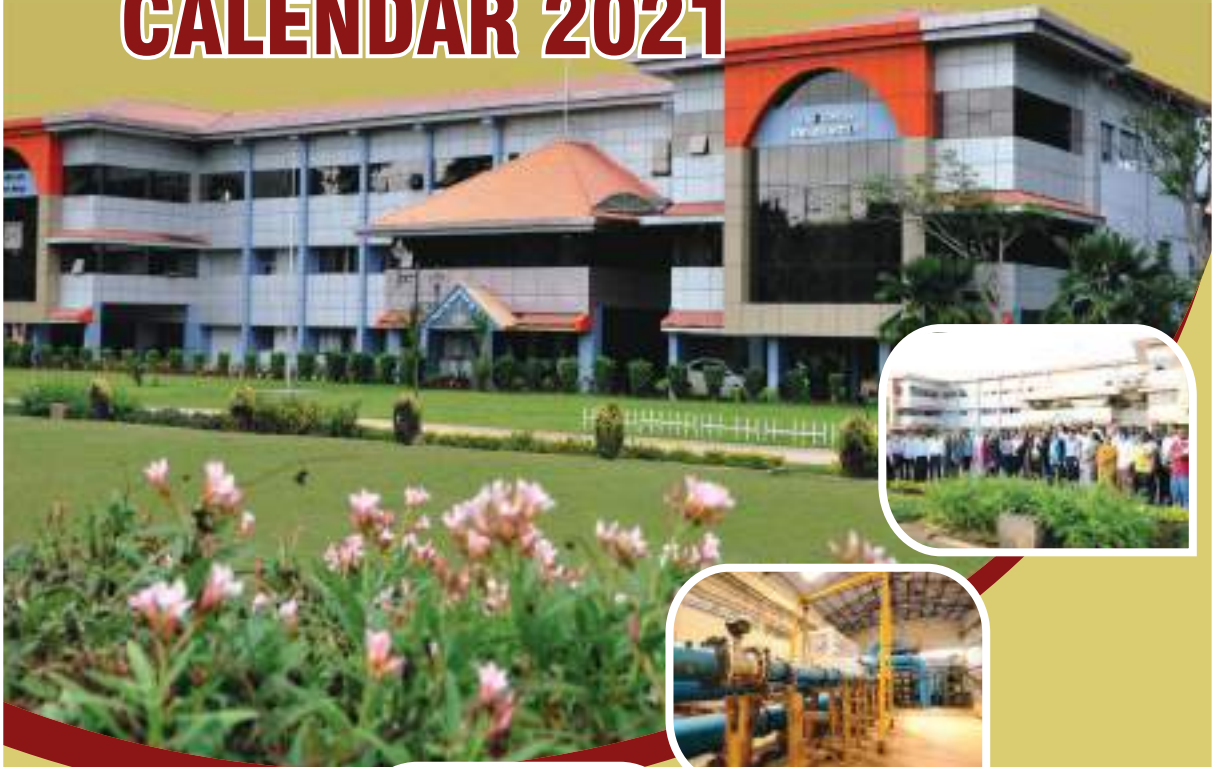


# TRAINING CALENDAR 2021



एफ.सी.आर.आई.



**फ्लूइड कंट्रोल रिसर्च इंस्टिट्यूट**  
**FLUID CONTROL RESEARCH INSTITUTE**

आई. एस. ओ 9001:2015 प्रमाणित एन. ए. बी. एल. प्रत्ययित संगठन An ISO 9001:2015 certified NABL accredited organisation  
(भारत सरकार, भारी उद्योग एवं लोक उद्यम मंत्रालय के अधीन) (Under Govt. of India, Ministry of Heavy Industries & Public Enterprises)

कंजिकोड (पश्चिम), पालक्काड, केरल - 678 623, भारत. Kanjikode (West), Palakkad, Kerala - 678 623, India  
Phone : 0491 - 2566119 / 2566120 / 2566206 / 2569010. Fax : 0491-2566326. Email : training@fcrindia.com

[www.fcrindia.com](http://www.fcrindia.com)

## *From the Director*



**Fluid Control Research Institute (FCRI)**, a state of the art Fluid flow Engineering facility was established in 1989 with techno-commercial inputs from UNDP/UNIDO and transfer of technical expertise from globally reputed facilities like NEL(UK), NRLM( Japan) and Delft Hydraulics(NL) etc. Since then it has grown to become a trusted and renowned Institution in the field of flow measurement and control.

