

Branch-Civil Engineering

First Year Engineering

First Semester								
	Theory					Practical		
Code	Course Name	Hours/ Week L/T	Credit Theory	University Marks	Internal Evaluation	Hours/ Week L/T	Credit Practical	Marks
BS	Mathematics-I	3-1	4	100	50	-	-	-
BS	Chemistry/ Physics	3-0	3	100	50	2	1	50
ES	Basics of Electronics / Basic Electrical Engineering	3-0	3	100	50	2	1	50
ES	Mechanics/ Thermodynamics	3-0	3	100	50			
ES	Programming in 'c'	3-0	3	100	50	2	2	50
HS	English Communication Skill	3-0	2	100	50	2	1	50
ES	Engineering Workshop/ Engineering Drawing					4	2	100
Total		16	18	600	300	18	7	300
Total Marks: 1200								
Total Credits: 25								

Second Semester								
	Theory					Practical		
Code	Course Name	Hours/ week L/T	Credit Theory	University marks	Internal Evaluation	Hours/ Week L/T	Credit Practical	Marks
BS	Mathematics-II	3-1	4	100	50	-	-	-
BS	Chemistry/ Physics	3-0	3	100	50	2	1	50
ES	Basics of Electronics / Basic Electrical Engineering	3-0	3	100	50	2	1	50
ES	Mechanics/ Thermodynamics	3-1	3	100	50			
ES	Data Structure Using 'C'	3-0	3	100	50	2	2	50
HS	Business communication	3-0	2	100	50	2	1	50
ES	Engineering Workshop/ Engineering Drawing					4	2	100
MC	NSS/NCC	-	-	-	-			
Total		17	18	600	300	14	7	300
Total Marks: 1200								
Total Credits: 25								

B.Tech(Civil Engineering) Detail Syllabus For Admission Batch 2015-16

Second Year Engineering								
Third Semester								
	Theory					Practical		
Code	Course Name	Hours/ week L/T	Credit Theory	University Marks	Internal Evaluation	Hours/ Week L/T	Credit Practical	Marks
PC	Mechanics of Solid	3-1	4	100	50			
PC	Fluid Mechanics & Hydraulics Machines	3-0	3	100	50	2	1	50
PC	Survey	3-0	3	100	50	2	1	50
PC	Geotechnical Engineering	3-0	3	100	50	2	1	50
PC	Construction Technology	3-0	3	100	50			
HS	Engineering Economics/ Organizational Behavior	2-1	3	100	50			
PC	Building Drawing					2	1	50
Total		19	19	600	300	8	4	200
Total Marks: 1100								
Total Credits: 23								
For Honours and Minor Specialization		4	4	100	50			

Fourth Semester								
	Theory					Practical		
Code	Course Name	Hours/ week L/T	Credit Theory	University Marks	Internal Evaluation	Hours/ Week L/T	Credit Practical	Marks
HS	Purely Applied Mathematics for Specific Branch of Engineering	3-0	3	100	50			
PC	Structural Analysis-I	3-0	3	100	50			
PC	Advanced Mechanics of Solids	3-0	3	100	50	2	1	50
PC	Highway & Traffic Engineering	3-0	3	100	50	2	1	50
PC	Design of Concrete Structure	3-0	3	100	50	2	1	50
HS	Engineering Economics/ Organizational Behavior	2-1	3	100	50			
PC	Material Testing Lab					2	1	50
	*Skill Project and Hands on					6	3	100
Total		18	18	600	300	14	7	300
Total Marks: 1200								
Total Credits: 25								
For Honours and Minor Specialization		4	4	100	50			

- *College should conduct at least one NSDC program under this category.

Third Year Engineering

Fifth Semester								
	Theory					Practical		
Code	Course Name	Hours/week L/T	Credit Theory	University Marks	Internal Evaluation	Hours/week L/T	Credit Practical	Marks
PC	Structural Analysis-II	3-0	3	100	50	2	1	50
PC	Design of Steel Structures	3-0	3	100	50	2	1	50
PC	Water Supply & Sanitary Engg.	3-0	3	100	50	2	1	50
PE	Water Resource Engg./ Ground Water Hydrology/Open Channel Flow	3-1	4	100	50			
OE		3-1	4	100	50			
PC	Advance Lab-I(Structural Engg. Lab /Advanced Geotechnical Engineering Lab)					8	4	200
Total		17	17	500	250	14	7	350
Total Marks: 1100								
Total Credits: 24								
For Honours and Minor Specialization		4	4	100	50			

