



TRAINING INSTITUTE FOR CHEMICAL INDUSTRIES

(Central Training Institute of BCIC)

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Department: Analytical Chemistry & Environmental Science Department (ACESD)

Objectives:

1. Conduct basic training courses for apprentice operators/technicians (HSC/BSc/Equiv.) and newly recruited officers (BSc/MSc/MS)
2. Conduct refreshers/up-gradation courses for in service operators, technicians and officers.
3. Conduct training courses for ongoing university students having chemistry background.
4. Tailor made courses for different organizations.
5. Conduct seminar, symposium, workshop & specially designed short courses with a view to exchange technical information & experience and to enhance mutual cooperation in national & international level.
6. Extend specialized technical services to industries & other organizations.
7. Long course for HSC (Science) pass students, fresh University Graduates.
8. Provide technical and consulting service to different industrial establishments.

Laboratories:

There are 6 different laboratories in ACES Department, namely

1. Qualitative & Titrimetry Laboratory (QTL)
2. Food & Beverage Testing Lab (FBTL)
3. Spectrometry Laboratory (SML)
4. Environmental Pollution Monitoring & Control Lab (EPCL)
5. Advanced Analytical Chemistry & Research Lab (ACRL)
6. Testing & Calibration Lab (TCL)

Qualitative & Titrimetry Laboratory (QTL)



QTL includes instrument, such as 1) pH meter, 2) conductivity meter, 3) refractometer, 4) flash point detector, 5) bomb calorimeter, 6) precision calorimeter, 7) semi-auto titrator, 8) Karl-Fischer titrator, 9) incubator, 10) oven, 11) furnace, etc.

Food & Beverage Testing Lab (FBTL)



FBTL is newly growing lab. It has 1) Kjeldahl apparatus, 2) elemental analyser, 3) Gas chromatograph, 4) Viscometer, 5) polarimeter, etc.

Spectrometry Laboratory (SML)



SML includes instrument, such as 1) AAS, 2) UV-Visible Spectrophotometer, 3) IR Spectrometer, 4) flame photometer, 5) photometer, etc.

Environmental Pollution Monitoring & Control Lab (EPCL)



EPCL includes instrument, such as 1) Emission gas analyzer, 2) water quality monitor, 3) COD analyzer, 4) sound level meter, 5) radiation alert, 6) NH₃ detector, 7) SO₂ detector, 8) CO detector, etc.

Advanced Analytical Chemistry & Research Lab (ACRL)

ACRL includes instrument, such as 1) ICP-OES, 2) GC, 3) GC-MS, 4) HPLC, 5) FTIR Spectrometer, 6) EXRF Spectrometer, etc.



