

## LABORATORY FACILITIES

<p><b>BASIC</b></p> 	<ul style="list-style-type: none"> <li>● Autoclave</li> <li>● De-Ionizer Unit</li> <li>● Heating Mantle</li> <li>● High Vacuum Pump</li> <li>● Hot Air Oven</li> <li>● Ice Flaker Machine</li> <li>● Jar Test Apparatus</li> <li>● Magnetic Stirrer with Heater</li> <li>● Microbalance</li> <li>● Muffle Furnace</li> <li>● Non Refrigerated Centrifuge</li> <li>● pH Meter</li> <li>● Total Suspended Solids Apparatus</li> <li>● Turbidity Meter</li> <li>● Ultrapure Water Purification system</li> <li>● Water Bath</li> </ul>
<p><b>INTERMEDIATE</b></p> 	<ul style="list-style-type: none"> <li>● Bacteriological Incubator</li> <li>● COD Digestor</li> <li>● Colony Counter</li> <li>● Electrothermal Heater</li> <li>● Fume Hood</li> <li>● Loop Sterilizer</li> <li>● Noise meter</li> <li>● Orbital Shaker &amp; Incubator</li> <li>● Portable Water Quality Multimeter</li> <li>● Refrigerated Centrifuge</li> <li>● Roto spin</li> <li>● Sonicator</li> <li>● Stack Monitoring Equipment</li> <li>● Ultra low Temperature Freezer</li> <li>● UV Visible Spectrophotometer</li> <li>● Vortex shaker</li> </ul>
<p><b>ADVANCED</b></p> 	<ul style="list-style-type: none"> <li>● Biosafety Class II Cabinet</li> <li>● BOD Analyzer with Incubator</li> <li>● Bomb Calorimeter</li> <li>● CHNS-O Analyzer</li> <li>● Fourier Transform Mid Infrared Spectroscopy</li> <li>● Gas Chromatography - FID, TCD &amp; Headspace Sampler</li> <li>● Indoor Air Quality Meter with Particle Size Counter</li> <li>● Inductively Coupled Plasma - Optical Emission Spectroscopy</li> <li>● Microwave Digestion System</li> <li>● Optical Microscope with Camera</li> <li>● Total Kjeldhal Nitrogen Analyzer</li> <li>● X-Ray Fluorescence Spectroscopy</li> </ul>

## LABORATORY SERVICES

We provide testing services for environmental samples: water, blackwater, greywater, biosolids, and sludge.

### PHYSICAL PARAMETERS



- Calorific Value
- Electrical Conductivity
- Moisture Content
- Temperature
- Total Dissolved Solids
- Total Solids
- Total Suspended Solids
- Turbidity

### CHEMICAL PARAMETERS



- Alkalinity
- Ammonical Nitrogen
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Chloride
- Elemental Analysis - Carbon, Hydrogen, Nitrogen, Sulphur, Oxygen
- Fluoride
- Heavy Metals - Aluminium, Arsenic, Barium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Gallium, Indium, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Nickel, Phosphorous, Potassium, Selenium, Silver, Sodium, Strontium, Titanium, Zinc.
- Iron
- Nitrate Nitrogen
- Nitrite Nitrogen
- pH
- Phosphate as P
- Total Hardness
- Total Kjeldahl Nitrogen
- Total Nitrogen
- Total Phosphorus

### MICROBIAL PARAMETERS



- Total Coliform
- Faecal Coliform
- Helminths Identification
- Helminths Enumeration

**ANALYTICAL CHARGES - Physical, Chemical & Microbial Parameters**

S. No	Analytical Parameters	Internal Charges	Internal Charges	External Charges	External Charges
		IIT Palakkad Students (Cost in Rs /Sample)	IIT Palakkad Faculty/Staff (Cost in Rs /Sample)	Other Academic Institutions (Cost in Rs /Sample)	Industries/ R&D (Cost in Rs /Sample)
1	Colour	100	110	120	150
2	Odour	100	110	120	150
3	Temperature	100	110	120	150
4	Electrical Conductivity	100	110	120	150
5	pH	100	110	120	150
6	Turbidity	100	110	120	150
7	Dissolved Oxygen	250	275	300	375
8	Sludge Volume Index (S.V.I.)	200	220	240	300
9	Settleable Solids	250	275	300	375
10	Total Solids	250	275	300	375
11	Total Fixed Solids	250	275	300	375
12	Total Volatile Solids	250	275	300	375
13	Total Suspended Solids	250	275	300	375
14	Volatile Suspended Solids	350	385	420	525
15	Total Dissolved Solids	350	385	420	525
16	Chemical Oxygen Demand	500	550	600	750
17	Soluble Chemical Oxygen Demand	600	660	720	900
18	Biochemical Oxygen Demand	500	550	600	750
19	Ammonical Nitrogen	500	550	600	750
20	Total Nitrogen	750	825	900	1125
21	Total Kjeldahl Nitrogen	650	715	780	975
22	Nitrite Nitrogen as NO <sub>2</sub>	350	385	420	525
23	Nitrate Nitrogen as NO <sub>3</sub>	350	385	420	525
24	Phosphate as P	250	275	300	375
25	Total Phosphorous	500	550	600	750
26	Chloride	250	275	300	375
27	Total Hardness	250	275	300	375
28	Hardness (Calcium)	250	275	300	375
29	Hardness (Magnesium)	250	275	300	375
30	Acidity	200	220	240	300
31	Alkalinity	200	220	240	300
32	Chlorine Demand	150	165	180	225
33	Chlorine Residual	150	165	180	225
34	Sulphate	250	275	300	375
35	Salinity	150	165	180	225