In the present highly competitive and dynamic business scenario, FCRI has been keeping up with the pace of demands for increasing accuracy regimens for its reference systems and capabilities. The Test, Research and Calibration facilities are continually upgraded, updated and expanded to ensure that they continue to be among the best in the world. Regular Inter-Comparison exercises, International certification and validations, stringent Quality Audits, trained manpower and professionalism are the key to its high levels of reputation and credibility.

FCRI believes in the philosophy of giving back to the industry its expertise and solutions nurtured over the last 32 years period. Our reputed and much sought after Technical Training Programs, both standard and customized, are specifically designed to develop, enhance and equip the industry with the latest principles, technologies and applications in Instrumentation, Flow Measurement and Control, Calibration Management Practices, Custody Transfer and Legal Metrology aspects. We encourage you to get in touch with us to know more about our Corporate Training Courses that have been popular with our loyal clientele such as ONGC, GAIL, IPCL, MRPL, Weights & Measures Department, Water Authorities, Reliance, Kerala Food Safety Department, Petronet etc.

Knowledge dissemination through National / International Training Programs under the ITEC scheme sponsored by Ministry of External Affairs, Govt. of India and also under a self-financing scheme are regular activities. About 93 such training programs have been conducted so far and about 1280 foreign nationals from more than 95 countries have benefited from these programs. The training programs provide a platform for eye to eye interaction between FCRI faculty and engineers from the industry field. This facilitates a direct knowledge transfer and also helps in understanding the field problems better.

Our earnest request to all professionals and end-users is to become partner of these Training programmes and help the nation in its march to Make in India programme and Atmanirbhar Bharat.

Welcome to FCRI.

**G Sundaravadivel**

Director (i/c)



## TRAINING PROGRAMMES FOR THE YEAR 2021

### TRAINING PROGRAMMES FOR EXECUTIVES

Sl. No.	Series	Programme	Duration	Date	Fee per participant (including GST @18%)
1.	216	Advanced Flow Measurement & Instrumentation – Principles & Practice	3 days	3 <sup>rd</sup> to 5 <sup>th</sup> February 2021	Rs. 18,213* US \$ 1,091**
2.	217	Liquid Hydrocarbon Flow Measurement And Custody Transfer	3 days	28 <sup>th</sup> to 30 <sup>th</sup> April 2021	Rs. 18,213* US \$ 1,091**
3.	218	Water Transmission & Distribution Engineering	3 days	9 <sup>th</sup> to 11 <sup>th</sup> June 2021	Rs. 18,213* US \$ 1,091**
4.	219	On the Job Training for Field Engineers On Flowmeters & Calibration Techniques	5 days	5 <sup>th</sup> to 9 <sup>th</sup> July 2021	Rs. 29,922* US \$ 1,781**
5.	220	Basics of Computational Fluid Dynamics	2 days	5 <sup>th</sup> to 6 <sup>th</sup> August 2021	Rs. 14,618* US \$ 904**
6.	221	Gas / Natural Gas / CNG / Custody Transfer as per ISO, AGA etc.	3 days	6 <sup>th</sup> to 8 <sup>th</sup> October 2021	Rs. 18,213* US \$ 1,091**
7.	222	Metrology, Pressure, Thermal & Electro Technical Measurements and Calibration	3 days	10 <sup>th</sup> to 12 <sup>th</sup> November 2021	Rs. 18,213* US \$ 1,091**
8.	223	Control Valves & Actuators	3 days	8 <sup>th</sup> to 10 <sup>th</sup> December 2021	Rs. 18,213* US \$ 1,091**

1% KFC extra as applicable

\*Special 10% discount for nominating 5 or more participants from same organisation \*For Indians working in India

\*\*For those working abroad changes in Tax at the time of Registration will be applicable for all the courses

(FCRI GSTIN : 32AAAAF0138K1Z6)