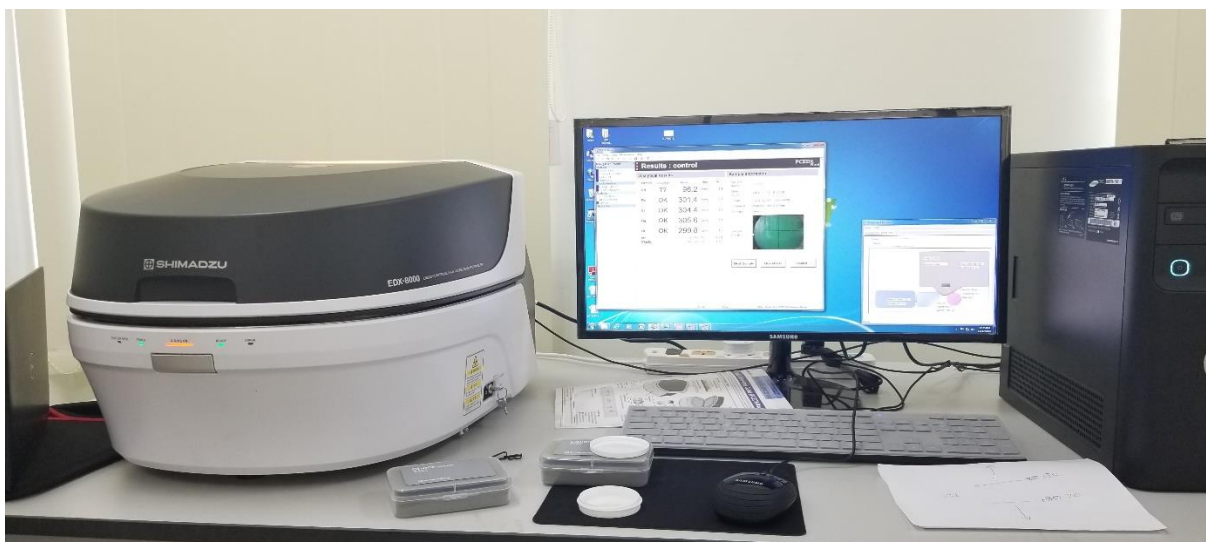
ICP-OES



HPLC



FTIR Spectrometer



EDXRF Spectrometer



GC



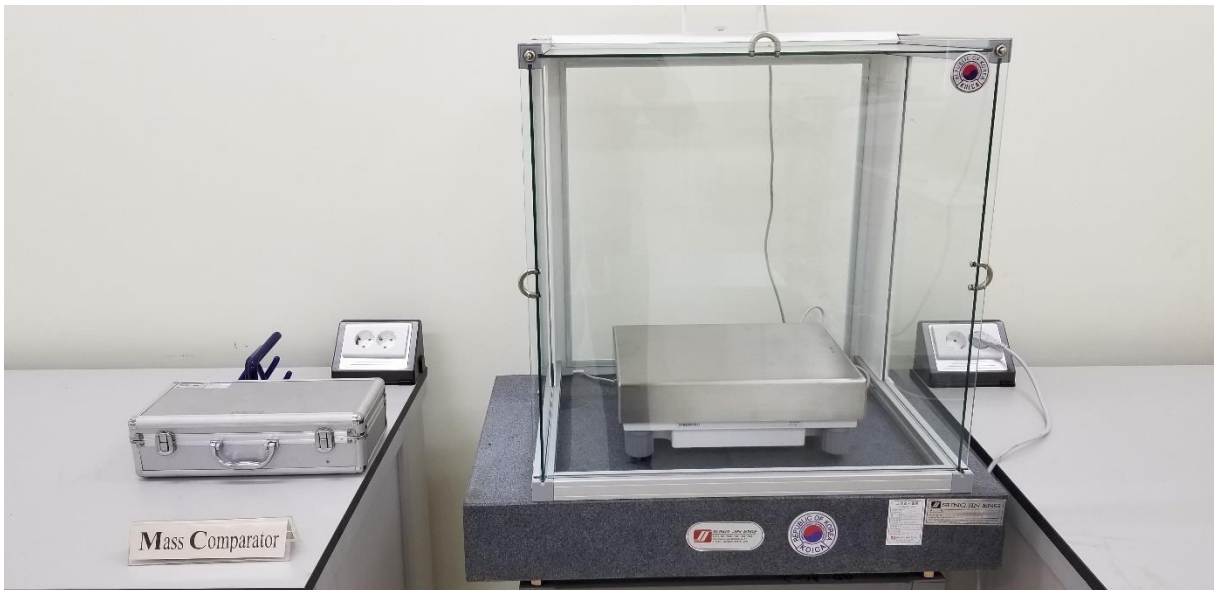
GC-MS

Testing & Calibration Lab (TCL)

TCL includes 1) E2 class mass stone, 2) F1 class mass stone, 3) Analytical balance, 4) mass comparator, etc.



Analytical Balance



Mass Comparator

Training Programmes

ACESD conducts long courses of 1 year for new recruits and short up-gradation training courses of 1-4 weeks duration, for personnel working in different industries/technical organizations. Training courses in general, maintain 1:1 ratio between theory and practice.

ACESD also conducts special training courses to cater to specific needs of requesting organizations in addition to scheduled courses. Some common popular courses are also conducted, time to time, on nominal fees basis.

a) **Long courses:** Presently ACESD conducts one year long courses for new recruits of 4 entry levels. Each long course is divided into 3 modules namely, Section-A, Section-B & Section-

C. Section-A & Section-B of 4 and 6 months duration respectively constitute institutional training. Section-C of 2 months duration is in-plant training.

Name of long courses	Eligibility	Duration
– Advanced Industrial Technology	BSc Engg./MSc/MS	1 Year
– Industrial Technology	BSc/Dip-in-Engg.	1 Year
– Basic Industrial Technology, level-II	HSC (Sc) or 2 yrs. Trade course with SSC	1 Year
– Basic Industrial Technology, level-I	SSC (Science)	1 Year
– Integrated Industrial Technology-1	Junior & midlevel officer	16 Weeks
– Integrated Industrial Technology-2	Skilled operators/technicians	16 Weeks
– Integrated Industrial Technology-3	Junior operators/technicians	16 Weeks

These courses include industrial visit & hands-on practice receives priority.

b) Upgradation courses: Upgradation courses are conducted for operators/technicians and supervisory personnel working in industries and other technical fields. The courses are designed in the light of actual requirement of the industries.

– Upgradation courses on specific subjects Officers, operators & Technicians 1~4 Weeks

c) Special courses: Special courses are conducted for Engineering universities, Technical universities, General universities, Polytechnic Institutes.

– Special courses Students of diff. universities 3~ 4 Weeks

d) Tailor-made courses: May arrange as per request of any organization with mutual discussion.

