Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)
NAAC
BHARATH INSTITUTE OF SCIENCE AND TECHNOLOGY
No.173, Agharam Road, Selaiyur, Chennai , T.N - 600 073.

Ref: BIHER/BIST/Civil//Spl/2020 **Date: 25/11/2020**

CIRCULAR

Many a times, the defined skill sets that are being imparted to students today with Programme Specific Objectives in educational institutions become redundant sooner than later due to rapid technological advancements. It is important for higher education institutions to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes.

Hence a Value Added Course is offered by Department of School of Civil and Infrastructure Engineering, Bharath Institute of Higher Education & Research. The course offered is **Introduction to Instrumentation Design** with the duration of 30 hours (Two hour per day) and commences from **2/12/2020 to 18/12/2020**.

Eligibility: Course is open for UG Students for Department School of Civil and Infrastructure Engineering.

Registration:

The registration form which is available in the university website should be duly filled by the participants and to be submitted to the Coordinator at least 5 days before the commencement of course.

Contact:

Ms.R.Chitra
Assistant Professor / School of Civil and Infrastructure Engineering.,
Course Coordinator
Bharath Institute of Higher Education & Research.
Email id: chitra.civil@bharathuniv.ac.in

HOD

Head of the Dept.
(Civil Engineering)
Bharath Institute of Higher Education & Research,
Selaiyur, Chennai - 600 073.

Value Added Course

Introduction to Instrumentation Design

NAME LIST

Sl.NO	Reg No	Name of the students	E-Mail ID
1	U17CE002	M. VIKASH	vikashmathi2012@gmail.com
2	U17CE003	AISHWARYA .C	cbaish18@gmail.com
3	U17CE005	KALLAM VENKATA REDDY	venk4147@gmail.com
4	U17CE006	ROSHAN NILLING GUHA	rosannilling@gmail.com
5	U17CE007	DILIP KUMAR .G	Dilipramya1406@ Gmail.com
6	U17CE008	LARRY LALNUNZIRA	larryziras@gmail.com
7	U17CE009	PRAVEEN KUMAR .S	praveenvictory505@gmail.com
8	U17CE010	MATHAVAN .S	maddyaustin316@gmail.com
9	U17CE011	DEEPAK KUMAR .N	littledeepak46@gmail.com
10	U17CE012	D.MULLAIVENDHAN	mullaivendhan949@gmail.com
11	U17CE013	REGHAKUMAR MUITHUKUMAR	kumarraghav333@gmail.com
12	U17CE014	TAJAMMUL AFROZ	tajammulafroz@gmail.com
13	U17CE015	KESAVA RANGANATH	keshavkhan1999@gmail.com
14	U17CE017	KISHORE .G	Kishorgkv30@gmail.com
15	U17CE018	RUBESH .V	rubeshragul17@gmail.com
16	U17CE019	JAIKISHEN .S	jaikishen91@gmail.com
17	U17CE021	TALASU PAVAN MANEESH	pavanmaneesh.talasu@gmail.com
18	U17CE022	SAYATUNENI PRASANNA KUMAR	sayapaneni69@gmail.com
19	U17CE023	KUNDEPI PAWAN SAI GOPAL	kpsgopal2000@gmail.com
20	U17CE024	KONJENGBAM SHYAM SINGH	kshyam2791@gmail.com
21	U17CE025	CHINTALAAKHIL KRISHNA	chintalabrothers11@gmail.com
22	U17CE026	MUTHURU ASHOK KUMAR REDDY	ashokkreddy8264@gmail.com
23	U17CE027	VARIKUTTI AYAPPA	manirockzz371@gmail.com

24	U17CE028	GABE TEJA SAI REDDY	gadetejasaireddy@gmail.com
25	U17CE029	CHINTALAPUDI NAGA MURALI KRISHNA	chinthalapudimuralikrishna5@gmail.com
26	U17CE030	NISHANTH RAJ .K	nishanthvijay62@gmail.com
27	U17CE031	GADAEWAR SAI PRANAY	saipranay4181@gmail.com
28	U17CE032	RAGHAVAREDDY PRASANTH REDDY	rp7842197222@gmail.com
29	U17CE033	CHILAKA SATHISH REDDY	chilakasathish664@gmail.com
30	U17CE035	JAYANT CHODHARY	choudharyjayant689@gmail.com

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Topic: Introduction to Instrumentation Design

Type of Course: value added course / UG

Department of school of Civil and infrastructure Engineering

Pre-Requisites: 12th Science

Course Duration: 30 hours (12 Dec' 2020)

Intended Audience: Civil Engineering Students

Industries Applicable To: All companies that deal with the civil infrastructure development

Coordinators: Ms.R.Chitra

Objective:

- To introduce the measurement techniques of force, torque and speed.
- To introduce the measurement techniques of acceleration, Vibration and density
- To introduce the measurement Viscosity, Humidity and moisture.
- To introduce the temperature measurement techniques
- To introduce the pressure measurement techniques

COURSE OUTLINE:

At the end of the course, the student will have the:

1. Ability to understand the construction and working of instruments used for measurement of force, torque, speed, acceleration, vibration, density, viscosity, humidity, moisture, temperature.