### CUSTOMIZED TRAINING PROGRAMMES CONDUCTED BY FCRI IN RECENT PAST

Sl. No	Courses	Course Title	Course Duration
1.	M/s GAIL, Jaipur	Measuring Instruments & Calibration for GAIL Engineers	5 Days
2.	Ministry of Consumer Affairs, Legal Metrology, New Delhi	Fuel dispensers for DIESEL/PETROL/LPG for Legal Metrology Officials	5 Days
3.	M/s GAIL, Noida	Flow Metering in Gas Business for GAIL Engineers	4 Days
4.	M/s ONGC, Vadodara	Oil & Gas Flow Measurement CTMS for ONGC Engineers	5 Days
5.	M/s ONGC, Dehradun	Hydrocarbon Flow Measurement (Liquid & Gas) and Custody Transfer as per API/AGA Standards; For ONGC Engineers	6 Days
6.	M/s Reliance Industries Ltd Navi Mumbai	Liquid Hydrocarbon Flow Measurement and Custody Transfer as per AGA Standards : For Reliance Engineers	3 Days
7.	M/s Reliance Gas Transportation Infrastructure Ltd., (RGITL), Navi Mumbai	Natural Gas Measurement for RGITL's Field & Measurement Engineers for RGITL Engineers	5 Days
8.	Communication & Capacity 8.Development Unit (CCDU) Thiruvananthapuram	Communication & Capacity 8.Development Unit (CCDU) Thiruvananthapuram	2 Days
9.	Hindustan Zinc Limited, Jaipur	DCS And SCADA for Hindustan Zinc Ltd.	3 Days
10.	Kerala Water Authority	Water Transmission and Distribution Engineering.	3 Days
11.	Bangalore Water Supply & Sewerage Board, Bangalore	Testing of Water Meters	3 Days
12.	M/s AFPO AS - Norway	Liquid & Gas Flow Measurement for Engineers	5 Days
13.	Kenya Bureau of Standards, Nairobi, KENYA	Ultrasonic Flow Meters	5 Days
14.	M/s Dare-e-Salam Water & Sewerage Authority, Tanzania	Testing & Calibration of Water Flow Meters	10 Days
15.	Food Safety Commissionerate Govt. of Kerala, Thiruvananthapuram	Calibration of Glass wares & Weighing Balances for Officials from Food & Safety Dept.	3 Days
16.	M/s Honeywell Bangalore	Liquid Hydro Carbon Flow Measurement & Custody Transfer	3 Days
17.	Concepts of LNG & Natural gas metering custody transfer	Petronet LNG	3 Days
18.	Gas Measurement Systems for BAPCO	Gas measurement techniques	4 Days



## International Training Programme 2021 - 2022

Sl.No.	Programme	Duration	Proposed Date of Training Course
1.	Oil, Water and Gas Flow Measurement And Control Techniques & Standards	9 Weeks	August 18 <sup>th</sup> , 2021 to October 18 <sup>th</sup> , 2021*

Refer website and international training brochure for details.

### Post Graduate Certificate Programme for Practicing / Fresh Engineers

Sl. No.	Series	Programme	Duration	Date	Fee per participant
1.	24	Liquid & Gas/Air Flow Measurement & Control Techniques and Standards	3 Months	24th August 2021 to 24th November 2021*	Rs. 65112/- including GST @ 18% (For Indian Participants) Non Residential+1%KFC (as applicable)

\* Tentative dates

### PROGRAM SERIES 216

### ADVANCED FLOW MEASUREMENT AND INSTRUMENTATION - PRINCIPLES & PRACTICE

**Dates: 3 to 5 February 2021**

#### OBJECTIVES

The course covers basics of flow metering and recent trends in *Industrial Flow Measurement*.

#### COVERAGE

- Fundamentals and Working Principles of Flow measurement techniques: Linear, Non-linear, Non-Intrusive types
- Flow measurement in large ducts and penstocks
- Calibration and validation of flow meters: Volumetric, Gravimetric, Meter-proving
- Field experiences and case studies in flow measurement, operation, calibration and maintenance
- Model approval concepts and tests for custody transfer flow metering
- Sizing and selection of flow meters
- Uncertainty estimation in flow measurement as per ISO / NABL
- Introduction to multiphase flow measurement
- Calibration of flow meters ( Lab demonstration)

#### TARGET GROUP

It is designed specifically to cover interests of personnel involved in plant design, operation and maintenance, calibration and purchase of flow measuring equipments and associated instruments/electronic accessories. The course will enhance the understanding of personnel from chemical process industry, oil & gas industries, water & hydropower sectors. Academia, Researchers and Graduate/Post-Graduate Engineers seeking to work in the area will also benefit from the program.

Indian Nationals Working in India  
Course Fees: Rs. 15,435  
GST @ 18%: Rs. 2,778  
Total Rs. 18213  
KFC @1%: Rs. 154 (as applicable)

Others / those working abroad:  
Course Fees: US\$ 908  
GST @ 18%: US\$ 163  
Processing Fee: US\$ 20  
Total US \$ 1091  
1% KFC US\$ 9 (as applicable)





## PROGRAM SERIES 217

### LIQUID HYDROCARBON FLOW MEASUREMENT AND CUSTODY TRANSFER

#### OBJECTIVES

The course covers basics bulk liquid measurement for oil companies and custody transfer measurements.

**DATES: 28<sup>TH</sup> TO 30<sup>TH</sup> APRIL 2021**

#### TARGET GROUP

Metering and Instrumentation Engineers, Production and Reservoir Engineers, Hydrocarbon Accountants, Product Suppliers, Metering System Vendors, Government Agencies, Researchers. This course has been designed to cover the interests of petroleum production and process industries, Power sector, flow meter manufacturers, dispenser manufactures and users, aviation industry, pipeline transporters (petroleum product), research organizations and academic institutions.