Technical Assistance & Consulting Service Facilities

ACESD maintains a technical service pool consisting of highly qualified foreign trained personnel having long experience of working in heavy industries. Areas of specialized technical services offered by ACESD at present are as follows:

- a) High precision chemical analysis using Ultraviolet, Visible, Infrared & Atomic Absorption Spectrophotometers
- b) High precision chemical analysis using Gas Chromatograph (GC), High Performance Liquid Chromatograph (HPLC) & Elemental Analyzer.
- c) Chemical cleaning of Boilers and Heat exchangers etc.
- d) Environmental Pollution Monitoring & Control Services –
- e) Initial Environmental Examination (IEE); Environmental Impact Assessment (EIA); Environmental Management Plan (EMP); Design/Development of Effluent Treatment Plant (ETP); Environmental Management System (EMS).

Fee for chemical analysis & physical measurement

(Sample delivered at TICI site)

<u>SN</u>	<u>Description of analytes/parameters</u>	<u>Rate per analyte (Tk.)</u>
01.	Physical measurement	
	Molar weight, volume of reagent chemicals, volume of laboratory glassware, density, specific gravity	: 400/-
02.	Water, wastewater, solution & liquid samples	
a)	Physical properties pH, conductivity, turbidity, color, TDS, TSS	: 1,000/-
b)	Non-metallic components Silica, sulphate, sulphide, phosphate, nitrate, chloride, salinity, hardness, ammonia, carbonate, free chlorine	: 1,000/-
c)	Metals & metalloids components Iron, copper, bismuth, aluminum, lithium, silver, chromium, nickel, zinc, lead, manganese, calcium, magnesium, sodium, silica, potassium, cadmium, strontium etc.	: 1,500/-
d)	Organic analyte & indicator parameters Oil & grease, Chemical oxygen demand (COD), Biochemical oxygen demand (BOD)	: 2,000/-
e)	Lubricating oil, edible oil and fat analysis Metal content, iodine value, saponification value, viscosity Flashpoint, acid value, moisture	: 1,500/- : 1,200/-
f)	Microbiological tests Total count, E. coliform count	: 1,500/-
03.	Gas sample analysis:	
a)	Gas mixtures Hydrogen, nitrogen, oxygen, argon, CO, CO ₂ , Hydrocarbons (C ₁ ~ C ₆₊)	: 1,200/-
b)	Emission gas analysis: Oxides of sulphur (SO _x), Oxides of Carbon(CO _x), Oxides of nitrogen (NO _x), Oxygen, Nitrogen, Moisture Temperature, Pressure, Flow rate	: 1,500/- : 1,000/-
c)	Indoor air quality analysis: Suspended particulate matter (SPM), VOC, CFC, Methane, ozone, ammonia, SO _x , NO _x CO _x , oxygen, hydrogen sulphide, chlorine	: 2,000/-
04.	Solid sample analysis	
a)	Steel, alloys, ores & minerals Iron, copper, bismuth, aluminum, silver, chromium, nickel, zinc, lead, manganese etc.	: 1,800/-
b)	Coal & coke analysis Calorific value fixed carbon, sulphur Volatile material, ignition loss, ash content Moisture, particle size, density etc.	: 2,500/- : 1,500/- : 1,000/-

SN	Description of analytes/parameters	Rate per analyte (Tk.)
c)	Soil & Fertilizer Organic matter, lime requirement, conductivity, nitrogen, sulphur, phosphorous, sulphate, chloride, silica, pH, potassium, calcium, magnesium, copper, iron, aluminum	: 1,500/-
d)	Boiler scale & sludge analysis Elemental composition, ignition loss	: 1,800/-
e)	Plants & vegetables Determination of elemental constituents	: 1,800/-
	Moisture, ash content etc.	: 1,000/-
f)	Food products, fish & meat etc. Determination of elemental constituents, fat, protein content, carbohydrate, calorific value etc	: 1,800/-
	Moisture, ash content, pH	: 1,000/-
g)	Animal & poultry feeds Determination of elemental constituents	: 1,800/-
	Moisture, ash content, pH.	: 1,000/-
	Fat, protein content, calorific value etc.	: 1,800/-
h)	Pharmaceuticals, drugs, pesticides & cosmetics Determination of elemental constituents,	: 1,800/-
	Moisture, pH, disintegration value, solvent etc	: 1,000/-
i)	Purity of basic chemicals	: 2,000/-
j)	Polymers & plastic materials Ion exchanging capacity of resin	: 1,500/-
	Elemental constituents	: 1,800/-
05.	Trace element analysis Total arsenic, mercury in soil/solid sample	: 5,000/-
	Total arsenic, mercury in water sample	2,000/-
06.	Noise & Radiation pollution level	: 2,000/-

Note:

- 1) The analytes not mentioned in the above list can be analyzed by establishing appropriate method. Charge for such analysis shall be determined case wise depending on the job involvement.
- 2) In case of multiple sample (at least three) analysis, the cost for same analyte may be deducted by 20% of the normal rate if given at a time.
- 3) The minimum fee of Tk.1000.00 shall be charged for one analysis in case of total analysis charge is less than Tk. 1000.00.