

MDIT LAB

Faculty



D. T. Shahani, Ph.D. (IIT Delhi)

Honorary Professor

Tel: +91-11-26591437

E-mail: shahani@sense.iitd.ac.in

shahani@iddc.iitd.ac.in

Research Interest: Electronic Instrumentation, Electromagnetics, Antennas.

Brief Overview of the Lab:

Instrument Technology is an important factor in the technological advancement of any country. In particular, Electronic Instrument Technology has linkages with almost all engineering fields. The lack of adequately trained manpower in this field is one of the main problems faced by all developing countries in their technological advancement. It is therefore necessary to upgrade the quality of training provided to engineers and expose them to the latest trends in this field.

Towards the above objective of generating trained manpower, MDIT (Manpower Development in Instrument Technology) Lab was established. The lab is equipped with the best facilities in electronics design and instrumentation.

List of Sponsored Projects carried out by MDIT Lab:

ELECTRONIC AND INSTRUMENTATION **SPONSORED RESEARCH PROJECTS** **(86 PROJECTS OVER Rs. 17.03 Crores)**

S.No.	Title	Sponsoring agency
1	Modified sonar receiver for sonar 170db	Indian Navy
2	Compact X Band Missile Antenna	DRDL
3	IFF simulator for ASW computer	Dept. of Electronics
4	Design and development of an own doppler tracking low noise receiver	Dept. of Electronics
5	Universal sonar signal processor	Dept. of Electronics
6	Establishment of faculty for research and training in Underwater Electronics	Dept. of Electronics
7	High definition for deep sea sonar (an Indo-UK collaborative project)	British Council

8	Scaled Studies on VLF	Navy
9	Tricedo VLF system	Navy
10	Model VLF Measurements	Navy
11	Investigations of improved techniques for omni directional sonar	Dept. of Electronics
12	Development of holographic grating and holographic optical elements	Internal Funding by CSIO
13	Semi active homing head missile	DRDL
14	Development of Pulsed NMR Spectrometer for Oil Seed Characterisation	UNDP/MHRD
15	MDIT Training in Instrumentation Manpower	MHRD
16	Electronic Stencil Cutting Machine	IITM
17	Manpower Training in Instrument Technology	MHRD
18	Irrigation Canal Gate Control	MP Govt.

19	Transfer of Technology for RAIM CW 130/91	MOD
20	Design of Fire Suppression System for MBT Arjun (CW4257)	DIFR
21	Study on Anti-Tank Mines	DRDO, Ministry of Defence
22	RAIM Design Armoured Tanks	MOD
23	Learning Material Development Analog Electronics-II Theory + Laboratory Engg colleges CW 3811	DOE/WB
24	Learning Material Development Analog Electronics-II Theory + Laboratory Engg colleges CW 3777	DOE/WB
25	Automatic Telecom Cable (RP036)	SARICON
26	Development of a Parametric Sonar	Dept. of Electronics
27	Development of Moire and semiconductor laser interferometry and electronic systems for precision length measurement instruments	MHRD
28	Automatic Telecom Cable Testing System CW 135/91 Phase-II	INCOM
29	Feasibility of Telecom Cable Testing System CW 135/91 Phase-I	INCOM

30	Resource Centre in Electronics (Project IMPACT - RP 011/91)	DoE/SDC/ World Bank
31	Design and Dev of Electron Gun Cap Measurement System	SAMTEL
32	EMPF for torpedo (RP047)	NSTL
33	Automatic Telecom Cable Test System (RP 036/93)	Sericon Impex
34	Feasibility Capacitive System for Electron Gun Control CW3165	SAMTEL
35	Screen Liner Manufacturing Technology Oil Extraction	ONGC
36	Automatic Telecom Cable Test System (RP 036/93)	Sericon Impex
37	Development of Technology for IMS based Organic Pollutant Detector (RP 025/92)	DRDE, Gwalior
38	Restructuring of LMD for Colleges & Polytechnics CW 4159	DOE/WB
39	Learning Material Development Electronics Test & Measurement-I Theory Polytechnics CW 3652	DOE/WB
40	Learning of Technology Development Electromagnetic Interference Compatibility Theory + Lab Engg colleges	DOE/WB
41	Learning Material Development High Frequency Design Theory + Lab CW 3745	DOE/WB
42	Learning Material Development Analog Electronics-I Theory Polytechnics CW 3742	DOE/WB
43	Learning Material Development Analog Electronics-I Laboratory Polytechnics CW 3257	DOE/WB
44	Learning Material Development Analog Electronics-II Theory + Laboratory Polytechnics CW 3664	DOE/WB
45	Learning Material Development Electronics Test & Measurement-II Theory Polytechnics CW 3656	DOE/WB
46	RC Block Trip Unit (CW05892)	BHEL Ltd.
47	Electromagnetic Proximity Fuse for Torpedo (RP 47/93)	NSTL
48	Fuel saving through eco-friendly hybrid vehicles (RP00880)	Crompton Greaves Ltd.
49	UNESCO training Program for LASU(Nigeria) CW 4159	UNESCO
50	Supply of two prototypes for IMS based Organic Pollutants Detector (RP 0975)	DRDE, Gwalior
51	Sustainability Support Scheme (Project IMPACT (RP01070))	DoE

