

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **CE308**

SUBJECT NAME : **ENVIRONMENTAL ENGINEERING**

FACULTY NAME : **DAYANAND TAK**

DESIGNATION : **SR. LECTURER (CIVIL)**

TOPIC	LECTURE / PRACTICAL CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME	E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC
Environment and Ecology : Definition and understanding of their concept, Ecosystem	1	Sep-15	05/09/15		
Energy flow in an ecosystem Important bio chemical cycles (water, carbon, oxygen), Communities relationship in an eco system	1	Sep-15	12/09/15		
Factors Affecting Environmental Pollution : Population, Urbanisation, Industrialisation	2	Sep-15	17,19-09-15		
Transportation, insecticide, animals, Wars, deforestation	1	Sep-01	26/09/15		
Water Pollution : Fresh water, Causes of water pollution in surface and ground water, Water quality standards	2	sep-oct 15	28-09-2015 3-10-15		
Remedial measures to control fresh water pollution, Waste water, Adverse effects of domestic and industrial effluent Standards for industrial effluents Remedial measures to control industrial pollution.	2	Oct-15	8,10-10-2015		
Air Pollution :Definition Sources	2	Oct-15	15,17-10-2015		
Harmful effects on living and non living beings, Permissible limits as per Indian standard	1	Oct-15	24/10/15		
Noise Pollution : Introduction, Sources of noise, Decibel scale	2	Oct-15	29,31-10-2015		
Adverse effect on human beings and environment, Control measures Land Pollution : Introduction	2	Nov-15	5,7-10-2015		
Sources of land pollution, Effects of land pollution	1	Nov-15	14/11/15		
TEST-I	1	Nov-15			
Control measures, Soil conservation	1	Nov-15	26,28-11-15		
Environmental Impact Assessment (EIA) : Introduction.	1	Dec-15	3,5-12-15		
E.I.A. of thermal power plants, mining and nuclear radiation	1	Dec-15	10,12-12-15		
Global Environmental Issues : Deforestation, Land sliding	1	Jan-16	7,9-01-16		
TEST-II	1	Jan-16			
Recharging and drying of water resources Green house effects	2	Jan-16	21,23-01-16		
Recharging and drying of water resources Green house effects	2	Jan-16	28,30-01-16		

Ozone depletion, Acid rain Global warming	1	Feb-16	5,7-02-16		
Ozone depletion, Acid rain Global warming	1	Feb-16	12,14-02-16		
Non Conventional Sources of Energy in Environmental Protection.	1	Feb-16	19,21-02-16		
Pollution Control Acts : Water Pollution Control Act 1974 and 1981	1	Feb-16			
Air Pollution Control Act 1981 Forest (Animal) Conservation Act 1972	1	Mar-16			
Environmental Protection Act 1986 Pollution Control provisions in Motor Vehicle Act	1	Mar-16			
Environment Laws : Water Pollution Prevention and Control Act	1	Mar-16			
Air Pollution Prevention and Control Act	1	Mar-16			
Discussion about preparation of this subject how to got good marks.	1	Mar-16			
TEST-III	1	Apr-16			
TOTAL	39				