2. Ability to select instruments according to the application.

3. Ability to understand the concept of calibration of instruments and gain knowledge about temperature measurement devices.

4. Ability to design signal conditioning circuits and compensation schemes for temperature measuring instruments.

5. Ability to understand the working of instruments used for measurement of pressure. 6. Ability to measure fiber optic sensor to measure temperature

Value Added Course

Introduction to Instrumentation Design Content of Syllabus

S.No.	Syllabus Details	No. of Lecture hrs	Time	Date	Lecture name
1	Different types of load cells	2	10.45 am to 12.45am	02.12.20	Ms.R.Chitra
2	Hydraulic, Pneumatic, Strain gauge, Magneto-elastic and Piezoelectric load cells	2	02.00 pm to 04.00 pm	03.12.20	Ms.R.Chitra
3	Different methods of torque measurement: Strain gauge, Relative angular twist. Speed measurement:	2	10.45 am to 12.45am	04.12.20	Ms.R.Chitra
4	Capacitive tacho, Drag cup type tacho, D.C and A.C tacho generators - Stroboscope	2	02.00 pm to 04.00 pm	05.12.20	Ms.R.Chitra
5	Accelerometers: LVDT, Piezoelectric, Strain gauge and Variable reluctance type accelerometers - Mechanical type vibration instruments - Seismic instruments as accelerometer	2	10.45 am to 12.45am	07.12.20	Ms.R.Chitra
6	Seismic instruments as accelerometer – Vibration sensor - Calibration of vibration pickups - Units of density and specific gravity	2	02.00 pm to 04.00 pm	08.12.20	Ms.R.Chitra
7	Baume scale and API scale – Densitometers: Pressure type densitometers, Float type densitometers, Ultrasonic densitometer and gas densitomet	2	10.45 am to 12.45am	09.12.20	Ms.R.Chitra
8	Definitions and standards – Primary and secondary fixed points – Different types of filled in system thermometers – Sources of errors in filled in systems and their compensation	2	02.00 pm to 04.00 pm	10.12.20	Ms.R.Chitra
9	Bimetallic thermometers – IC sensors – Thermocouples: Laws of thermocouple, Fabrication of industrial thermocouples, Reference junctions compensation, Signal	2	10.45 am to 12.45am	11.12.20	Ms.R.Chitra

