SILVER OAK COLLEGE OF ENGINEERING AND TECHNOLOGY
CIVIL ENGINEERING DEPARTMENT

6TH SEMESTER

SUBJECT: ADVANCE CONSTRUCTION AND EQUIPMENT
SUBJECT CODE: 2160601

MODULE-I

Pile Foundations:
Introduction, uses, selection of pile, types of piles, pile cap and pile shoe, pile driving methods, micro piling, causes of failures of piles, Heaving of piles

Caissons:
Definition, uses, construction material, types of caissons, loads on caisson, design features of caissons, floating of caissons, cutting edges, sinking of caisson, tilting of caisson, shifting of caisson, caisson diseases

MODULE-III

Form work
Form work for R.C.C. Wall, slab, beam and column, centering for arches of large spans and dams, design features for temporary works, slip formwork, False work for Bridges

Construction of tall structures.
Materials of tall structures. Structural system for tall structures.
Methods of construction of tall structures.

Demolition of Structure:
Demolition, taking down, dismantling, methods, safety

Ms. Viraj Parekh
Subject Coordinator

A/Prof. Ninaad S. Athalye
HOD, Civil Engg. Dept.
Module 1:
**Behavior Of Real Fluids**: Governing Equations of Fluid Dynamics, Navier-Stokes equation of motion, Initial and boundary conditions.

**Steady Viscous Flow**: Couette Flow, Hagen-Poiseuille flow between parallel plates and tubes, Flow around a cylinder.

**Turbulent Flow**: Reynolds equations of motion for turbulent flow - Prandtl’s mixing length theory - Turbulent flow in pipes - velocity distribution from Prandtl’s hypothesis - smooth and rough boundaries.

**Unsteady Flow in pipes**: Oscillation of liquids - water hammer equations.

Module 3:
Basic concept of open channel flow - Steady uniform flow - Velocity distribution - Optimum shape of cross section for uniform flow - Energy equation - specific energy diagram - discharge diagram - Application of specific energy and discharge diagrams.

Non-Uniform steady flow - equations for gradually varied flow - Direct Step method, Rapidly varied flow.
Module 1: Stiffness Method
Types of skeletal structures, Internal forces and deformations. Introduction and applications of stiffness member approach to analyze beams, Trusses.

Module 2 Stiffness Method (Special topics )
Various secondary effects like deformation of support, prestrain & temperature. Symmetry/, Oblique, supports Elastic supports
Module 1:

Module 2:
Limit state design of RC elements:
(B) Design of Beams: Simply supported.

Module 3:
Limit state design of Steel elements:
(A) Philosophy of Limit state design: Limit state of collapse & serviceability, partial safety factor for material and loading, Type & behavior of sections – Plastic, compact, semicompact, slender.
(B) Connections: Bolted connections – bearing type, behavior of bolted joints, Design strength of ordinary & HSFG bolts. Welded connectionsFillet and Butt weld, design of simple connections such as lap and butt joints, truss joint connections
Railway

**Introduction:** History, Indian Railways, recent developments.

**Railway Track Gauge:** Different gauges on Indian Railways, loading gauge, Problems caused by change of gauge.

**Alignment of Railway lines:** Importance, Basic requirements of an ideal alignment, selection of a good alignment.

**Rails:** Functions, types of rails, Standard rail sections, Causes of creep, Effects of creep, Measures to reduce creep.

**Sleeper:** Functions, requirements, types of sleepers, and spacing of sleepers.

**Bridge**

Factors affecting for site selection, Scours depth, water way, afflux, and economic span.

Classification: Classification of superstructures with respect to structural behavior and material used.

Rewati S. Marathe                  A/Prof. Ninaad S. Athalye
Subject Coordinator               HOD, Civil Engg. Dept.
Module 1:

Urbanization, urban class groups, transportation problems and identification, impacts of transportation, urban transport system planning process, modeling techniques in planning.

Module 3:

Introduction to land use planning models, land use and transportation interaction. The transportation study area definition; division into traffic zones; network identification and coding; types of trips, characteristics of various surveys; home interview; roadside survey; goods, mass transit and intermediate public transport surveys; sampling and expansion factors; accuracy checks, screen line checks, consistency checks.

Module 4:

Travel demand modeling: Trip generation-zonal regression and category analysis, Trip distribution-growth factor models

Sumeetkaur S. Multani
Subject Coordinator

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6TH SEMESTER

SUBJECT: Water and Waste Water Engineering
SUBJECT CODE: 2160604

Module 1:

Water treatment plant:
Layout plan and section of water treatment plant, Estimation of raw water discharge for treatment plant, Design period, and factors considered for selection of design period. Treatment plant site selection, factors considered, future stages of expansion, selection of treatment train.

Collection and conveyance of raw water from source:
Intakes, types of intakes, conveyance of water, design of pumps and gravity and rising mains

Module 2

Water treatment processes and treatment units:
Plain sedimentation, aeration, sedimentation tank & its design, sedimentation with coagulation, types of coagulants, optimum dose of coagulants, mixing devices, design of flocculation unit. theory of filtration, types of filters and their comparison, design of rapid sand filter, washing of filter, methods of disinfection, methods of removing hardness Computation of dose of chemicals for removal of hardness

Distribution system:
Layouts of distribution networks, Components of distribution system, Newton’s and Hardy cross methods for network analysis, storage capacity of ESR and underground reservoir, determination of location and height of ESR.

Amita Shah
Subject Coordinator

A/Prof. Ninaad S. Athalye
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