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| 1. | Title of the course | Environmental Engineering Laboratory |
| 2. | Course number | CE315P |
| 3. | Structure of credits (L-T-P-C) | 0-0-3-2 |
| 4. | New course/modification to | Modified with CE305P/HYDRAULICS AND ENVIRONMENTAL ENGINEERING LABORATORY |
| 5. | To be offered by | Civil and Environmental Engineering |
| 6. | Proposed by | Shihabudheen Mundampra Maliyekkal |
| 7. | Prerequisite | None |
| 8. | Course Objective(s): To introduce the analysis of physical, chemical and biological parameters involved in characterizing water, wastewater, air and municipal solid waste samples. To illustrate how environmental sample characterization helps design and operate various treatment systems and develop effective environmental management strategies. | |
| 9. | Course Content: Analysis of water samples: determination of pH, turbidity, conductivity, hardness, alkalinity, chlorides, sulfates, optimum coagulant dosage, residual chlorine and available chlorine; Analysis of municipal wastewater samples: determination of solids, dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), and sludge volume index (SVI), microscopic examination of biosolids, determination of the most probable number (MPN) index; Analysis of air samples: ambient monitoring of particulate matters (PM10 and PM2.5), oxides of sulfur (SO _x), and oxides of nitrogen (NO _x); Analysis of municipal solid waste samples: calorific value; C/N ratio and toxicity characteristic leaching procedure (TCLP) test. | |
| 10. | Textbook(s): 1. Lipps WC, Braun-Howland EB, Baxter TE, eds., American Public Health Association, American Water Works Association, Water Environment Federation, Standard Methods for the Examination of Water and Wastewater, 24th Edition, APHA Press (2023). 2. James P and Lodge JR, Methods of Air Sampling and Analysis, 3rd Edition, CRC Press (2020). | |
| 11. | Reference(s): 1. Metcalf and Eddy Inc., Tchobanoglous G, Burton FL, Stensel HD and Tsuchihashi R, Wastewater Engineering: Treatment and Resource Recovery, 5th Edition, Tata-McGraw Hill (2013). 2. Pichtel J, Waste Management Principles, 2nd Edition, CRC Press (2014). | |