Course Scheme for B.Tech. Civil Engg. IT.,GGV.

(Effective from Session 2016-17 onwards)

III SEMESTER B.TECH. (CIVIL ENGG.)

Sl No	Subject Code	Subjects	Periods /Week			Evaluation Scheme						Grand Total	Credits
						Internal Assessment					ESE		
						Theory			Practical	Total			
		Theory	L[1]	T[2]	P[3]	CT[5]	MSE[4]	TA[6]	LA[7]				
1	CE3TPC01	Fluid Mechanics-I	3	0	0	10	20	10	-	40	60	100	3
2	CE3TES05	Strength of Materials	3	1	0	10	20	10	-	40	60	100	4
3	CE3TBS05	Engineering Mathematics-III	3	0	0	10	20	10	-	40	60	100	3
4	CE3TES06	Building Materials & Construction	3	1	0	10	20	10	-	40	60	100	4
5	CE3TPC02	Surveying-I	3	0	0	10	20	10	-	40	60	100	3
		Practical											
1	CE3LPC01	Surveying-I Lab	0	0	3	-	-	-	30	30	20	50	2
2	CE3LPC02	Fluid Mechanics Lab	0	0	3	-	-	-	30	30	20	50	2
2	CE3LES05	Material Testing Lab	0	0	3	-	-	-	30	30	20	50	2
												Total Credits	23

IV SEMESTER B.TECH. (CIVIL ENGG.)

Sl No	Subject Code	Subjects	Periods /Week			Evaluation Scheme						Grand Total	Credits
						Internal Assessment					ESE		
						Theory			Practical	Total			
		Theory	L[1]	T[2]	P[3]	CT[5]	MSE[4]	TA[6]	LA[7]				
1	CE4THS03	Engineering Economics	3	0	0	10	20	10	-	40	60	100	3
2	CE4TPC03	Building Planning & Drawing	3	0	0	10	20	10	-	40	60	100	3
3	CE4TBS06	Numerical Analysis & Computer Applications	3	0	0	10	20	10	-	40	60	100	3
4	CE4TPC04	Surveying-II	3	0	0	10	20	10	-	40	60	100	3
5	CE4TPC05	Structural Analysis-I	3	1	0	10	20	10	-	40	60	100	4
6	CE4TPC06	Fluid Mechanics-II	3	0	0	10	20	10	-	40	60	100	3
		Practical											
1	CE4LPC03	Civil Engineering Drawing	0	0	3	-	-	-	30	30	20	50	2
2	CE4LPC04	Surveying-II Lab	0	0	3	-	-	-	30	30	20	50	2
3	CE4LBS03	Numerical Analysis & Computer Applications Lab	0	0	3	-	-	-	30	30	20	50	2
												Total Credits	25

[1]-Lecture Hours, [2]-Tutorial Hours, [3]- Practical Hours, [4]- Mid Sem. Exam, [5]-Class Test, [6]-Teacher Assessment (Attendance &Assignments), [7]-Lab Work Assessment

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Course Scheme for B.Tech. Civil Engg. IT.,GGV.

(Effective from Session 2016-17 onwards)

III SEMESTER B.TECH. (CIVIL ENGG.)

Sl No	Subject Code	Subjects	Periods /Week			Evaluation Scheme						Grand Total	Credits
						Internal Assessment					ESE		
						Theory			Practical	Total			
		Theory	L[1]	T[2]	P[3]	CT[5]	MSE[4]	TA[6]	LA[7]				
1	CE3TPC01	Fluid Mechanics-I	3	0	0	10	20	10	-	40	60	100	3
2	CE3TES05	Strength of Materials	3	1	0	10	20	10	-	40	60	100	4
3	CE3TBS05	Engineering Mathematics-III	3	0	0	10	20	10	-	40	60	100	3
4	CE3TES06	Building Materials & Construction	3	1	0	10	20	10	-	40	60	100	4
5	CE3TPC02	Surveying-I	3	0	0	10	20	10	-	40	60	100	3
		Practical											
1	CE3LPC01	Surveying-I Lab	0	0	3	-	-	-	30	30	20	50	2
2	CE3LPC02	Fluid Mechanics Lab	0	0	3	-	-	-	30	30	20	50	2
2	CE3LES05	Material Testing Lab	0	0	3	-	-	-	30	30	20	50	2
												Total Credits	23

IV SEMESTER B.TECH. (CIVIL ENGG.)