#### COVERAGE

- Calibration of Flow Meters for Oil industry/case studies
- Calibration of CNG Dispensers - Field Experience/ Pipe Provers
- Uncertainty Estimation in Flow Measurement as per ISO/NABL Guidelines
- Model Approval of Flow Meters, Petroleum Dispensers and LPG Dispensers as per OIML R 117
- Fundamentals of Flow Measurement for petroleum liquids
- Coriolis Mass Flow Meters for Custody Transfer - Theory and Practice/Ultrasonic Flow Meters
- Multiphase Flow Metering
- Pipe Prover
- Ultrasonic Flow Meters
- Selection of Flow Meters / Installation Effects on Flow Meters
- Importance and Measurement of Temperature, Pressure and Density
- Calibration of flow meters ( Lab demonstrations)



Indian Nationals Working in India

Course Fees: Rs. 15,435

GST @ 18%: Rs. 2,778

Total Rs. 18213

KFC @1%: Rs. 154 (as applicable)

Others / those working abroad:

Course Fees: US\$ 908

GST @ 18%: US\$ 163

Processing Fee: US\$ 20

Total US \$ 1091

1% KFC US\$ 9 (as applicable)



## PROGRAM SERIES 218

### WATER TRANSMISSION & DISTRIBUTION ENGINEERING

#### OBJECTIVES

Course on water transmission and Distribution Engineering has been designed to provide a indepth knowledge of water metering, water transmission, flow measurement and related fields.

#### COVERAGE

- Flow meters for water industries
- Hydraulic transients in transmission systems
- Pumps & pumping systems
- Analysis of water distribution network
- Quality assurance of water meters
- Automated meter reading systems for water meters
- Testing of valves
- On-site flow measurement / case studies
- Flowmeasurement in large diameter pipes

**Dates: 9<sup>th</sup> to 11<sup>th</sup> June 2021**

#### TARGET GROUP

It is designed specifically to cover interests of Technical personnel involved in and experienced in fields related to Water Supply Industry, personnel responsible for Design/Maintenance of Water Supply System, Consultants, Flow meter Manufacturers/Suppliers, Hydel Power Plants, Water Resources Management Departments, Water Treatment Plant Engineers. etc.

Indian Nationals Working in India

Course Fees: Rs. 15,435

GST @ 18%: Rs. 2,778      Total Rs. 18213

KFC @1%: Rs. 154 (as applicable)

Others / those working abroad:

Course Fees: US\$ 908      GST @ 18%: US\$ 163

Processing Fee: US\$ 20      Total US \$ 1091

1% KFC US\$ 9 (as applicable)



Centre Water Management Laboratory



## PROGRAM SERIES 219

### ON THE JOB TRAINING FOR FIELD ENGINEERS ON FLOWMETERS & CALIBRATION TECHNIQUES

Dates: 5<sup>th</sup> to 9<sup>th</sup> July 2021

#### OBJECTIVES

The course envisages to cater to the requirements of technical personnel from Petroleum, Natural Gas, Petrochemical, Process and Manufacturing industries for on the Job Training of Flow metering and Auxiliary measurement system for both liquid and gas flow measurement.

#### COVERAGE

- Calibration of Flow Meters in Air/Gas/Water and Oil Medium
- Calibration of Flow Meters using primary & secondary standards
- Pressure measurement and calibration/calibration of dimensional parameters
- Calibration of voltage, current, resistance and time
- Temperature measurement and calibration
- Uncertainty analysis and preparation of uncertainty budget
- Extensive Lab sessions

#### TARGET GROUP

Technical personnel from Mechanical, Instrumentation, Chemical, Petroleum, Electrical Engineering or related background with exposure to Industrial Instrumentation. The course will benefit Oil/Gas Metering Engineers, Instrumentation Engineers, Process Control Engineers, Production and Reservoir Engineers, Laboratory Engineers, Quality Managers, Hydrocarbon Accountants, Metering System Vendors, Flow Meter Manufacturers, Product Suppliers, Government Regulators, Researchers and others from related fields.

Indian Nationals Working in India

Course Fees: Rs. 25,358

GST @ 18%: Rs. 4,564 Total Rs. 29,922

KFC @1%: Rs. 254 (as applicable)

Others / those working abroad:

Course Fees: US\$ 1492 GST @ 18%: US\$ 269

Processing Fee: US\$ 20 Total US \$ 1781

1% KFC US\$ 15 (as applicable)



ITEC Trainees at Oil Flow Laboratory



TRAINING

7 CALENDAR 2021

## PROGRAM SERIES 220

### BASICS OF COMPUTATIONAL FLUID DYNAMICS

#### OBJECTIVES

Computational Fluid Dynamics (CFD) is the branch of science dealing with simulation of fluid flows with heat and mass transfer in various engineering and natural objects. The course is designed to cover the essentials of CFD with software application and case studies.