**ANALYTICAL CHARGES - Physical, Chemical & Microbial Parameters**

S. No	Analytical Parameters	Internal Charges	Internal Charges	External Charges	External Charges
		IIT Palakkad Students (Cost in Rs /Sample)	IIT Palakkad Faculty/Staff (Cost in Rs /Sample)	Other Academic Institutions (Cost in Rs /Sample)	Industries/ R&D (Cost in Rs /Sample)
36	Iron	300	330	360	450
37	Fluoride	300	330	360	450
38	E.coli (MPN Count)	750	825	900	1125
39	E.coli (Colony Count)	750	825	900	1125
40	Coliform (MPN Count)	750	825	900	1125
41	Coliform (Colony Count)	750	825	900	1125
42	Helminth Eggs Enumeration (Liquid)	1200	1320	1440	1800
43	Helminth Eggs Enumeration (Solid)	1500	1650	1800	2250

## ANALYTICAL CHARGES - Sophisticated Instruments

S. No	Testing of Samples Solid/Liquid/Gaseous Forms	Internal Charges IIT Palakkad Students (Cost in Rs /Sample)	Internal Charges IIT Palakkad Faculty/Staff (Cost in Rs /Sample)	External Charges Other Academic Institutions (Cost in Rs /Sample)	External Charges Industries/ R&D (Cost in Rs /Sample)
	Instruments & Parameters				
1	ICP-OES <i>(Heavy Metals - Ag, Al, As, B, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, In, K, Li, Mg, Mn, Na, Ni, P, Pb, Se, Sr, Tl, Zn)</i>	Rs.400/element + Rs.150 additional for each element + Rs.250 for Microwave Digestion/solid sample	Rs.440/element + Rs.150 additional for each element + Rs.250 for Microwave Digestion/solid sample	Rs.480/element + Rs.150 additional for each element + Rs.250 for Microwave Digestion/solid sample	Rs.600/element + Rs.150 additional for each element + Rs.250 for Microwave Digestion/solid sample
2	CHNS Analyzer <i>(% Carbon, Hydrogen, Nitrogen and Sulphur)</i>	1600	1760	1920	2400
3	Oxygen Analyzer <i>(% Oxygen)</i>	1500	1650	1800	2250
4	Bomb Calorimeter <i>(Calorific Value)</i>	750	825	900	1125
5	Gas Chromatography <i>(Gaseous Components - CO, CO<sub>2</sub>, H<sub>2</sub>S, H<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>)</i>	1500 + Rs.750 additional for each element	1650 + Rs.750 additional for each element	1800 + Rs.750 additional for each element	2250 + Rs.750 additional for each element
6	Fourier Transform Mid Infrared Spectroscopy <i>(Chemical Composition of Materials)</i>	750	825	900	1125

## DRINKING WATER STANDARD PACKAGE (BIS) 10500: 2012

### Parameters Covered

PHYSICAL PARAMETERS	CHEMICAL PARAMETERS	TOXIC PARAMETERS	MICROBIAL PARAMETERS
Colour Odour TDS Turbidity	Alkalinity Ammonical Nitrogen Calcium Fluoride Magnesium Nitrate Nitrogen pH Residual Chlorine Sulphate Total Hardness	Aluminum Arsenic Barium Boron Cadmium Chromium Copper Iron Lead Manganese Mercury Nickel Selenium Silver Zinc	Coliform (MPN Count) E.coli (MPN Count)

### Testing Charges

Internal Charges IIT Palakkad Students (Cost in Rs /Sample)	Internal Charges IIT Palakkad Faculty/Staff (Cost in Rs /Sample)	External Charges Other Academic Institutions (Cost in Rs /Sample)	External Charges Industries/ R&D (Cost in Rs /Sample)
7500	8250	9000	11250

## NATIONAL GREEN TRIBUNAL: STP DISCHARGE STANDARDS 2019

### Parameters Covered

PHYSICAL PARAMETERS	CHEMICAL PARAMETERS	MICRIBIAL PARAMETERS
Total Suspended Solids	Biochemical Oxygen Demand Chemical Oxygen Demand pH Total Nitrogen Total Phosphorous	E.coli (MPN Count)

### Testing Charges

Internal Charges IIT Palakkad Students (Cost in Rs /Sample)	Internal Charges IIT Palakkad Faculty/Staff (Cost in Rs /Sample)	External Charges Other Academic Institutions (Cost in Rs /Sample)	External Charges Industries/ R&D (Cost in Rs /Sample)
3350	3685	4020	5025

### NOTE

Taxes	18% GST extra (9% - SGST; 9% - CGST)
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### CONTACT

For further information, please feel free to contact us

#### Global Sanitation Centre of Excellence (GSCOE)

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# LABORATORY FACILITIES