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **CE 201**

SUBJECT NAME : **Strength of Materials**

FACULTY NAME : **DAYANAND TAK**

DESIGNATION : **SR. LECTURER (CIVIL)**

TOPIC	LECTURE / PRACTICAL CLASSES REQUIRED TO COVER TOPIC	MONTHS IN WHICH THE TOPIC WILL BE COVERED	ACTUAL DATE OF COVERING OF THE TOPIC	REASON FOR NOT COVERING THE TOPIC IN DUE TIME	E-CONTENTS PROVIDED TO STUDENTS RELATED TO TOPIC
Various types of mechanical properties of materials, Elasticity, plasticity, ductility, brittleness, toughness, hardness. Concept of stress and strain types of force-direct, shear, compressive, tensile and shear stress, statement of hook's law and three modulli constants.	1	Aug-15			
Tensile stress diagram for M.S. bar gauge length, limit of proportionality, elastic limit, yield point, yield strength, ultimate point, rupture strength, nominal strength and proof stress. Working stress and factor of safety. Principle of superposition, bar of homogeneous section having uniform and stepped section. Bar of composite section.	2	Aug-15			
Temperature stresses in homogeneous and composite section, shear stresses, modulus of rigidity, complimentary shear stress, concept of single and double shear, shear strain, poisson's ratio and volumetric strain.	1	Sep-15			
Lateral and longitudinal volumetric stain and bulk modulus. Relationship between elastic constants E, N and K; $E=3K(1-2/m)$, $E=2N(1+1/m)$. $E=9NK/N+3K$.	2	Sep-15			
Compound stress: Introduction, stress components on an inclined plane induced by direct stresses, simple shear, direct and simple shear stresses.	2	Sep-15			
Compound stress: Introduction, stress components on an inclined plane induced by direct stresses, simple shear, direct and simple shear stresses.	1	Sep-15			
Principal stresses and planes: Major and minor principal stress, Mohr's circle method for principal stresses. Strain Energy introduction, strain energy from stress and strain curve	2	Sep-15			
Proof Resilience, Stress in gradual, sudden and impact loading.	1	Sep-15			
Bending moment shear force diagram: Types of support: movable, immovable hinge support and fixed support, types of beams: Cantilever, simply supported, fixed and overhanging beams	2	Oct-15			
Types of loads: Point load and uniformly distributed load. Sign convention for shear force and bending moment diagram. SFD BMD in a Cantilever beam for different loading.	1	Oct-15			
SFD and BMD in Simply supported and Simply supported with Overhanging beam.	3	Oct-15			

Moment of Inertia: Concept of MI, Radius of gyration, Parallel and Perpendicular axis theorem, MI of rectangular section, Triangular section, Circular section.	2	Oct-15			
MI of unsymmetrical section like T-section, Channel and L-section etc.	2	Oct-15			
Bending stresses in Beams: Concept of bending stress and its theory. Assumptions, use of equation: $M/I=f/y=E/R$ and its proof, section modulus.	2	Nov-15			
TEST-I		Nov-15			
Calculation of max. Bending stress of rectangular, circular, I and T section.	2	Nov-15			
Shear stresses in beams: Concept, use of equation $q=F(Ay)/b$ with proof, shear stress distribution diagram in rectangular, I-section.	1	Nov-15			
Shear stress distribution diagram in channel, H section, + section and circular section.	2	Dec-15			
Deflection: Concept of deflection of a beam, use of standard formula for calculating deflection for UDL and point load in Cantilever beam.	2	Dec-15			
Deflection in Simply supported beam. Introduction about column and Struts, modes of failure.	2	Dec-15			
Types of Column, long and short column, Buckling load, Slenderness ratio, Euler's formula for both ends hinged, both ends fixed, one end fixed and other end hinged, one end fixed and other end free, limitations of Euler's formula.	2	Jan-16			
TEST-II		Jan-16			
Column equivalent length, Rankine's formula. Concept of torsion, angle of twist Polar MI, Assumptions in the theory of pure torsion	1	Jan-16			
Derive and use of: $q/r=T/J=N\theta/l$, Relation between power and torque	1	Jan-16			
Combined stress in due to bending and torsion in solid and hollow shaft. Introduction and classification about Springs, application about flat carriage springs	2	Feb-16			
Application of flat carriage springs, determination of leaves and their sections, deflection and radius of curvature, quarter elliptical springs	2	Feb-16			
Closely coiled helical spring, determination of deflection, number of coils stiffness under axial loading in closely coiled helical spring. Introduction about thin cylindrical shell, use of cylinders, stresses due to internal pressure.	3	Feb-16			
Circumferential stress, or hoop stress, longitudinal stress. Design of cylinder, calculation of various dimensions of thin cylinder.	2	Mar-16			