B.Tech(Civil Engineering) Detail Syllabus For Admission Batch 2015-16

Sixth Semester								
	Theory					Practical		
Code	Course Name	Hours/week L/T	Credit Theory	University Marks	Internal Evaluation	Hours/week L/T	Credit Practical	Marks
PC	Foundation Engg.	3-0	3	100	50	2	1	50
PC	Irrigation Engg.	3-0	3	100	50	2	1	50
PE	Advanced Transportation Engg./ Pavement Design / Mass Transit System	3-1	4	100	50			
PE	Structural Dynamics/ FEM/Prestressed Concrete	3-1	4	100	50			
MC & GS	Environmental Science & Engineering	3-0	3	100	50			
OE	Industrial Lecture #					3	1	50
HS	Presentation Skill & Skill for Interview # #	2-0	1		50	4	2	100
MC	Yoga					2	1	50
Total		19	18	500	300	13	6	300
Total Marks: 1100								
Total Credits: 24								
For Honours and Minor Specialization		4	4	100	50			

To be conducted by the Training & Placement department by inviting experts from the industry. No academican to be called. Record may be asked by the University for verification. Evaluation to be done by the TPO.

To be conducted by the Training & Placement department of the College.

Final Year Engineering

Seventh Semester								
	Theory					Practical		
Code	Course Name	Hours/week L/T	Credit Theory	University Marks	Internal Evaluation	Hours/week L/T	Credit Practical	Marks
GS	Nano Science & Bio Technology	3-1	4	100	50			
PE	Architecture & Town planning / Ground improvement Technique/ Soil Dynamics & Machine Foundation	3-1	4	100	50			
PE	Environmental Impact Assessment/ Industrial Waste Management & Disposal / Quantity Surveying & Estimating	3-1	4	100	50			
OE	Soft Computing */ Other subjects	3-1	4	100	50			
PC	Advance Lab-II/ Project					8	4	200
	Projects on Internet of Things					8	4	200
Total		16	16	400	200	16	8	400
Total Marks: 1000								
Total Credits: 24								
For Honours and Minor Specialization		4	4	100	50			

*Student can choose from any department but subject must be running in that semester.

B.Tech(Civil Engineering) Detail Syllabus For Admission Batch 2015-16

Eighth Semester						
	Training cum Project				Evaluation Scheme	
Code	Course Name	Hours/week L/T	Credit Theory	Total Marks		Marks
	Industrial Training cum Project/ Entrepreneurship Training cum Project / Stratup Training cum Project	30	20	1000	Evaluation by the Industry / Training Organisation	500
					Evaluation by the Institute (Report & Institute Viva)	500
Total		30	20	1000		1000
Total Marks:1000						
Total Credits:20						

Note- Minimum Pass Mark from Industry Evaluation is 300 (i.e. 60%).

Distribution of Credit Semester wise:

Semester	Credit
First	25
Second	25
Third	23
Fourth	25
Fifth	24
Sixth	24
Seventh	24
Eighth	20

Total	190

Internal Evaluation Scheme

Attendance & Class Interaction	05
Assignment	05
Surprise Test	05
Quiz	05
Class Test I & II	30
Total	50
Class Test Time(Hrs.): 1	

Pass Mark in Internal is 50% of total marks i.e. 25

External Evaluation Scheme

University Semester Examination of 3 Hours duration.

Pass mark will be 35% which means students have to score 35 out of 100.

Practical/Sessional Evaluation Scheme

Pass mark will be 50% which means students have to score 25 out of 50.

Evaluation Scheme

Attendance & Daily Performance	-10
Lab Record	- 10
Lab Quiz	- 05
Final Experiments & Viva	– 25

Total=50

All Lab examinations are to be completed one week before the end semester examination and marks are to be displayed on the college notice board.

**III-VI SEMESTER SYLLABUS
OF
B.TECH. DEGREE PROGRAMME
for
ADMISSION BATCH 2015-16
BRANCH-CIVIL ENGINEERING**

TENTATIVE
Likely to be Modified

B.Tech(Civil Engineering) Detail Syllabus For Admission Batch 2015-16

Semester : 3rd

1.	PCI3D001 Honours (O2)	Concrete Technology	4-0-0	4
2.	PCI3D002 Honours (O2)	Construction Planning Management	4-0-0	4
3.	PEK3E001 HS (O1)	Engineering Economics	3-0-0	3
4.	POB3E002 HS (O1)	Organizational Behavior	3-0-0	3
5.	PCI3G001 Minor (CP)	Mechanics of Solid	4-0-0	4
6.	PCI3I001 PC (CP)	Mechanics of Solid	4-0-0	4
7.	PCI3I002 PC (CP)	Construction Technology	3-0-0	3
8.	PCI3I101 PC (CP)	Fluid Mechanics & Hydraulics Machines	3-0-1	4
9.	PCI3I102 PC (CP)	Survey	3-0-1	4
10.	PCI3I103 PC (CP)	Geotechnical Engineering	3-0-1	4
11.	PCI3I201 PC (CP)	Building Drawing	0-0-1	1

