechanical Engineering
IIT Delhi, Hauz Khas
New Delihi 110 016, INDIA
Tel: +91-11-2659 6139/1135/6320; Fax: 2658 2053
Email: saha@mech.iitd.ernet.in

5. Achievements

- Started a library section in the lab, which contains
  - Company brochures/catalogues received time to time: They are classified for easy reference by the users
  - IEEE Spectrum, SAE Automotive Engineering & Aerospace Engineering, NIF HoneyBee Newsletter
  - Abstracts of the M. Tech projects
  - Manuals for the lab hardware equipment and software
- Coordinated 400 contestants in 133 teams of ROBOMANIA competition during TRYST 2003
- Supported the IIT Delhi team for the Doordarshan ROBOCON 2003 (basket ball throwing robots) competition to be held in July, 2003

Paper Presentation

- On ``CNC XY Table" in the National Convention of Mechanical Engineers-Emerging Trends in Mechatroincs for Automation, NIT, Rourkela, Nov 9-10, 2002.

6. Events

- October 2002: Open House for the IIT Campus people
- December 2002: 1st Training Programme for SAMTEL Color Ltd., Ghaziabad
- March 2003: Visit by BOYSCOUT (USA) school students
- March 2003: ROBOMANIA-Robot competition using LEGO-MS kits
- April 2003: 2nd Training Programme for SAMTEL Color LTd.

7. Documentation

The following new brochure, reports were prepared during the last one year:

- Mechatronics Laboratory Brochure (updated)
- Four Manuals for the two Training Programmes for the SAMTEL Color Ltd.
- Manuals for RIDIM software, PPR & SCORBOT ER9 robots

Contents

Lab at a Glance during July 2002-June 2003

Facilities

Hardware: 17 (+5)*; Computers: 10; Software: 10 (+2)

Practical Classes

Total: 4 [2 UG (+1) + 2 PG (-1)]

Student Projects Completed

M. Tech: 3; BTP: 4 (+3); MiniP: 3 (+2)

Other Activities

Open House: 1; Training: 2; Student Competition: 1

* + *implies addition of an item during the last year (2002-2003).*

1. Introduction

One of our main objectives last year was to keep our hardware equipment and software *ALWAYS* in running condition. This really kept us on toes. The daily users of the lab have been taking responsibilities other than their academic/professional work, e.g., taking care of computer complaints, classifying the tools/product catalogues we have, and the company catalogues/brochures, etc. In order to assess our progress and discuss our difficulties, we meet for about half an hour in a week, which was very effective.

2. Lab. Facilities

Computers		Hardware		Software	
C1	SGI WS [S2,5]	H1	CNC XY Table [C5]	S1	ADAMS 12 [C2-3]
C2	COMPAQ [S1,4,8]	H2	Intelligent Conveyor [H3,C6]	S2	ADAMS 11 [C1]
C3	P-III [S1,4,8]	H3	Fiber Optic Sensor [H2]	S3	ULTRAGRIP [C4]
C4	P-I [S3,4,8]	H4	MA3000 Robot [C8]	S4	MATLAB 5.3 [C2-5]
C5	P-I [H1,S4,8]	H5	RTX Robot [C7]	S5	C, C++, F77 [C1]
C6	IBM-486 [H2,3,7S4,8]	H6	HaPRA Robot [C9]	S6	VC++ [C4]
C7	486-DOS [H5]	H7	OWI Robot [C6]	S7	BASIC [C8]
C8	286-DOS [H4]	H8	Mobile Robot [C9]	S8	MS Office [C2-6,10]
C9	286-DOS [H6,8,10]	H9	HEXAPOD M/C Model	S9	RIDIM [C10]
C10	486-Win: 6	H10	Index Table [C9]	S10	ROBOCELL [C10]
		H11	μP Training Kits: 5		
		H12	Phantom [C9]		
		H13	PPR Robot [C10]		
		H14	SCORBOT ER9 [C10]		
		H15	|| Drive Robot [C9]		
		H16	6-legged walker		
		H17	LEGO-MS: 6sets		
		H18	5-bar Flying Mech.		

3. Academic Courses

The following courses used our laboratory for their laboratory classes:

- ME100S: Introduction to the Department, UG
- ME304P: Design Laboratory, UG
- ME731N: Design of Mechanisms and Manipulators, PG
- ME788: Mechatronic Product Design, PG

4. Student Projects

The following student projects were carried out in the lab. for their projects during July 2002 to June 2003

M. Tech

- On “PPR Robot Control”
- On “Steering System Modelling”
- On “Trajectory Planning of Parallel Drive Robot”

B. Tech

- On “Cryo-Arm Dynamics”
- On “Steering Modelling"
- On “Control of PPR Robot”
- On “Flying Machine”

Mini Project

- On “Robot Model using ADAMS”
- On “Robot Model using ULTRAGRIP”
- On “C++ Library Development for RTX Robot”