Combined direct and bending stress, effect of eccentricity, stress due to eccentric load, middle third and quarter rule.	4	Mar-16			
TEST-III		Apr-15			
TOTAL	50				

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **CE206**

SUBJECT NAME : **Soil Mechanics**

FACULTY NAME : **DAYANAND TAK**

DESIGNATION : **SR. LECTURER (CIVIL)**

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Introduction: Introduction and scope of soil engineering, origin and formation of soils, major soil deposits of India. Fundamental definitions and relationships: representation of soil as a three phase system.	1	Aug-15			
Definition of moisture content, unit weight, density, specific gravity, void ratio porosity, degree of saturation and relationship among them.	2	Aug-15			
Classification of soils: classification as per particle size and plasticity chart according to IS specifications. Particle size distribution-sieve analysis. Consistency of soils—liquid limit.	3	Sep-15			
Plastic limit, shrinkage limit, field identification of soil.	1	Sep-01			
Definition of Permeability and related terms, Darcy's law of flow through soils.	1	Sep-15			
Factor affecting permeability, measurement of permeability in laboratory.	2	Sep-15			
Measurement of permeability in field. Compaction: Process of compaction, Proctor compaction test.	3	Sept,Oct-15			
Moisture content and density relationships. Factor affecting compaction, different methods of compaction.	1	Oct-15			
Brief description of field compaction methods, equipments and suitability for different type of soil.	2	Oct-15			
Consolidation: meaning and explanation of phenomena, total stress, neutral stress and affective stress.	2	Nov-15			
Measurement of compressibility characteristics, consolidation test, pressure void ratio, relationship in consolidation.	2	Oct,Nov-15			
TEST-I	1	Nov-15			
Practical methods of accelerating consolidation, normally consolidated and over consolidated soil.	1	Nov-15			
Shear strength: concept of shear strength, factor contributing to shear strength of soils, drainage condition of testing.	2	Dec-15			
Determination of shear strength by direct shear test, unconfined compression test and vane shear test.	2	Dec-15			
Bearing capacity: concept of bearing capacity, Terzaghi's bearing capacity factors, bearing capacity as per IS code.	2	Jan-16			

TEST-II	1	Jan-16			
Factor affecting bearing capacity, determining bearing capacity of soil by load test and standard penetration test.	2	Jan-16			
Discussion about method to improving bearing capacity. Earth pressure: Active and passive earth pressure, earth pressure at rest.	2	Jan-16			
Determination of earth pressure by Rankine's theory for cohesionless soil.	1	Feb-16			
Soil exploration: function scope of exploration, excavation and boring methods of sub-surface exploration, types of samplers.	2	Feb-16			
Disturbed and undisturbed sample, labelling, sealing and preservation of samples	1	Feb-16			
Foundation: Introduction to different type of foundation, shallow, deep foundation.	2	Feb-16			
Raft and well foundation. Pile foundation: Definition of pile foundation, places of application	2	Mar-16			
Classification of piles based on functions and materials.	1	Mar-16			
Formula related to pile foundation: Static, Dynamic engineering news, Hilley's formula.	2	Mar-16			
Soil stabilisation: general principle of soil stabilisation, different types of soil stabilisation, mechanical stabilisation.	2	Mar-16			
Water reluctant chemicals, cement stabilisation, lime stabilisation.	2	Mar-16			
TEST-III	1	Apr-16			
Discussion about the performance of students and how to improve their performance.	1				
TOTAL	52				

GOVERNMENT POLYTECHNIC COLLEGE, KOTA (RAJ.)