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PCI3I001 MECHANICS OF SOLIDS

Theory L/T (Hours per week): 3/1, Credit: 4

Module-I (12 classes)

Simple Stress and Strain -Load, Stress, Principle of St.Venant, Principle of Superposition, Strain, Hooke's law, Modulus of Elasticity, Stress-Strain Diagrams, Working Stress, Factor of safety, Strain energy in tension and compression, Resilience, Impact loads, Analysis of Axially Loaded Members, Composite bars in tension and compression, temperature stresses in composite rods, Statically indeterminate problems, Shear stress, Complimentary shear stress, Shear strain, Modulus of rigidity, Poisson's ratio, Bulk Modulus, Relationship between elastic constants.

Compound Stress and strain- Stresses in thin cylinders, thin spherical shells under internal pressure, wire winding of thin cylinders. Analysis of Biaxial Stress. Plane stress, Principal stress, Principal plane, Mohr's Circle for Biaxial Stress, Two dimensional state of strain, Mohr's circle for strain, Principal strains and principal axes of strain, strain measurements, Calculation of principal stresses from principal strains.

Module-II (10 classes)

Shear Force and Bending Moment for Determinate Beams - Types of load and Types of support. Support reactions, Shear force and bending moment, Relationship between bending moment and shear force, Point of inflection, Shear Force and Bending Moment diagrams for determinate beams.

Module-III (10 classes)

Simple Bending of Beams - Theory of simple bending of initially straight beams, Bending stresses, Shear stresses in bending, Distribution of normal and shear stress, beams of two materials, Composite beams.

Deflection of Beams - Differential equation of the elastic line, Slope and deflection of beams by integration method and area - moment method.

Module-IV (8 classes)

Theory of Columns - Eccentric loading of a short strut, Long columns, Euler's column formula, Lateral buckling, Critical Load, Slenderness ratio

Torsion in solid and hollow circular shafts - Twisting moment, Strain energy in shear and torsion, strength of solid and hollow circular shafts. Stresses due to combined bending and torsion, Strength of shafts in combined bending and twisting.

TEXT BOOKS

1. *Elements of Strength of Materials* by S.P.Timoshenko and D.H.Young, Affiliated East-West Press
2. *Strength of Materials* by G. H. Ryder, Macmillan Press
3. *Strength of Materials* by R.Subramaniam, Oxford University Press
4. *Strength of Material* by S. S. Ratan, McGraw Hill

REFERENCE BOOKS

1. *Mechanics of Materials* by Beer and Johnston, McGraw Hill
2. *Mechanics of Materials* by R.C.Hibbeler, Pearson Education
1. *3.Engineering Mechanics of Solids* by Egor P. Popov, Prentice Hall of India

PCI3I101 FLUID MECHANICS & HYDRAULICS MACHINES

Theory L/T (Hours per week): 3/0, Credit: 3

Module-I (12 classes)

Introduction - Physical property of Fluid: Density, specific gravity, specific weight, specific volume, surface tension and capillarity, viscosity, compressibility and bulk modulus, Fluid classification.

Fluid statics - Pressure, Pascal's Law, Pressure variation for incompressible fluid, atmospheric pressure, absolute pressure, gauge pressure and vacuum pressure, manometer. Hydrostatic pressure on submerged surface, force on a horizontal submerged plane surface, force on a vertical submerged plane surface. Buoyancy and floatation, Archimedes' principle, stability of immersed and floating bodies, determination of metacentric height.

Module-II (10 classes)

Fluid kinematics - Introduction, description of fluid flow, classification of fluid flow. Reynold's number, Acceleration of fluid particles, flow rate and continuity equation, differential equation of continuity, Mathematical definitions of irrotational and rotational motion. Circulation, potential function and stream function. Flow net

Module-III (8 classes)

Fluid dynamics - Introduction, Euler's equation along a streamline, energy equation, Bernoulli's equation and its application to siphon, venturimeter, orificemeter, pitot tube. Flow in pipes and ducts: Loss due to friction, Minor energy losses in pipes Hydraulic Gradient Line (HGL), Total Energy Line (TEL), Power transmission in the fluid flow in pipes, fluid flow in pipes in series and parallel. Flow through nozzles.