Sl No	Subject Code	Subjects	Periods /Week			Evaluation Scheme						Grand Total	Credits
						Internal Assessment					ESE		
						Theory			Practical	Total			
		Theory	L[1]	T[2]	P[3]	CT[5]	MSE[4]	TA[6]	LA[7]				
1	CE4THS03	Engineering Economics	3	0	0	10	20	10	-	40	60	100	3
2	CE4TPC03	Building Planning & Drawing	3	0	0	10	20	10	-	40	60	100	3
3	CE4TBS06	Numerical Analysis & Computer Applications	3	0	0	10	20	10	-	40	60	100	3
4	CE4TPC04	Surveying-II	3	0	0	10	20	10	-	40	60	100	3
5	CE4TPC05	Structural Analysis-I	3	1	0	10	20	10	-	40	60	100	4
6	CE4TPC06	Fluid Mechanics-II	3	0	0	10	20	10	-	40	60	100	3
		Practical											
1	CE4LPC03	Civil Engineering Drawing	0	0	3	-	-	-	30	30	20	50	2
2	CE4LPC04	Surveying-II Lab	0	0	3	-	-	-	30	30	20	50	2
3	CE4LBS03	Numerical Analysis & Computer Applications Lab	0	0	3	-	-	-	30	30	20	50	2
												Total Credits	25

[1]-Lecture Hours, [2]-Tutorial Hours, [3]- Practical Hours, [4]- Mid Sem. Exam, [5]-Class Test, [6]-Teacher Assessment (Attendance &Assignments), [7]-Lab Work Assessment

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TPC01

Subject: Fluid Mechanics-I

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT 1: Introduction: Fluid, physical properties of fluids ideal and real fluid, Newtonian and Non-Newtonian Fluid Fluid Statics: Pressure density height relationship, pressure measurement by Manometers, Pressure on plane and curved surfaces, centre of pressure, buoyancy, stability of immersed and floating bodies, metacentric height.

UNIT 2:Kinematics of fluid flow : Steady and unsteady flow, uniform and non-uniform flow, laminar and turbulent flow, one, two and three dimensional flow, streamlines and path lines, rotational and irrotational flow, continuity equation, three dimensional continuity equation. velocity potential and stream function.

UNIT 3: Dynamics of fluid flow: Euler's equation of motion along a streamline and its integration, Bernoulli's equation and its applications – Pitot tube, Venturimeter, orificemeter, problems related to application of momentum equations.

UNIT 4:Flow in Pipes: Major and minor losses in pipe lines, loss due to sudden contraction & expansion, Pipes in series and parallel Flow in open Channel: Comparison between open channel and pipe flow, definition of uniform and non-uniform flow, Chezy's and Manning's Formula, Hydraulically efficient channel section of rectangular, trapezoidal.

UNIT 5: Flow through mouthpieces and orifices: Hydraulic coefficients of orifice, flow through large rectangular orifice, mouthpieces, Borda's mouthpieces. Notches and Weirs: Rectangular, triangular and trapezoidal notches and weir, cippoletti and broad crested weir.

NAME OF TEXT BOOKS:

Fluid Mechanics and Machines – Dr. A.K. Jain (Khanna Publications)
Fluid Mechanics and Machines – Dr. R.K. Bansal (Laxmi Publications)
Fluid Mechanics & Hydraulic Machines – Dr.P.N.Modi&S.M.Seth,(Narosa Publishing House)

NAME OF REFERENCE BOOKS:

Mechanics of Fluid – Irving H. Shames (McGraw Hill)
Introduction to Fluid Mechanics – James A. Fay (Prentice Hall India)
Fluid Mechanics – R.J. Garde (New Age International Publication)
Fluid Mechanics – Streeter V.L. & Wylie E.B. (Tata McGraw Hills)
Fluid Mechanics – John F Dougles (Pearson Publication)
Introduction to Fluid Mechanics Fox, R.W. and McDonald, A.T., John Wiley & Sons.
Fluid Mechanics", Streeter, V.L. and Benjamin, W.E., "McGraw-Hill.
Fluid Mechanics and Fluid Mechanics Som, S.K. and Biswas, G.,Tata McGraw Hill.
Introduction to Fluid Mechanics, Fox, R. W. and A. T. McDonald, 6th ed., John Wiley, New York, (2004)

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SYLLABUS **(SEMESTER-III)**

Subject Code: **CE3TES05**

Subject: Strength of Materials

CREDITS: 4			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	1	-	10	20	10	40	60

UNIT 1: Simple Stresses -Strain and compound stresses: Types of stresses and strains, Mechanicals properties, Hooke's law, stress– strain curve for mild & Cast iron, hardness, impact strength, Poisson's ratio, Relation between the elastic moduli & Poisson's ratio, Bars subjected to varying loads, Temperature stresses in composite bars, Elongation of bars of constant and varying sections. Stress at a point. Components of stress in rectangular coordinates, stresses on an inclined plane, Principal stresses & principle plane, Mohr's circle of stresses.

UNIT : Shear Force - Bending Moment and Bending Stress: Shear Force & Bending Moment diagrams in statically determinate beams loaded with different load combination, Relationship between Load intensity- Shear Force - Bending Moment, Thrust diagram, Point of contraflexure, loading diagram & Bending moment diagram from shear force diagram, beam with internal hinge.

UNIT 3: Shear Stresses in Beams and Slope-Deflections of Beams: Derivation of Shear Stress formula, assumptions, Shear stresses in symmetrical elastic beam with different sections. Derivation of differential equation for deflection, Slope & Deflection of Beams by Double integration method, Macaulay's method & Moment area method. Propped cantilever.

UNIT 4: Torsion and Columns: Equation of Pure Torsion, Assumptions, Power transmitted, Stiffness of Shafts, Comparison of Solid & Hollow shaft, Strain energy in Torsion. Stable and unstable equilibrium, Short columns, Euler's formula for long columns, Equivalent length, Limitation of Euler's formula, Rankine's formula.

UNIT 5: Thin -Thick Cyl;inders-Spheres and Rivet-welded Connection: Stresses in Thin Cylinders, Changes in Dimensions of Cylinder, Rivetted Cylinders, Thin Spherical Shells. Thick Cylinders, Lame's equation. Riveted Joints, Method of riveting, Types of joints, assumptions made in analysis of riveted joints, pitch of Rivets, Failure of a Riveted joint, Strength of a riveted joint, Efficiency of a Joint, Design of Riveted joints for axial load. Welded connection, Types of joints, strength of joints, size of weld, comparison of welded & Riveted joints.

TEXT BOOKS: Strength of Materials – R.K. Rajput (S. Chand & Co.)

NAME OF REFERENCE BOOKS:

Mechanics of Structures (Vol. – I) – Junarkar (Charotar Publications)
Strength of Materials – Timoshenko, S. & Gere (CBS Publishers)
Introductions to Solid Mechanics –Shames &Pitarresi (Prentice Hall of India)
Engineering Mechanics of Solid – Popov (Pearson Publication)
Strength of Materials–S. Ramamurtham (DhanpatRai Publications)
Strength of Materials (Part-I) – Timoshenko (CBS Pubishers)

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SYLLABUS **(SEMESTER-III)**

Subject Code: **CE3TBS05**

Subject: Engineering Mathematics-III

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT-I Functions of a complex variable: Complex variable, function of complex variable, limit, continuity, and differentiability, of a function of a complex variable. Analytic functions, Cauchy-Riemann equations, Orthogonal curves, harmonic functions, conformal mapping, bilinear transformation (Mobius transformation) Cauchy integral theorem, Cauchy integral formula, Cauchy's inequality Taylor theorem, Laurent's theorem.

