

**CE-311A**

# **Environmental Quality & Pollution**

**Monitoring Techniques**

**2023 - 2024 (First Semester)**

## **Lab Schedule\_Lunar Group**

**Lunar Group-1 and Lunar Group-2**

## Lab Instructions

**Time Slot:** Wednesday (16.00-17.00 h); Friday (16.00-17.00 h)

**Venue:** L-20, LHC

| Lab Instructions | Date     | Topic  |
|------------------|----------|--|
| 1                | 2.8.23   | Environment Introduction                     |
| 2                | 4.8.23   | Understanding Physical Environment (Part I)  |
| 3                | 9.8.23   | Understanding Physical Environment (Part II) |
| 4                | 11.8.23  | Water Quality Quantification                 |
| 5                | 16.8.23  | Water Characteristics & Quality              |
|                  |          | pH   |
| 6                | 18.8.23  | Turbidity                                    |
|                  |          | Conductivity                                 |
| 7                | 23.8.23  | Alkalinity (Part I)                          |
| 8                | 25.8.23  | Alkalinity (Part II)                         |
| 9                | 30.8.23  | Solids                                       |
| 10               | 1.9.23   | Hardness                                     |
| 11               | 6.9.23   | Chemical Oxygen Demand (COD)                 |
| 12               | 8.9.23   | Dissolved Oxygen (DO)                        |
| 13               | 13.9.23  | Bio-chemical Oxygen Demand (BOD)             |
| 14               | 27.9.23  | Colorimetry / Spectrophotometry              |
|                  | 29.9.23  | Nitrogen (Part I)                            |
| 15               | 4.10.23  | Nitrogen (Part II)                           |
|                  | 4.10.23  | Phosphorus                                   |
| 16               | 6.10.23  | Chlorine                                     |
| 17               | 6.10.23  | Chloride                                     |
|                  | 11.10.23 | Fluoride                                     |
|                  |          | Sulphate                                     |
| 18               | 13.10.23 | Microbial Examination (Part I)               |
| 19               | 13.10.23 | Microbial Examination (Part II)              |
| 20               | 18.10.23 | Microbial Examination (Part III)             |
|                  |          |  |

## Laboratory Sessions

**Lunar Group-1** // Monday (14.00-17.00 h)  
**Lunar Group-2** // Monday (15.00-18.00 h)  
**Venue:** WL-116, Environmental Engineering Laboratory, Western Lab

| Lab | Date               | Part | Activity   |
|-----|--------------------|------|--|
| 1   | August 7, 2023     | I    | Introduction of Environmental Engineering Laboratory                                   |
|     |                    | II   | Some General Equipment, Chemicals & Glassware  |
| 2   | August 14, 2023    | I    | Preparations for Analytical Techniques   |
|     |                    | II   | Taste  |
|     |                    | III  | Odour  |
|     |                    | IV   | Colour   |
| 3   | August 21, 2023    | I    | pH   |
|     |                    | II   | Alkalinity   |
|     |                    | III  | Hardness   |
| 4   | August 28, 2023    | I    | Turbidity  |
|     |                    | II   | Conductivity   |
|     |                    | III  | Solids   |
| 5   | September 4, 2023  | I    | Dissolved Oxygen (DO)  |
|     |                    | II   | Bio-chemical Oxygen Demand (BOD)   |
|     |                    | III  | Chemical Oxygen Demand (COD)   |
| 6   | September 11, 2023 | I    | Nitrogen   |
|     |                    | II   | Phosphorus   |
| 7   | September 25, 2023 | I    | Chlorine   |
|     |                    | II   | Chloride   |
|     |                    | III  | Fluoride   |
| 8   | October 7, 2023*   | -    | Sulphate   |
| 9   | October 9, 2023    | -    | Microbial Examination  |
| 10  | October 16, 2023   | I    | Total Carbon (TC) and<br>Total Organic Carbon (TOC) Analyser                           |
|     |                    | II   | Ion Chromatography (IC) and Ion Analysis   |
|     |                    | III  | Gas Chromatography (GC) &<br>Analysis of Gases and Organics                            |
|     |                    | IV   | Elemental Analyser (CHN/O/S)   |
| 11  | October 30, 2023   | I    | Microwave Plasma Atomic Emission Spectrometer (MP-AES)                                 |
|     |                    | II   | Inductively Coupled Plasma - Mass Spectrometer (ICP-MS)                                |
|     |                    | III  | High Performance Liquid Chromatograph (HPLC)   |
|     |                    | IV   | Atomic Absorption Spectrophotometer (AAS)  |
| 12  | November 6, 2023   | I    | Automated Weather Monitoring System (AWS)  |
|     |                    | II   | Determination of Noise Level   |
| 13  | November 13, 2023  | I    | High Volume Sampler for Measurement of<br>SPM, RSPM, SO <sub>x</sub> & NO <sub>x</sub> |
|     |                    | II   | Stack Sampling & Gaseous Emission Monitoring   |

*\*Lab shifted to Saturday due to Gazetted holidays on regular lab days.*

| Time Slot, hrs | Monday (Lunar)  |               |
|----------------|---|---------------|
|                | Lunar Group 1   | Lunar Group 2 |
| 14.00-15.00    | Lab Inst  |               |
| 15.00-16.00    | Lab Practical   | Lab Inst      |
| 16.00-17.00    |   | Lab Practical |
| 17.00-20.00    | Lab Report in the Lab Manual to be submitted on<br>the same day latest by 20.00 hrs |               |