Module-IV (10 classes)

Hydraulic turbine: Classification, Impulse and Reaction turbine; Tangential, Radial and axial turbine. Impulse turbine, Pelton wheel, bucket dimensions, number of buckets in pelton wheel, efficiency and performance curves. Reaction Turbines: Francis turbine and Kaplan turbine, velocity triangle and efficiencies, performance curve. Function of draft tube and casing cavitation. Centrifugal Pump: constructional features, vane shape, velocity triangles, Efficiencies, Multi stage centrifugal pumps, Pump Characteristic, NPSH and Cavitation. Positive displacement pumps: Reciprocating Pump, Working principle, Discharge, work done and power requirement, Slip, Indicator diagram

TEXT BOOKS

1. *Fluid Mechanics and Hydraulic Machines*, P. N. Modi & S. M. Seth, STANDARD BOOK HOUSE
2. *A Text Book of Fluid Mechanics and Hydraulic Machines*, R. K. Bansal, Laxmi Publications
3. *Fluid Mechanics and Machinery*, CSP Ojha and P. N. Chandramouli, Oxford University Press
4. *Engineering Fluid Mechanics & Hydraulic Machines*, K. C. Patra, Narosa Publishing House, Standard Book House

REFERENCE BOOKS

1. *Fluid Mechanics*, J. F. Douglas, J. M. Gasiorek, J. A. Swaffield, , Pearson Education,
2. *Fluid Mechanics*, F. M. White, McGraw-Hill
3. *Fluid Mechanics Foundations and Application of Mechanics*, C. S. Jog, Cambridge University Press
4. *Fluid Mechanics and Fluid Machines*, Som & Biswas, McGraw Hill
5. *Problems in Fluid Mechanics*, Subramanyam, McGraw Hill

FLUID MECHANICS & HYDRAULICS MACHINES LAB

1. *Determination of Metacentric Height*
2. *Proof of Bernoulli's Theory*
3. *Determination of Coefficient of Discharge for V-notch*
4. *Determination of Coefficient of Discharge for Orifice meter*
5. *Determination of Coefficient of Discharge for Venturimeter*
6. *Determination of Reynold's Number*
7. *Friction Flow through Pipes*
8. *Determination of losses due to bends, fittings and elbows in pipes*
9. *Impact of Jets*
10. *Efficiency of Francis Turbine*
11. *Characteristics of Pelton wheel turbine*
12. *Discharge through Centrifugal Pump.*

PCI3I102 SURVEYING

Theory L/T (Hours per week): 3/0, Credit: 3

Module I (10 classes)

Linear measurement and chain survey: Use of chains and tapes for measurement of correct length of lines, direct and indirect ranging, chaining along sloping ground. Obstacle in chaining, errors and their elimination.

Compass surveying: Use of prismatic compass, temporary adjustment, bearing of a line, local attractions, correction of bearing

Module II (8 classes)

Levelling: Use of dumpy level and levelling staff. Temporary and Permanent adjustment of dumpy level, Reduction of levels by height of instrument and rise and fall method. Curvature and refraction error, sensitiveness of level tube, reciprocal levelling, levelling difficulties and common errors, Automatic and Electronic or Digital levels

Module III (10 classes)

Contouring: Contour interval and horizontal equivalent, characteristics of contours, methods of contouring- different and indirect method, contour gradient

Theodolite Survey: Use of theodolite, temporary adjustment, measuring horizontal and vertical angles, theodolite traversing

Module IV (8 classes)

Modern Surveying Instruments – Electromagnetic Spectrum, Radar, Electronic Distance Measurement, EDM Equipment, Corrections to measurement, Digital Theodolite, Total Stations, Introduction to Remote Sensing and GIS

Text Books

1. *Surveying & Levelling. Vol-I by T.P.Kanethar & S.V.Kulkarni, Pune Vidyarthi Griha Prakashan*
2. *Surveying and Leveling by R. Subramanian, Oxford University Press*
3. *Surveying- Vol.I, by B.C. Punmia, Laxmi Publications*

Reference Books

1. *Surveying Vol-1 by R Agor, Khanna Publishers*
2. *A Textbook of Surveying, C. Venkatramaiah, Universities Press*
3. *Surveying And Levelling, N.N. Basak, McGraw-Hill Education*

SURVEY – I LAB

1. *Testing of chain and measurement of correct length of the line and chain traversing.*
2. *Traversing by Compass*
3. *Horizontal and vertical angle by theodolite*
4. *Traversing by theodolite*
5. *Use of dumpy level and automatic level for fly levelling.*
6. *Contouring*
7. *Measurement of distance, horizontal and vertical angle by Total Station*
8. *Contouring by Total Station*

PCI3I103 GEOTECHNICAL ENGINEERING

Theory L/T (Hours per week): 3/0, Credit: 3

Module-I (10classes)

Origin of Soil and Grain Size: Rock Cycle and the origin of soil, soil particle size, clay minerals, mechanical analysis of soil, grain size distribution curve, particle shape, weight volume relationships, specific gravity, unit weight, void ratio, moisture content, and relationships, relative density, Consistency of soil: Atterberg limits - liquid limit, plastic limit, shrinkage limit. Liquidity index and consistency index, activity, soil structure. Engineering classification of soil: IS, USCS, HRB and ASTM.