**Dates: 5<sup>th</sup> & 6<sup>th</sup> August 2021**

#### TARGET GROUP

Technical Personnel from  
Civil, Mechanical, Chemical,  
Hydraulics Aeronautical &  
Aerospace Engineering  
Fields, academic institutions  
Researchers and others from  
Relevant field.

#### COVERAGE

- Introduction to CFD
- Basics of Fluid Flow and Governing Equations
- Discretization and Solution Methods (FDM & FVM)
- Turbulence Modeling
- Applications of CFD
- Methods of CFD Analysis Using Commercial CFD Software
- Demonstration of FLUENT Software and Flow Simulation
- Meshing and Boundary Conditions
- Case studies including Industrial Problems
- Importance of CFD in Flow Metering and Design
- All classes are fully Theoretical with Typical Software Demonstration and no Lab Session

Others / those working abroad:  
Course Fees: US\$ 749  
GST @ 18%: US\$ 135  
Processing Fee: US\$ 20  
Total US \$ 904  
1% KFC US\$ 7.5 (as applicable)

Indian Nationals Working in India , Course Fees: Rs. 12,388  
GST @ 18%: Rs. 2,230 , Total Rs. 14618, KFC @1%: Rs. 124 (as applicable)  
For Research Scholars & Academic Staff , Course Fees: Rs. 10,112  
GST @ 18%: Rs. 1,820 , Total Rs. 11,932, KFC @1%: Rs. 101 (as applicable)



Trainees attending CFD Class





## PROGRAM SERIES 221

### GAS / NATURAL GAS / CNG / CUSTODY TRANSFER AS PER ISO, AGA ETC.

#### OBJECTIVES

Gas flow measurements play a very vital role in petrochemical industries and process plants. Flow measurement and control is an essential requirement for assuring the quality as per the relevant standards and the safe operation of the piping network and personnel involved. The course is designed to deal with all the relevant aspects of gas flow measurement and control and will also cover the new technological developments in the field.

#### COVERAGE

- Gas Flow Measurement Techniques
- Flow Meters : Orifice, Turbine, Ultrasonic, Coriolis Principles, Applications, Installations, Calibration.
- CNG Metering and Dispensing
- LNG Measurement Techniques
- Flare Gas Measurement/Flow Measurement in Large Ducts
- Gas Properties, on flow measurement, PVT corrections
- Secondary Instrumentation
- Verification and Calibration of Flow Computers
- Uncertainty Analysis in Flow Measurement
- In Situ Auditing/Field Validation of Flow Metering Station as per AGA Standards / case studies
- Model Approval as per OIML norms
- Diaphragm Gas Meters
- CNG Dispenser
- Laboratory Sessions

Dates: 6<sup>th</sup> to 8<sup>th</sup> October 2021

#### TARGET GROUP

Personnel from Mechanical, Instrumentation, Chemical, petroleum or Electrical Engineering with a background of Industrial Instrumentation and Control in Gas Flow Measurement and related field. Participants may be from gas industries, flow meter manufacturers, other related industries like refineries, power plants, fertilizers, R&D organizations or academic institutions.

Indian Nationals Working in India , Course Fees: Rs. 15,435  
GST @ 18%: Rs. 2,778 Total Rs. 18213  
KFC @1%: Rs. 154 (as applicable)

Others / those working abroad: Course Fees: US\$ 908 GST @ 18%: US\$ 163 , Processing Fee: US\$ 20 , Total US \$ 1091 , 1% KFC US\$ 9 (as applicable)

## PROGRAM SERIES 222

### METROLOGY, PRESSURE, THERMAL & ELECTRO TECHNICAL MEASUREMENT AND CALIBRATION CONTROL

#### OBJECTIVES

National and International trade depends on acceptable systems of measurement standards for efficient operation. Recognizing the critical role of metrology, the International Standards Organisation (ISO) has given it a due important place in the International Quality Standards ISO 9000, 14000 & 18000 series by incorporating specific clauses on Calibration and Traceability. The course covers specification of laboratory reference equipments, testing and calibration techniques including documentation, traceability, uncertainty evaluation as required by ISO 17025/NABL 141 guidelines for accreditation of laboratories in different areas like Mechanical, Thermal, Electro-technical etc.