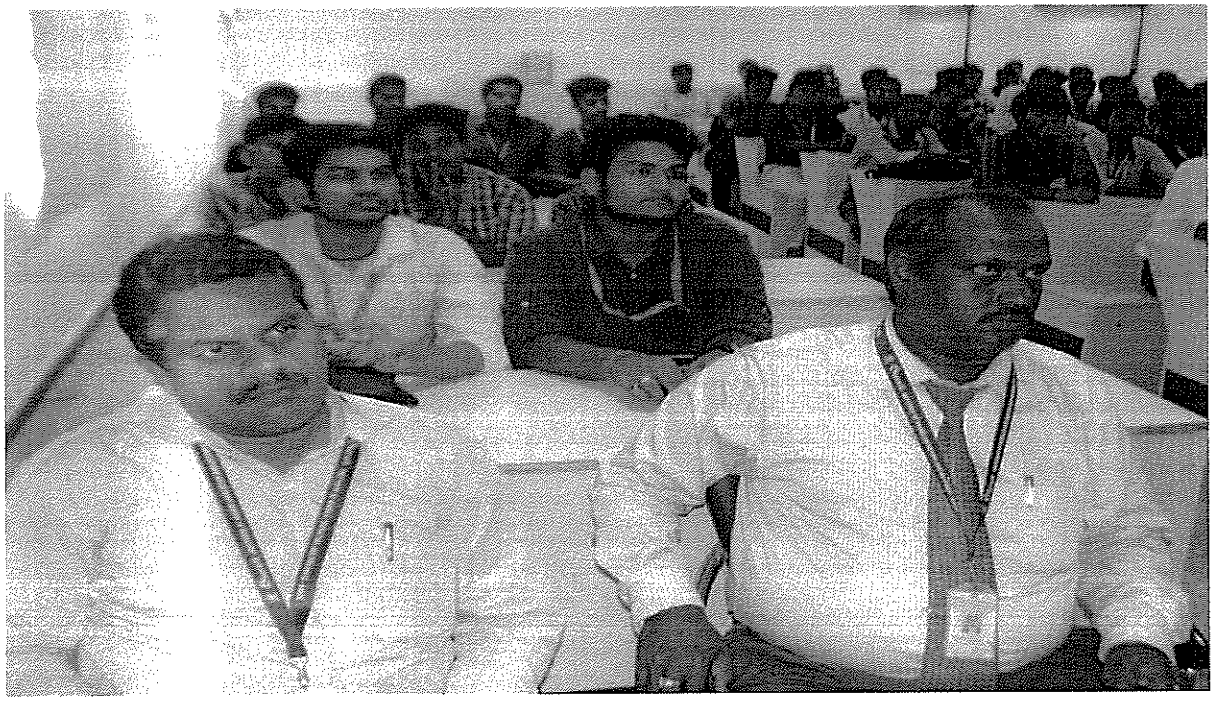
	conditioning for thermocouple				
10	Signal conditioning for thermocouple, Commercial circuits for cold junction compensation, Response of thermocouple, Special techniques for measuring high temperature using thermocouple – Radiation fundamentals	2	02.00 pm to 04.00 pm	12.12.20	Ms.R.Chitra
11	- Radiation methods of temperature measurement – Total radiation pyrometers – Optical pyrometers – Two color radiation pyrometers	2	10.45 am to 12.45am	14.12.20	Ms.R.Chitra
12	Fiber optic sensor for temperature measurement – Thermograph, Temperature switches and thermostats – Temperature sensor selection, Installation and Calibratio	2	02.00 pm to 04.00 pm	15.12.20	Ms.R.Chitra
13	Units of pressure – Manometers: Different types, Elastic type pressure gauges: Bourdon tube, Bellows, Diaphragms and Capsules	2	10.45 am to 12.45am	16.12.20	Ms.R.Chitra
14	Capacitive type pressure gauge - Piezo resistive pressure sensor- Resonator pressure sensor - Measurement of vacuum: McLeod gauge,	2	02.00 pm to 04.00 pm	17.12.20	Ms.R.Chitra
15	Thermal conductivity gauge, lionization gauges, Cold cathode type and hot cathode type – Pressure gauge selection, installation and calibration using dead weight tester	2	10.45 am to 12.45am	18.12.20	Ms.R.Chitra

HOD

Head of the Dept.
Instrumentation Engineering
Bharath Institute of Higher
Education & Research,
Selaiyur, Chennai - 600 073.

Value Added Course

Introduction to Instrumentation Design



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A GRADE NAAC NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

BHARATH INSTITUTE OF SCIENCE AND TECHNOLOGY

CERTIFICATE OF PARTICIPATION

This is to Certify that KISHORE G, from Bharath Institute of Higher Education and Research, has participated in value added course on '**Introduction to Instrumentation Design**' presented by **Ms.** R.Chitra**, Assistant Professor,** Organized by School of Civil & Infrastructre Engineering, Bharath Institute of Science & Technology, BIHER from **2/12/2020 to 18/12/2020.**

Coordinator

HOD
Head of the Dept.
(Civil Engineering)
Bharath Institute of Higher Education & Research,
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VALUE ADDED COURSE

Feedback Form

Event Name: INTRODUCTION TO INSTRUMENTATION DESIGN

Event Venue: Date: 2/12/2020

Name of participant: KISHORE. G

1. How useful did you think this event was for you?

(Please circle the appropriate number where 1 = not at all useful and 5 = extremely useful)

1	2	3	4	✓5

2. Value added course is useful and well organized.

YES ✓	NO

3. Did you receive all the information you required at this Venue?

✓ YES	NO

4. Would you like to attend any further Training Courses VAC

✓ YES	NO

VALUE ADDED COURSE

Feedback Form

Event Name: INTRODUCTION TO INSTRUMENTATION DESIGN

Event Venue: Date: 2/12/2020

Name of participant: AISHWARYA C

1. How useful did you think this event was for you?

(Please circle the appropriate number where 1 = not at all useful and 5 = extremely useful)

1	2	3	4	5 ✓

2. Value added course is useful and well organized.

YES ✓	NO

3. Did you receive all the information you required at this Venue?

YES ✓	NO

4. Would you like to attend any further Training Courses VAC

YES ✓	NO