Module-II (10 classes)

Soil Hydraulics: Modes of occurrence of water in soil. Stress conditions in soil- total, effective and neutral stresses and relationships. Permeability - Bernaulli's equation, Darcy's Law, hydraulic conductivity, laboratory determination of hydraulic conductivity, equivalent hydraulic conductivity in stratified soil. Seepage- Laplace equation of continuity, flow nets, seepage calculation from a flow net, flow nets in anisotropic soils, seepage through earth dam, critical hydraulic gradient and quick sand condition.

Soil Compaction: mechanism and principles, Standard and Modified Proctor Test, factors affecting compaction, effect of compaction on soil properties, field compaction techniques.

Module-III (10 classes)

Consolidation of soils: Consolidation and compaction, primary and secondary consolidation, Terzaghi's theory of one dimensional consolidation, consolidation test, determination of coefficient of consolidation. Stresses in Soil: Normal and shear stresses on a plane, Boussinesq's solution for a point load, line load, strip load, uniformly loaded circular and rectangular areas, Isobar and pressure bulb concept, stress distribution on horizontal and vertical planes, Newmark's chart and its application, contact pressure.

Module-IV (10 classes)

Shear Strength: Mohr-Coulomb failure criterion, shear strength parameters and determination: direct and tri-axial shear test, unconfined compression test, vane shear test. Other methods of determining the un-drained shear strength of soil, sensitivity and thixotropy of clay. Stability of Slopes: Terminology, stability of finite and infinite slopes, Swedish slip circle method and friction circle method of analysis of slopes, Taylor stability Number and stability curves, Bishops Method.

TEXT BOOKS

1. *Principles of Geotechnical Engineering* by Braja M. Das, Cengage Learning
2. *Soil Mechanics and Foundation Engineering* by B. C Punmia et al., Laxmi Publications Pvt Ltd
3. *Soil Mechanics and Foundation Engineering*, by K.R. Arora, Stanard Publishers
4. *Soil Mechanics and Foundation Engineering* by B.N.D. NarasingaRao, Wiley India Pvt. Ltd

REFERENCE BOOKS

1. *Basic and applied soil mechanics*, New Age International Publishers
2. *Geotechnical Engineering* by T.N. Ramamurthy & T.G. Sitharam, S. Chand & Co.
3. *Geotechnical Engineering*, S.K.Gulati and M. Datta, McGraw Hill

GEOTECHNICAL ENGINEERING LAB

1. *Determination of specific gravity of soil grains*
2. *Determination of grain size distribution of soil*
(a) Sieve test (b) Hydrometer/ pipette test
3. *Determination of Atterberg limits of soil*
Liquid limit (b) plastic limit (c) shrinkage limit
4. *Measurement of soil compaction in the field*
Core cutter method (b) Sand replacement method
5. *Determination of Density – Water content relationship of soil.*
Proctor compaction test (ii) Modified Proctor compaction test (c) Use of Proctor penetration needle
6. *Determination of relative density of granular soil*
7. *Determination of shear strength parameters of soil*
(a) Shear Box test (b) Tri-axial compression test (c) Unconfined compression test (d) Vane shear test
8. *Determination of consolidation characteristics of soil using fixed ring Oedometer*
9. *Determination of California Bearing Ratio (CBR) of soaked and un-soaked soil specimens*
10. *Determination of coefficient of permeability of soil*
(a) Constant head permeameter (b) Falling head permeameter

PCI3I002 CONSTRUCTION TECHNOLOGY

Theory L/T (Hours per week): 3/0, Credit: 3

Module I(10 classes)

Introduction of various Civil Engineering structures, Functions of various components of building and other structures

Fundamentals of Construction Technology: Introduction, Construction activities, construction process, construction workers, construction estimating, construction estimate, construction schedule, productivity and mechanized construction, Quality and safety

Preparatory Work and Implementation: Site layout, Infrastructure development, construction methods, construction materials, deployment of construction equipment, prefabrication in construction, falsework and temporary work,

Module II (10 classes)

Earthwork: Introduction, Classification of soil, project site development, setting out, mechanized excavation, ground water control. Piling: classification of piles, pile driving methods, load test and quality control

Concrete and Concreting: Introduction, Important properties of concrete, Use of admixtures, formwork, shotcrete, lightweight and heavyweight concrete, ready-mix concrete, high performance concrete, self-compacting concrete, extreme weather concreting, prestressed concrete, under water concreting, curing of concrete, non-destructive testing of hardened concrete

Roof and roofing: Introduction, cast-in-situ reinforced concrete roofs, precast reinforced concrete roofs, roofs covered with sheets, water proofing over roofs

Finishing Work: Introduction, plastering, pointing, facing, glazing, flooring, painting, Construction joints-need and materials used, Plumbing and electrification- various types of fittings and laying procedure,