52	Miniature Ion Mobility Sensors (RP02170)	DRDO, Ministry of Defence
53	Software engineering for telemedicine (RP01207)	DST
54	Re-engineering of IMS based Organic Pollutants Detector (RP 01090)	DRDE, Gwalior
55	Special IMS CWA Sensors (RP01205)	DRDE
56	Development of Dot specified SMPS power plants (RP01173)	Central Electronics Ltd.
57	HF Circuits for SAW (RP01207)	MOTOROLA
58	Development of Miniature DC/DC Convertors (RP01231)	S M Creative
59	TOT on Fabrication of IMS CWA Detection System and R&D of Advanced IMS Version (RP01206)	DRDE
60	Development of a Golden Ear Concept for Entertainment Systems (RP01359)	LG Electronics (India) Pvt. Ltd.
61	Novel Writing cum Pointing Device for PC (RP01570)	Maarshan Projects B V
62	Design of low velocity and high maneuverability electric wheel chair for mobility within the home (RP01158)	Ministry of social justice & empowerment
63	Development / Automation of Panchkarma Instruments (RP01694)	CCRAS
64	Development of WEB Based Learning Material (CWO5167)	Project INPACT SSS (RPO1070)
65	Development of SAW Detector for Organic Pollutants in Air (RP01583)	DST, Govt. of India
66	Development of a Programmable A/C Controller (RP01579)	Anergy Instruments
67	Internal Stabiliser for A/C (RP01644)	LG Electronics
68	Composite Security Plan / Security Audit of Delhi Main Junction (RP01362)	Ministry of Railways
69	Bamboo as a Green Engineering Material in Rural Housing and Agricultural Structural for Sustainable Economic Growth (RP02112)	Indian Council of Agriculture Research
70	RF Networking Technology in Instrumentation (RP01625)	MHRD
71	Development of Digital Gauge Measuring Bore (RP01815)	Facility of weapon

		technology EME School Baroda
72	Earthquake Signature Analysis using Intelligent Techniques (RP01896)	DST
73	Fourier Transform Ion Mobility IMS MS based detector for Organic Pollutants in Air (RP01906)	Ministry of Defence, Dept of Defence Res. & Development
74	Faculty and Curriculum Development of RBEF (RP01342)	Ritnand Balved Education Foundation
75	Propagation Studies on Mobile IED Pre-Initiator System (RP02077)	OC Software Engg. Corp
76	Development of Data Communication for SMERCH Weapon Systems (RP02221)	HQ 640 EME Battalion, Ambala Cantt
77	Mobility enhancement for elderly (RP02289)	DST
78	Expert System for Artillery Gun Fault Diagnosis System	Army Technology Board
79	Development of remote operation of anti-aircraft machine gun 12.7 mm NSVT mounted on commanders cupola Tank T-72 (RP0-2790)	Army Technology Board
80	Development/Automation of Ksharasutra Preparation (RP0-2677)	CCRAS
81	Design Of Quartz Crystal Micromass Balance Technique For Feasibility Study Of Using Chimeric Polymer Interfacing For Biomedical Applications Including Drug Uploading Delivery Potentials In Air (RP0-2685)	DMSRDE
82	Design and development of Automatic Radio relay link (RR Link) Establishment System	Army Technology Board
83	Design and Development of the Cost Effective Equipment for Carrying out test on the bamboo joints of bamboo abd structural elements of the bamboo in short term and long term	Indian Council of Agricultural Research
84	Design and development of the base pollutant Detector (RPO36)	DRDE
85	Dual Mode Phase Shifter	DRDO, Ministry of Defence

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Following laboratory courses in Instrument Technology are offered:

Instrument Technology Laboratory-1 (DSP-703)

S.No.	Name of the experiment
1	Ranging and calibration of milliammeter as indicating device in instrumentation.
2	(a) Use and calibration of Digital Panel Meter for instrumentation applications. (b) Measurement of angular displacement using linear potentiometer (setting span and range) and application of DPM in angular displacement measurement.
3	Characterisation of Transducer Bridge Conditioning circuit and to study the application of instrumentation amplifiers in resistance bridges.
4	To measure the R-T characteristic of a thermistor and to construct a linearised temperature sensor.
5	Measurement of thermocouple characteristics.
6	To design an electronic conditioning circuit for a cold junction compensated thermocouple thermometer.
7	To construct a Centigrade thermometer with a sensitivity of 10mV/oC and to measure its performance.
8	Electronic Conditioning for Capacitance Transducers.
9	To design a Conductivity Measurement System and evaluate its performance.
10	To estimate the thermal resistance of a heat sink.

Instrument Technology Laboratory-2 (DSP-704)

S.No.	Name of the experiment
1	Design and characterisation of active filters, LPF, HPF and BPF
2	Electronic Instrumentation Module Impedance Characterisation: (a) Measurement of complex Z_{in} and Z_o . (b) Proper Impedance interfacing with other modules.
3	Transfer Function Characterisation (a) Frequency Domain (b) Time Domain
4	To study Multiplier chip AD633
5	To study voltage to frequency converter.
6	To study frequency to voltage converter.
7	To study phase sensitive detection and to construct a capacitance meter.

Instrument Technology Laboratory-3 (DSP-705)

S.No.	Name of the experiment
1	To characterise a thermistor and a thermal process model.
2	To study a proportional process temperature controller.
3	To study a P-I process temperature controller.
4	To study a variable reluctance magnetic sensor and to construct an electronic tachometer.