#### COVERAGE

- Dimensional Metrology, Precision Measurement/Calibration Techniques
- Mass Metrology (Mass, Density, Volume etc ) and Calibration Techniques
- Pressure Metrology and Calibration of Pressure Measuring Instruments
- Thermometry and Calibration

Dates: 10<sup>th</sup> to 12<sup>th</sup> November 2021

#### TARGET GROUP

Personnel with 2-3 years experience in Metrological or inspection sectors and quality groups from Engineering Industries, Industrial Process Control & Instrumentation and other related areas can participate.

Indian Nationals Working in India  
Course Fees: Rs. 15,435  
GST @ 18%: Rs. 2,778  
Total Rs. 18213  
KFC @1%: Rs. 154 (as applicable)



- Transducers, Transmitters and Calibration Techniques
- Laboratory Accreditation as per NABL Norms
- Traceability and Inter-comparison Campaigns
- Quality Standards and Relevance of Calibration
- Assessment of Uncertainty of Measurements for Laboratory Environs
- Uncertainty Estimation - case studies
- Lab sessions

Others / those working abroad:  
 Course Fees: US\$ 908  
 GST @ 18%: US\$ 163  
 Processing Fee: US\$ 20  
 Total US \$ 1091  
 1% KFC US\$ 9 (as applicable)

## PROGRAM SERIES 223

### CONTROL VALVES & ACTUATORS

#### OBJECTIVES

The course presents a practical approach to selection, sizing, installation and performance evaluation of control valves/actuators. These elements from critical control device in industrial/process piping/flow systems. The course also covers matching of valve/actuator technical specifications and system operational parameters.

**Dates: 8<sup>th</sup> to 10<sup>th</sup> December 2021**

#### TARGET GROUP

Personnel who are involved in design, selection, installation or operation of Valves and Actuators within the Oil & Gas, Petroleum, Water, Chemical Process, Pharmaceuticals, plastics, Paper and Food Industries. A basic understanding of flow measurement/control requirements & applications would be advantageous.

#### COVERAGE

- Basic Classification of Valves and their Characteristics
- Basics of Selection and Sizing of Control Valves and Matching Actuator, Metering System Operational Requirements etc.
- Air Valves, Safety Relief Valves and Breather cum Relief Valves Test Procedures
- Cavitation in Control Valves - Theory and Testing
- Valves for Cryogenic Services - Test Program
- Fugitive Emission - Theory and Testing
- Diagnostic for Valve Actuators
- Endurance/Life Cycle Test of Valves and Actuators
- Performance Evaluation of Control Valves and Actuators

#### LABORATORY EXPERIMENTS

- Flow Coefficient Test of Valves
- Fugitive emission testing of Valves
- Seismic Testing of Valves
- Special Test on Valves



Primary Standard Gravimetric System

Indian Nationals Working in India  
 Course Fees: Rs. 15,435  
 GST @ 18%: Rs. 2,778  
 Total Rs. 18213  
 KFC @1%: Rs. 154 (as applicable)

Others / those working abroad:  
 Course Fees: US\$ 908  
 GST @ 18%: US\$ 163  
 Processing Fee: US\$ 20  
 Total US \$ 1091  
 1% KFC US\$ 9 (as applicable)



# POST GRADUATE CERTIFICATE PROGRAMME (PGCP) IN 'LIQUID & GAS/AIR FLOW MEASUREMENT & CONTROL TECHNIQUES AND STANDARDS'

3 Months – 24<sup>th</sup> August 2021 to 24<sup>th</sup> November 2021\*

**Eligibility :** Four Year Engineering Graduation in B.E/ B.Tech with consistently good academic record.

## **Course Coverage :**

### **Principles and Practice of Flow Measurement**

Flow Measurement in Single Phase Fluids: Principles and types of Linear & Non-linear Flow meters, Differential pressure based flow measurement devices, Inline and insertion flow meters for conduits and closed ducts: Turbine Flow Meters, Positive Displacement Flow Meters, Vortex Flow Meters, Ultrasonic Flow Meters, Coriolis Mass Flow Meters, Thermal Mass Flow Meters, Fluidic Oscillation Flow Meters, Open channel flow measurement methods.

### **Performance/QR Evaluation/Calibration of Flow Meters**

Calibration Techniques, Primary and Secondary Calibration, Gravimetric Method, Volumetric Method, Master Meter Method, Meter Provers, Pipe Provers & Tank Provers, Calibration of liquid and gas flow meters, Calibration at site and case studies.

### **Special Applications, Selection Sizing of Flow Meters and Installation Effects**

Measurement of Multiphase flow, Flow measurement in large diameter pipes and Hydro-power Penstocks, Installation effects for various flow meters, Selection and sizing of Flow meters for various applications, Piston provers and Bell-provers.