Module III (10 classes)

Mechanized Construction: Introduction, general consideration, plants for earthwork- tractor, bulldozer, ripper, scraper, face shovel, backhoe, dragline, clamshell etc., roller, plants for transportation, movement and handling- derrick, crane, hoist, concrete mixers and pumps, scaffolding Building items: Plastering & pointing- its purpose, various types, construction procedures, advantages and disadvantages, suitability of each, Damp proof course (DPC), Anti-termite measures and treatment, Construction joints-need and materials used, Plumbing and electrification- various types of fittings and laying procedure,

Module IV (6 classes)

Building Maintenance and Safety Measures: Purpose, need, importance, methods, Causes and types of defects in buildings, Preparation of report on maintenance work, Remedial measures and execution procedure of any one type of building maintenance work, Importance of various Laws / Norms / Regulations / Acts for safety, Precautions and precautionary Measures, Post-accident procedures.

Text Books

1. *Construction Technology*, Subir Sarkar and Subhaji Saraswati, Oxford University Press
2. *Construction Planning and Management*, U.K. Srivastava, Galgotia Publications Pvt Ltd
3. *Construction Engineering and Management*, S. Seetharaman, Umesh Publications

Reference Books

1. *Concrete Technology*, Santha Kumar, Oxford University Press
2. *Construction Technology Analysis and Choice*, Tony Bryan, Wiley
3. *Building Construction*, B.C. Punmia, Laxmi Publication
4. *Building Construction*, Sushil Kumar, Standard Publisher
5. *Building Construction*, Rangwala, Charotar Pub House

PEK3E001 ENGINEERING ECONOMICS

Theory L/T (Hours per week):2/1, Credit: 3

Module I (12 hours)

Engineering Economics- Nature, Scope, Basic problems of an economy, Micro Economics and Macro Economics.

Demand- Meaning of demand, Demand function, Law of Demand and its exceptions, Determinants of demand, Elasticity of demand & its measurement (Simple numerical problems to be solved), Supply-Meaning of supply, Law of supply and its exception, Determinants of supply, Elasticity of supply, Determination of market equilibrium (Simple numerical problems to be solved).

Production-Production function, Laws of returns: Law of variable proportion, Law of returns to scale

Module II (12 hours)

Cost and revenue concepts, Basic understanding of different market structures, Determination of equilibrium price under perfect competition (Simple numerical problems to be solved), Break Even Analysis-linear approach (Simple numerical problems to be solved).

Banking -Commercial bank, Functions of commercial bank, Central bank, Functions of Central Bank.

Inflation-Meaning of inflation, types, causes, measures to control inflation.

National Income-Definition, Concepts of national income, Method of measuring national income.

Module III (12 hours)

Time value of money- Interest - Simple and compound, nominal and effective rate of interest, Cash flow diagrams, Principles of economic equivalence.

Evaluation of engineering projects-Present worth method, Future worth method, Annual worth method, Internal rate of return method, Cost benefit analysis for public projects .

Depreciation- Depreciation of capital asset, Causes of depreciation, Methods of calculating depreciation (Straight line method, Declining balance method), After tax comparison of project.

Text Books

1. Riggs, Bedworth and Randhwa, "Engineering Economics", McGraw Hill Education India
2. Principles of Economics, Deviga Vengedasalam; Karunagaran Madhavan, Oxford University Press.
3. Engineering Economy by William G.Sullivan, Elin M.Wicks, C. Patric Koelling, Pearson
4. R.Paneer Seelvan, " Engineering Economics", PHI
5. Ahuja,H.L., "Principles of Micro Economics", S.Chand & Company Ltd
6. Jhingan,M.L., "Macro Economic Theory"
7. Macro Economics by S.P.Gupta, TMH

POB3E002 ORGANIZATIONAL BEHAVIOUR**Credit- 3 Class Hours - 40****Objectives:**

1. To develop an understanding of the behavior of individuals and groups inside organizations
2. To enhance skills in understanding and appreciating individuals, interpersonal, and group process for increased effectiveness both within and outside of organizations.
3. To develop theoretical and practical insights and problem-solving capabilities for effectively managing the organizational processes.

