

Environmental Engineering Laboratory

General

The primary objective of this lab is to demonstrate environmental engineering testing procedures for the subjects of Environmental Engineering I and II and for the electives such as solid waste management and Industrial waste water treatment. This lab is continuously upgraded with the latest environmental equipments. It covers the four major pollution areas: air, wastewater and water and solid waste management. Students contribute through various undergraduate and postgraduate projects in the lab. Various models of water filtration and aeration tanks are available in the lab.

(i) Facilities available :

Various equipments to measure air, water, soil and wastewater quality and analysis are available in the laboratory. Some of them are as follows:

i) AAS (Shimadzu)



ii) UV Vis Spectrophotometer (Shimadzu)



iii) COD Reactors (Hach)



iv) Noise Level Meters



v) Turbidimeter (Hach)



vi) Jar test Apparatus (Amit Enterprise)



vii) Personal samplers(Simplex)



viii) High volume sampler(Poltech)



ix) Stack sampling (Poltech)



x) DO/pH Probe(Hach)



xi) pH meter



xii) DI water Unit (Millipore)



xiii) Visible Spectrophotometer



(II) Laboratory Incharge

Dr. Hansa Jeswani

Prof. Snehajit Kumbhar

(III) Lab Assistant

Mr Ashish Kadam

(iv) List of Experiments

Environmental Engineering I

1. Determination of pH in water.
2. Determination of Hardness of water.
3. Determination of Turbidity of water.
4. Determination of Optimum dose of coagulant by using Jar Test Apparatus.
5. Determination of Residual chlorine from water
6. Determination of Most probable number
7. Solid waste: Determination of pH
8. Solid waste: Determination of moisture content
9. Solid Waste : Organic content of solid waste
10. Measurement of Noise Level

Environmental Engineering II

Wastewater experiments

- 1 Determination of pH of sewage
- 2 Determination of Chlorides
- 3 Solids: Suspended solids, dissolved solids, total solids, volatile solids
- 4 Determination of Dissolved oxygen
- 5 Determination of Chemical oxygen demand(COD) of sewage sample
- 6 Determination of Biochemical oxygen demand(BOD) of sewage sample
- 7 To find Sludge volume index (SVI) of sewage sample
- 8 To find Sulfate in wastewater sample
- 9 To observe microorganisms after staining

Air Pollution Experiments

- 1 Air : To find PM 10 and PM 2.5 in ambient air
- 2 Air : To find NO_x and SO_x level in ambient air

PROJECTS COMPLETED

| S. No | Title | Cost in | Month of submission | Role as PI/Co-PI | Agency | Status |
|-------|---|---------|---------------------|------------------|-----------|-----------|
| 1 | Treatment of Biomass gasification wastewater using algal bacterial system | 56 | June 2012 | Co-PI | DBT | Completed |
| 2 | Design of Pervious filter for filtration | 1.2 | April 2014 | PI | TEQIP II | Completed |
| 3 | Development of Ultra High performance concrete | 1.5 | April 2015 | PI | TEQIP II | Completed |
| 4 | Development of portable device for non potable water from sullage | 1.2 | May 2016 | PI | TEQIP II | Completed |
| 5 | Portable hand held disinfection device | 2 | May 2018 | PI | TEQIP II | Completed |
| 6 | Modeling of Pervious concrete filter for rapid sand filtration | 1.5 | June 2021 | PI | TEQIP III | Completed |

Major Consultancies completed

- 3rd party audits to check design of treatment plants
- 3rd party audits to check the viability of newly constructed sewerage system
- Environmental Consultancy services for Pentacle Consultants for Samruddhi Mahamarg, Konkan Expressway and Pune Ring Road