# CE311A: Environmental Quality & Pollution Monitoring Techniques

## 2023 – 2024 (First Semester)\_Lunar Group Students

### Group: Lunar-1; Monday; 14.00 - 17.00 hr

| S.No. | Roll No | Student Name         | Email                   |
|-------|---------|----------------------|-------------------------|
| 1     | 200885  | SARTHAK JAIN         | sarthakj20@iitk.ac.in   |
| 2     | 210003  | AADYA UMRAO          | aadyau21@iitk.ac.in     |
| 3     | 210007  | AAKANSH CHANDRA      | aakanshc21@iitk.ac.in   |
| 4     | 210010  | AAKASH YADAV         | aakashy21@iitk.ac.in    |
| 5     | 210012  | AARISH MUHAMMAD KHAN | aarishmk21@iitk.ac.in   |
| 6     | 210015  | AASHIKA GUPTA        | aashikag21@iitk.ac.in   |
| 7     | 210016  | AASHRUTI RAJ SINGH   | aashruti21@iitk.ac.in   |
| 8     | 210022  | ABHAY SHUKLA         | abhaysh21@iitk.ac.in    |
| 9     | 210027  | ABHIMANYU JAIN       | abhimanyuj21@iitk.ac.in |
| 10    | 210033  | ABHIRAJ SINGH        | abhiraj21@iitk.ac.in    |
| 11    | 210048  | ADARSH KUMAR         | adarshkum21@iitk.ac.in  |
| 12    | 210053  | ADITI BARBETA        | aiditib21@iitk.ac.in    |
| 13    | 210058  | ADITYA JOHRI         | adityaj21@iitk.ac.in    |
| 14    | 210082  | AKARSHA              | akarsha21@iitk.ac.in    |
| 15    | 210109  | AMAN KHILANI         | amanrk21@iitk.ac.in     |
| 16    | 210111  | AMAN PRATAP YADAV    | amanpy21@iitk.ac.in     |
| 17    | 210131  | ANANYA BIST          | ananyab21@iitk.ac.in    |
| 18    | 210140  | ANIMESH SINGH        | animeshs21@iitk.ac.in   |
| 19    | 210151  | ANKIT MANGAWA        | ankitm21@iitk.ac.in     |
| 20    | 210155  | ANSHU KUMAR RAJKUMAR | anshukr21@iitk.ac.in    |
| 21    | 210156  | ANSHU SAINI          | anshus21@iitk.ac.in     |
| 22    | 210175  | ANUSHREE             | anushree21@iitk.ac.in   |
| 23    | 210187  | ARNAV SINGH          | arnavsingh21@iitk.ac.in |
| 24    | 210192  | ARPIT RAJ            | arpitr21@iitk.ac.in     |
| 25    | 210890  | SACHIN MEENA         | msachin21@iitk.ac.in    |
| 26    | 201113  | VIJAY MAKWANA        | vijaygm20@iitk.ac.in    |

### Group: Lunar-2; Monday; 15.00 - 18.00 hr

| S.No. | Roll No | Student Name        | Email                  |
|-------|---------|---------------------|------------------------|
| 1     | 210189  | ARNESH DADHICH      | arneshd21@iitk.ac.in   |
| 2     | 210191  | ARPIT KAITHWAR      | akaithwar21@iitk.ac.in |
| 3     | 210197  | ARVIND MEHTA        | amehta21@iitk.ac.in    |
| 4     | 210200  | ARYAN BHARDWAJ      | aryanb21@iitk.ac.in    |
| 5     | 210211  | ASHISH KUMAR        | ashishkum21@iitk.ac.in |
| 6     | 210217  | ASHOK SINGH NARUKA  | ashoksn21@iitk.ac.in   |
| 7     | 210239  | AVISHK KASHYAP      | avishk21@iitk.ac.in    |
| 8     | 210242  | AVNISH SINGH        | avnishs21@iitk.ac.in   |
| 9     | 210246  | AYUSH KUMAR         | kayush21@iitk.ac.in    |
| 10    | 210247  | AYUSH KUMAR         | ayushk21@iitk.ac.in    |
| 11    | 210248  | AYUSH KUMAR KHARWAR | ayushkk21@iitk.ac.in   |
| 12    | 210251  | AYUSH YADAV         | ayushy21@iitk.ac.in    |
| 13    | 210255  | BALA SATHWIK        | balas21@iitk.ac.in     |
| 14    | 210260  | BEDANT SHARMA       | bedants21@iitk.ac.in   |
| 15    | 210270  | BHOIR RONAK PRAKASH | bhoirr21@iitk.ac.in    |
| 16    | 210276  | CHAITANYA           | chaitanya21@iitk.ac.in |
| 17    | 210301  | DAPPU SANDHYARANI   | dsandhya21@iitk.ac.in  |
| 18    | 210323  | DEVANSHI DANGARA    | devanshid21@iitk.ac.in |
| 19    | 210336  | DHARMRAJ            | dharmraj21@iitk.ac.in  |
| 20    | 210345  | DILKESH MEENA       | dilkeshm21@iitk.ac.in  |
| 21    | 210346  | DINESH CHOUDHARY    | dineshc21@iitk.ac.in   |
| 22    | 210349  | DISHANT SHARMA      | dishants21@iitk.ac.in  |
| 23    | 210366  | DURGESH ANAND       | durgesh21@iitk.ac.in   |
| 24    | 210371  | ENNA GUPTA          | ennagupta21@iitk.ac.in |
| 25    | 210372  | ESHIKA YADAV        | eshikay21@iitk.ac.in   |
| 26    | 210201  | ARYAN KUMAR         | aryank21@iitk.ac.in    |