Unit	Contents	Class Hours
01	Fundamentals of OB: Definition, scope and importance of OB, Relationship between OB and the individual, Evolution of OB, Theoretical framework (cognitive), behavioristic and social cognitive), Limitations of OB.	6
02	Attitude: Importance of attitude in an organization, Right Attitude, Components of attitude, Relationship between behavior and attitude, Developing Emotional intelligence at the workplace, Job attitude, Barriers to changing attitudes. Personality and values: Definition and importance of Personality for performance, The Myers-Briggs Type Indicator and The Big Five personality model, Significant personality traits suitable to the workplace (personality and job – fit theory), Personality Tests and their practical applications. Perception: Meaning and concept of perception, Factors influencing perception, Selective perception, Attribution theory, Perceptual process, Social perception (stereotyping and halo effect). Motivation: Definition & Concept of Motive & Motivation, The Content Theories of Motivation (Maslow's Need Hierarchy & Herzberg's Two Factor model Theory), The Process Theories (Vroom's expectancy Theory & Porter Lawler model), Contemporary Theories – Equity Theory of Work Motivation.	10
03	Foundations of Group Behavior: The Meaning of Group & Group behavior & Group Dynamics, Types of Groups, The Five – Stage Model of Group Development. Managing Teams: Why Work Teams, Work Teams in Organization, Developing Work Teams, Team Effectiveness & Team Building. Leadership: Concept of Leadership, Styles of Leadership, Trait Approach Contingency Leadership Approach, Contemporary leadership, Meaning and significance of contemporary leadership, Concept of transformations leadership, Contemporary theories of leadership, Success stories of today's Global and Indian leaders.	9

- 04 Organizational Culture :** Meaning & Definition of Organizational Culture, creating & Sustaining Organizational Culture, Types of Culture (Strong vs. Weak Culture, Soft Vs. Hard Culture & Formal vs. Informal Culture), Creating Positive Organizational Culture, Concept of Workplace Spirituality. **8**
- 05 Organizational Change:** Meaning, Definition & Nature of Organizational Change, Types of Organizational Change, Forces that acts as stimulants to change. **7**
- Implementing Organizational Change : How to overcome the Resistance to Change, Approaches to managing Organizational Change, Kurt Lewin's-Three step model, Seven Stage model of Change & Kotter's Eight-Step plan for Implementing Change, Leading the Change Process, Facilitating Change, Dealing with Individual & Group Resistance, Intervention Strategies for Facilitating Organizational Change, Methods of Implementing Organizational Change, Developing a Learning Organization.

Reference Books

1. *Understanding Organizational Behaviour*, Parek, Oxford
2. *Organizational Behaviour*, Robbins, Judge, Sanghi, Pearson.
3. *Organizational Behaviour*, K. Awathappa, HPH.
4. *Organizational Behaviour*, VSP Rao, Excel
5. *Introduction to Organizational Behaviour*, Moorhead, Griffin, Cengage.
6. *Organizational Behaviour*, Hitt, Miller, Colella, Wiley

BUILDING DRAWING LAB (0-0-2)

1. *The drawing is to be drawn using AutoCAD.*
2. *Plan, elevation, side view of residential/office building*
3. *Drawing of 2 bed room/3 bed room houses (single and two storeyed), ground and first floor plans, elevation and section for load bearing and framed structures*
4. *Detailing of doors/windows*
5. *Drawing of several types of footing, bricks work, floor, staircases, masonry, arches and lintels*
6. *Types of steel roof trusses*
7. *Project on establishments like Bank building/ Post office/ Hostel/ Library/ Hospital/ Auditorium etc*

PCI3D001 CONCRETE TECHNOLOGY(Honours Subject)

Module I (10 classes)

Cement:Portland cement- chemical composition, Hydration, Setting of cement, Structure of hydrate cement, Test on physical properties, Different grades of cement.

Admixtures: Types of admixtures - mineral and chemical admixtures -properties - dosages - effects - usage.

Aggregates:Classification of aggregate, Particle shape & texture, Bond, strength & other mechanical properties of aggregate, Specific gravity, Bulk density, porosity, adsorption & moisture content of aggregate, Bulking of sand, Deleterious substance in aggregate, Soundness of aggregate, Alkali aggregate reaction, Thermal properties, Sieve analysis, Fineness modulus, Grading curves, Grading of fine & coarse Aggregates, Gap graded aggregate, Maximum aggregate size.

Module II(8 classes)

Fresh concrete:Workability - Factors affecting workability, Measurement of workability by different tests, Setting times of concrete, Effect of time and temperature on workability, Segregation & bleeding, Mixing and vibration of concrete, Steps in manufacture of concrete, Quality of mixing water.

Hardened concrete:Water Cement ratio, Abram's Law, Nature of strength of concrete, Maturity concept, Strength in tension & compression, Factors affecting strength, Relation between compression & tensile strength, Curing.

Module III(10classes)

Testing of hardened concrete:Compression tests, tension tests, factors affecting strength, flexure tests, splitting tests, pull-out test, non-destructive testing methods - code provisions for NDT.

Elasticity, creep & shrinkage : modulus of elasticity, dynamic modulus of elasticity, poisson's ratio, creep of concrete, factors influencing creep, relation between creep & time, nature of creep, effects of creep, shrinkage, types of shrinkage.

