

Proposals

of

Department of Civil Engineering



New Courses Proposed

- CEM409 (Environmental Engineering Lab)
- CEM609 (Stream Seminar)
- CEM814 (Prestressed Concrete Structures)
- CEM815 (Air Quality Engineering)

CEM815 (Air Quality Engineering)

- Unit-1: Introduction
 - History of Air pollution and episodes, Sources and classification of air pollutants
Composition and structure of the atmosphere, atmospheric energy balance, humidity, condensation, lapse rate and atmospheric stability
Introduction to meteorology and transport of air pollution: Global winds, Hadley cells, wind rose
terrestrial wind profile, Effects of terrain and topography on winds
- Unit-2: Dynamics of Air Pollution
 - Physical and chemical processes that transform and transport pollutants in the atmosphere. Meteorology as applied to air pollution and dispersion of air pollutants, Mathematical models of dispersion of air pollutants, Plume Behaviour, Gaussian plume dispersion model: theory and application, Concept of isopleths
- Unit-3: Effects of Air Pollution
 - Impacts of air pollution on human health, materials and ecosystem. Local Effects - Smoke, Smog,
 - Global effects of air pollution: Green house effects, acid rain and ozone layer depletion.

CEM815 (Air Quality Engineering)

- Unit-4: Air Pollution control
 - Methods, devices and systems for control at source For particulate matter-Settling chambers-Fabric filters-Scrubbers-Cyclones Electrostatic precipitators
 - For gaseous pollutants-control by absorption-adsorption scrubbers-secondary combustion after burners, Working principles advantages and disadvantages, design criteria and examples.
- Unit-5: Air Quality Sampling, Monitoring and Regulation
 - Stack sampling, instrumentation and methods of analysis of SO₂, CO , NO₂, particulates, Hydrocarbons; Methods for monitoring and control, selection of control equipment. Engineering control concepts.
 - Air pollution indices, standards, norms, rules and regulations and air quality management plan

CEM814 (Prestressed Concrete Structures)

- UNIT 1
 - Review of Fundamentals of prestressing - Materials of prestressing - Systems of prestressing - Loss of prestress -
 - Deflection of Prestressed Concrete members s- short term as well as long term deflections of uncracked and cracked members.
- UNIT 2
 - Design of beams - Design for flexure, bond and shear - IS code provisions - Ultimate flexural and shear strength of prestressed concrete sections - Design of end anchorage zones using IS code method.
- UNIT 3
 - Analysis of Continuous beams - Principles of design of prismatic continuous beams of two and three equal, unequal spans, with variable moments of inertia.
 - Cable layout - Linear transformation - Concordant cables.

CEM814 (Prestressed Concrete Structures)

- UNIT 4
 - Composite sections of prestressed concrete beam and cast in situ RC slab - analysis of stresses - differential shrinkage - deflections - Flexural and shear strength of composite sections - Design of composite sections.
 - Partial prestressing - non-prestressed reinforcements.
- UNIT 5
 - Design of pipes and tanks, railway sleepers, electric posts, composite construction Industrial Structures-Analysis and design of Cylindrical shell structures, Folded plates, Chimneys, Silos, Bunkers.

CEM409 (Environmental Engineering Lab)

- **List of Experiments:**
- Determination of pH, Acidity, and Alkalinity in Water and Wastewater
- Determination of Dissolved Oxygen in Wastewater
- Determination of BOD in Wastewater
- Determination of Solids in Sewage:
 - I) Total Solids,
 - II) Suspended Solids,
 - III) Dissolved Solids,
 - IV) Settle able Solids
- Determination of Turbidity in water

CEM409 (Environmental Engineering Lab)

- Determination of Optimum Dosage of Alum in water using Jar test apparatus
- Determination of sodium and potassium in Water and Wastewater using a flame photometer.
- Determination of Nitrates in Water and Wastewater by spectrophotometer
- Determination of COD in Wastewater
- To introduce concepts of total coliforms using the MULTIPLE-TUBE FERMENTATION TECHNIQUE
- To understand the operation of air quality monitor and compare air quality (CO, CO₂, temperature, relative humidity) of indoor and outdoor air environments
- Determine chloride ion concentration in a water sample

Change in BOS minutes

Some observations regarding the Civil Engineering BOS proposals during the FACULTY BOARD meeting prompted the Department to conduct a review of the minutes. The following decisions were made:

- The proposal at Item 3 of BOS Minutes to merge two subjects **CEM301 - Building Construction** and **CEM305 - Construction Materials**, is now withdrawn
- The proposals at Items 7 and 1 of BOS Minutes to interchange subjects offered to Civil Mainstream students (CEM611, CEM612) and to all Civil students (CEM607, CEM608), and to remove one of these (CEM611), are now withdrawn.

Change in BOS minutes

- As per the change in BOS minutes, some minor changes (shifting of the courses) need to be revised.
- The same will be incorporated and submitted to the concerned authorities.