### **Secondary Instrumentation and Auxiliary Measurements System**

Instrumentation/sensors for Pressure, Temperature, Density, etc. and their Calibration methods Process Transmitters / Smart Transmitters, Level Measurement and Tank Gauging principles and practice, Gas Chromatography.

### **Study of International Standards - AGA, API, OIML etc. for Oil and Gas flow measurement computations and custody transfer**

International and national standards for flow measurement-American Petroleum Institute (API), Organisation Internationale De Metrolgie Legale (OIML), American Gas Association (AGA) and ISO standards

### **Custody Transfer Flow Measurements, Auditing and Model Approval**

Custody transfer flow measurement scenario, Flow metering for Custody transfer of Liquid Petroleum Quantities, AGA standards for Orifice and Turbine Flow meters for Natural Gas, AGA standards for Natural Gas compressibility calculations, Custody Transfer Accuracy and Contractual needs, Compact volume provers/Pipe-provers for custody transfer applications, Flow Computers for Oil & Gas Flow Custody transfer, Tank Gauging and Tank Farm Management system. Inspection and Auditing of Natural Gas Custody Transfer Installations. Dispensers for Petroleum and Compressed Natural Gas and Testing of Dispensers.

### **Flow Control Techniques - Control Valves and Actuators**

Types of valves, intelligent control valves, flow characteristics of valves, performance evaluation of control valves. Selection and sizing of control valves. Actuators selection and sizing, testing of actuators, diagnostics of valve actuators, matching actuators for control valves and electronic controllers.

### **Software and computational fluid dynamics**

Software for selection and sizing of flow meters, selection and sizing of control valves, Computational Fluid Dynamics (CFD), Applications, and Case Studies.

### **Projects/ Seminars/Industrial visit**

Graduation in disciplines : Instrumentation, Mechanical, Electrical, Electronics, Chemical or Mechatronics. Those who have not completed graduation or without Provisional/Degree certificate need not apply.

\* Tentative dates



**Course Fee** : Rs. 55180 + GST @ 18% Rs. 9932 +1% KFC Rs.552.= Total Rs.65664  
(Excluding cost of boarding & lodging)

**Mode of Payment** : We accept e-payment only. For bank details ref. page No. 12 Course is open for Indian citizens only.

**Accommodation** : The course is purely Non-residential. FCRI Hostel facility can be provided as per request of students, if available.

**FCRI Hostel facilities & Mess for Course Participants:**

FCRI has Hostel Facilities inside the campus. The course participants can avail this facility with an advance request on payment of nominal hostel fees & mess fees, as per availability.

**How to apply** : A detailed Bio-Data along with self attested copies of Certificates in proof of Qualification & Experience (if any) may be mailed to below indicated Address to reach us before the due date along with non-refundable Registration fee of Rs. 500/- + 1% KFC Rs. 5.

**Postal Address for sending Application**

The Head-Training, FLUID CONTROL RESEARCH INSTITUTE, Kanjikode West, Palakkad - 678 623, Kerala, INDIA Communication/Enquiries : Email : [training@fcriindia.com](mailto:training@fcriindia.com)  
Phone ; +91 - 491 - 2566120/2566206/2566119/2569010 Fax : 91-0491-2566326

Tentative	Dates
Last date for receipt of Applications	11 <sup>th</sup> August 2021
Date of Screening Test/Interview	13 <sup>th</sup> August 2021
Closing of Admissions	17 <sup>th</sup> August 2021

## TRAINING PROGRAMME HITHERTO

Sl. No.	Programme	No. of Programs	Duration	Participants
1	Training Programmes for Executives	198	2 to 5 days	Participants from various industries
2	Customised / Tailor made Training Programme	159	3 to 5 days	Participants from HPCL, HAL, W & M, TNPEC, ONGO, GAIL Naval Dockyard, Reliance, etc
3	Post Graduate Certificate Programme	23	3 months	329 Fresh Engineers
4	International Training (ITEC Programme of MEA)	91	2 to 3 months	Above 1280 Participants from 95 countries



ITEC participants-Group Photo-2019



## BANK DETAILS

### Training Course Fee to be paid by e-payment (RTGS/NEFT) only

State Bank of India (SME Branch) Kanjikode West, Palakkad - 678 623

Account No. 10258760349. IFSC Code: SBIN0006640. GSTIN : 32AAAF0138K1Z6. PAN : 32AAAF0138K