SYLLABUS BREAK-UP (SESSION 2015-16)

SUBJECT CODE : **CE209**

SUBJECT NAME : **CONSTRUCTION MATERIALS AND EQUIPMENDS**

FACULTY NAME : **DAYANAND TAK**

DESIGNATION : **SR. LECTURER (CIVIL)**

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Bricks: Meaning and composition of brick, preparation of brick clay- weathering, kneading, tempering of clay, brief description and use of pug mill.	1	Aug-15			
Standard size and shape of wooden and steel mould, moulding, ground moulding, table moulding, sand moulding, shop moulding, machine moulding, utility of frog.	2	Aug-15			
Brief description and working of different types of Kilns. Timber: Standing timber, rough timber, converted timber, endogenous trees, soft wood and hard wood.	1	Sep-15			
Growth and general structure of exogenous trees, seasoning of timber (natural and artificial), conversion of timber by sawing, preservation of timber.	2	Sep-15			
Qualities and uses of good timber, manufacturing and uses of ply woods, different ply boards and laminated boards.	2	Sep-15			
Stones: Classification of rocks, Geological classification: Igneous rocks, sedimentary rocks and metamorphic rocks.	1	Sep-15			
Chemical classification: argillaceous, siliceous, calcareous. Physical classification: unstratified, stratified and foliated rocks	2	Sept,Oct-15			
Common rock forming minerals and their properties- silica feldspar, mica, hornblende and dolomite, qualities of good building stone, general characteristics, identification and use of common building stone- granite, basalt trap, sand, stone, lime stone, dolomite, marble, slate quartzite.	1	Oct-15			
Natural bed of stone, seasoning of stone	2	Oct-15			
Lime: Introduction- lime, calcinations, quick lime, slaking, setting, hardening, hydraulicity, classification of lime as per B.I.S. Manufacturing of lime- process of charging, burning, collection and slaking.	1	Oct-15			
Properties and uses of lime, storage of lime, testing of lime as per B.I.S, Field test of lime as per B.I.S, Pozolonic materials.	3	Oct-15			
Lime Mortar : Constituents of lime mortar. Functions of sand and surkhi in lime mortar. Preparation of lime mortar - mixing and grinding	2	Oct,Nov-15			

Properties and common uses of lime mortar. Constituents, function and properties of lime concrete	2	Nov-15			
Cement and Cement Mortar : Introduction. Raw material Manufacturing process of ordinary Portland cement	2	Nov-15			
TEST-I		Nov-15			
Flow diagram for wet and dry process Properties and use of ordinary Portland cement. Constituents, function and use of cement mortar	2	Nov-15			
Ferrous Material : Pig iron, Cast iron, Wrought iron Steel	1	Nov-15			
Classification, Heat Treatment Structural steel	2	Dec-15			
Non Ferrous Metals : Aluminum, Copper, Zinc, Galvanized, Corrosion of Metals	2	Dec-15			
Mechanism and prevention Glass : Properties, Types of Glass, Industrial forms of glasses	2	Dec-15			
Paints and Varnishes : Classification of paints - oil paints, plastic paints, enamel paints, water paints and cement paints. Constituent materials of paints	2	Jan-16			
TEST-II	1	Jan-16			
Preparation and uses of different paints Constituents, properties and uses of varnish and polish - spirit polish and wax polish	1	Jan-16			
Different types and use of exterior paints	1	Jan-16			
Equipment for Earth Work and Compaction : Bull Dozers, Scraper, Loaders, Excavator, Shovels, Cranes, Static Compaction Equipment	2	Feb-16			
Vibratory compaction equipment, Rubber tyred compaction equipment, Road Rollers Bitumen or Asphalt Mixing Plant : Hot mix plant, Cold Mix plant, Paver finisher Bitumen distributors, Road Marking machine	2	Feb-16			
Equipment for Concreting : Concrete batching and mixing plant Concrete mixer, Truck – mixers – transit truck mixers, truck agitators, Concrete pumps and dumpers, Concrete paver finishers	2	Feb-16			
Hauling Equipment Different Types of dumpers, Trailors	1	Mar-16			
Tiles : Use of tiles, Classification of tiles According to use, According to shape Special tiles - Allahabad tiles, Mangalore tiles, Preparation of clay, Moulding, shaping, drying and burning, Properties and uses of fire clay tiles.	3	Mar-16			

TEST-III	1	Apr-15			
TOTAL	49				