Module IV (8 classes)

Mix design :Factors in the choice of mix proportions, Durability of concrete, Quality Control of concrete, Statistical methods, Acceptance criteria, Proportioning of concrete mixes by various methods, BIS method of mix design.

Special concretes:Light weight aggregates - Light weight aggregate concrete - Cellular concrete - **No-fines concrete** - High density concrete -Fibre reinforced concrete - Polymer concrete - Types of Polymer concrete - High performance concrete - Self compacting concrete.

Text Books

1. *Concrete Technology* - Gambhir, M.L., McGraw Hill
2. *Properties of Concrete* by A.M.Neville
3. *Concrete Technology* by M.S.Shetty. - S.Chand & Co.
4. *Concrete Technology* by Santakumar A.R, Oxford University Press

PCI3G001 MECHANICS OF SOLIDS (Minor subject)

Theory L/T (Hours per week): 3/1, Credit: 4

Module-I (12 classes)

Simple Stress and Strain -Load, Stress, Principle of St.Venant, Principle of Superposition, Strain, Hooke's law, Modulus of Elasticity, Stress-Strain Diagrams, Working Stress, Factor of safety, Strain energy in tension and compression, Resilience, Impact loads, Analysis of Axially Loaded Members, Composite bars in tension and compression, temperature stresses in composite rods, Statically indeterminate problems, Shear stress, Complimentary shear stress, Shear strain, Modulus of rigidity, Poisson's ratio, Bulk Modulus, Relationship between elastic constants.

Compound Stress and strain- Stresses in thin cylinders, thin spherical shells under internal pressure, wire winding of thin cylinders. Analysis of Biaxial Stress. Plane stress, Principal stress, Principal plane, Mohr's Circle for Biaxial Stress, Two dimensional state of strain, Mohr's circle for strain, Principal strains and principal axes of strain, strain measurements, Calculation of principal stresses from principal strains.

Module-II (10 classes)

Shear Force and Bending Moment for Determinate Beams - Types of load and Types of support. Support reactions, Shear force and bending moment, Relationship between bending moment and shear force, Point of inflection, Shear Force and Bending Moment diagrams for determinate beams

Module-III (10 classes)

Simple Bending of Beams - Theory of simple bending of initially straight beams, Bending stresses, Shear stresses in bending, Distribution of normal and shear stress, beams of two materials, Composite beams.

Deflection of Beams - Differential equation of the elastic line, Slope and deflection of beams by integration method and area - moment method.

Module-IV (8 classes)

Theory of Columns - Eccentric loading of a short strut, Long columns, Euler's column formula, Lateral buckling, Critical Load, Slenderness ratio

Torsion in solid and hollow circular shafts - Twisting moment, Strain energy in shear and torsion, strength of solid and hollow circular shafts. Stresses due to combined bending and torsion, Strength of shafts in combined bending and twisting.

TEXT BOOKS

1. *Elements of Strength of Materials* by S.P.Timoshenko and D.H.Young, Affiliated East-West Press
2. *Strength of Materials* by G. H. Ryder, Macmillan Press
3. *Strength of Materials* by R.Subramaniam, Oxford University Press
4. *Strength of Material* by S. S. Ratan, McGraw Hill

REFERENCE BOOKS

1. *Mechanics of Materials* by Beer and Johnston, McGraw Hill
2. *Mechanics of Materials* by R.C.Hibbeler, Pearson Education
2. *3.Engineering Mechanics of Solids* by Egor P. Popov, Prentice Hall of India

B.Tech(Civil Engineering) Detail Syllabus For Admission Batch 2015-16

Semester : 4th

1.	PCI4D001 Honours (O2)	Advance Surveying	4-0-0	4
2.	PCI4D002 Honours (O2)	Environmental Pollution and Management	4-0-0	4
3.	PCI4D003 Honours (O2)	Optimization in Civil Engineering	4-0-0	4
4.	PCI4E001 HS (CP)	Purely Applied Mathematics for Specific Branch of Engineering	3-0-0	3
5.	PEK4E002 HS (O1)	Engineering Economics	3-0-0	3
6.	POB4E003 HS (O1)	Organizational Behavior	3-0-0	3
7.	PCI4G001 Minor (CP)	Highway & Traffic Engineering	4-0-0	4
8.	PCI4I001 PC (CP)	Structural Analysis - I	3-0-0	3
9.	PCI4I101 PC (CP)	Advanced Mechanics of Solids	3-0-1	4
10.	PCI4I102 PC (CP)	Highway & Traffic Engineering	3-0-1	4
11.	PCI4I103 PC (CP)	Design of Concrete Structures	3-0-1	4
12.	PCI4I201 PC (CP)	Material Testing Lab	0-0-1	1
13.	PCI4I202 PC (CP)	Skill Project and Hands on	0-0-3	3

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