### NABL Approved Test Facilities

Control Valve/Actuators	CV, FL, Seat leakage test, Fugitive emission, cryogenic Testing, torque
Water Meters	All test as per IS 6784, IS 779, IS 2373, ISO 4064
Butterfly Valves & Actuators	POD tests as per AWWA C504 & C540
Venting devices/air valves	API 2000
Safety Relief Valves	ASME PTC 25
Gas Turbine Meters	OIMLR 137 - 1 Model Approval
Gas Regulators	BS EN 334
Diaphragm Gas Meters	BS EN 1359 Model Approval
Liquid Flow Meters	As per relevant standards

### RECOGNITIONS OF FCRI

Agency	Category
National Accreditation Board for Testing and Calibration Laboratories (NABL)	Calibration/Testing of Flow Products, Mechanical Measurements Thermal Calibration, Electro Technical Calibration
Netherlands Measurement Institute (NMI)	CLATF (20 Bar, 400 m <sup>3</sup> /h) of FCRI complies with the criteria for Calibration Laboratories as per ISO/IEC 17025
Department of Science & Technology	Recognized R&D Institute
Department of Weights & Measures (Ministry of Civil Supplies)	Model Approval tests on flow meter for custody transfer of oil/gas as per OIML Standard
Chief Controller of Explosives, Nagpur	Testing of Safety Relief Valves
Bureau of Indian Standards	Testing of Water Meters, Anemometers etc.
Institution of Fire Engineers, New Delhi	Hydraulic Qualification tests on fire fighting Equipments
Central Pollution Control Board	Certification of Petrol, Kerosene & Diesel Generators for type approval
Nuclear Power Corporation	Seismic Studies for Power Plant Equipments
Ministry of External Affairs (ITEC)	Training programmes for Foreign Nationals on Flow Measurement and Instrumentation for Oil Gas & Water utilities/industries
GCAS Quality Certification Pvt. Ltd.	ISO 9001:2008 Certification in Calibration & Testing of fluid flow components, calibration of Mechanical, electro technical, thermal Instruments, flow calibration & measurements at Site, project consultancy & implementations, Professional training.

#### About FCRI

An ISO - 9001:2008 accredited, autonomous Research Institute under the Ministry of Heavy Industries & Public enterprises, Govt. of India, FCRI celebrated its Silver Jubilee in 2014. FCRI has had unique and focused expertise in Flow Measurement and Control, Fluid Dynamics Instrumentation and Data Acquisition, Computational Fluid Dynamics and Finite Element Analysis, Technical computational Software, etc. ISO - 17025 accredited Fluid Flow Laboratories at FCRI are considered one of the best in this part of the World. FCRI has been accredited and approved by a number of certifying bodies and agencies.

Please visit [www.fcriindia.com](http://www.fcriindia.com) for knowing more.



**TRAINING**

**CALENDAR 2021**





ITEC participants-Group Photo-2019



### Distance from Nearest Airports to Palakkad (FCRI)

Coimbatore - Palakkad	- 40 Kms
Cochin - Palakkad	- 140 Kms
Calicut (Kozhikode) - Palakkad	- 160 Kms
Nearest Railway Station Palakkad Junction	- 11 Kms





Water Flow Laboratory



ITEC Trainees at Electro-Thermal Laboratory



Air Flow Laboratory



ITEC Trainees at Hemi-Anechoic chamber



Group photo of Engineers during  
Flotek-G conference 2018



Group photo of participants from  
Legal Metrology department



ITEC Trainees at large Water Flow Laboratory



Training Laboratory Facility



# Welcome to God's Own Country



## *Kerala*

is the land of exceptional natural beauty. Tucked away within little villages and bustling towns, sheltered by the elegant coconut farms, Kerala deserves the name God's Abode. The major places of visit are Cochin a natural harbour with beautiful backwaters, Thekkady - a wildlife sanctuary, Palakkad - Malampuzha Dam, fort, Nelliampathi, Munnar - a gracious hill station, Thiruvananthapuram - the capital of Kerala, Kovalam - a beautiful beach and Kanyakumari - the southern tip of India. Places of interest for sight seeing in and around the Southern part of India are Ooty, Kodaikanal (hill stations), Bengaluru & Mysore (Palace), Madurai Meenakshi Temple etc.



एफ.सी.आर.आई.



**फ्लूइड कंट्रोल रिसर्च इंस्टिट्यूट**  
**FLUID CONTROL RESEARCH INSTITUTE**

आई. एस. ओ 9001:2008 प्रमाणित एन. ए. बी. एल. प्रत्ययित संगठन An ISO 9001:2008 certified NABL accredited organisation  
(भारत सरकार, भारी उद्योग एवं लोक उद्यम मंत्रालय के अधीन) (Under Govt. of India, Ministry of Heavy Industries & Public Enterprises)  
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