UNIT-II Fourier series and Fourier transform: Periodic function, Fourier series, Dirichlet's conditions for a Fourier series. Advantages of Fourier series and determination of Fourier coefficients, Fourier series of function of periods 2π, change of interval, Even Odd functions, Half range sine and cosine series, practical harmonic analysis, Fourier transformation, Fourier sine and cosine transform , properties of Fourier transform.

UNIT-III Laplace transformation: Laplace transformation, properties of Laplace transformation, first shift theorem,Laplace transform of the derivative of f(t), multiplication and division by t. Unit step function: Laplace transformation of unit function, second shifting theorem, Laplace transform of function and periodic function. Inverse Laplace transformation Multiplication by s, division by s, first shifting property, second shifting property, inverse Laplace transform of derivatives, solution of differential equations by Laplace transform

UNIT-IV Correlation& Regression : Scatter diagram , Linear Correlation , Measures of Correlation . Karl Pearson's Coefficient of correlation , Limits for correlation coefficients, Coefficient of correlation for bivariate frequency distribution , Rank correlation , Linear Regression, Equations to the line of Regression. Regressioncoefficient. Angle between two lines of Regression.

UNIT –V Theoretical Distributions: Discrete and Continuous probability distribution's .Mathematical expectation, Mean and Variance, Moments, Moments generating function, probability distribution ,Binomial, Poisson and Normal distribution ,Test of siginificance based on chi-square , T,F, and Z distribution, degree of freedom , conditions for applying X2 (chi-square) test , student's test.

TEXT BOOKS:

1) Prasad C "Advanced Engineering mathematics", 2) Pati T "Functions of complex variables", 3) Dass H.K. " Advanced Engineering mathematics", 4) Ray M. " Mathematics statistics", 5) Higher Engg. Mathematics by Dr. B.S. Grewal– Khanna Publishers., 6) Advanced Engg. Mathematics by Erwin Kreyszig –John Wiley & Sons, 7) Advanced Engg.Mathematics by R.K. Jain and S.R.K. Iyengar – Narosa Publishing House., 8) Applied Mathematics by P.N.Wartikar& J.N. Wartikar. Vol- II– Pune VidyarthiGrihaPrakashan,Pune., 9) Applied Mathematics for Engineers & Physicists by Louis A. Pipes-TMH

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SYLLABUS (SEMESTER-III)

Subject Code: **CE3TES06**

Subject: Building Materials &Construction

CREDITS: 4			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT I: Stones, Bricks, Tiles, Timber; Properties, Classification&Uses
UNIT 2: Miscellaneous Engineering Materials; Ceramics & glass; Plastics & Rubber; Paints, Varnishes and distempers; Composite materials; Adhesives; Thermal, Electrical & Sound Insulators.
UNIT III: Cement, Aggregate, Concrete and Steel; classification, properties & uses.
UNIT-IV: Foundations, Masonry, Arches & Lintels; Classification, Requirements & Uses.
UNIT-V: Shoring, Underpinning, Formwork, Advanced construction materials & Techniques.

NAME OF TEXT BOOKS:

Building Materials – S.K. Duggal (New Age Publication)
Building Materials – S. C. Rangwala (Charotar Publication)
Building Construction by S.G. Rangwala, Charter Publishing House, Anand, India.
Building Construction by Sushil Kumar, Standard Publ. and Distributors, New Delhi
Building Construction by Punmia B.C., Lakshmi Publications, New Delhi.
Advanced Building Materials and Construction by Mohan Rai and Jai Sing, CBRI Publications, Roorkee
Concrete Technology – A.M. Neville & J.J. Brooks (Pearson Education)
Concrete Technology – M.S. Shetty (S. Chand & Co.)
Engineering Materials – Surendra Singh (Laxmi Publication)
Construction Engineering and Management – S. Seetharaman (UmeshPublication)
Building Materials – Gurucharan Singh (Standard Publishers, Delhi)

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TPC02

Subject: Surveying-I

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT-I: INTRODUCTION AND CHAIN SURVEYING: Definition - Principles - Classification - Fields and office work - Scales - Conventional signs – Survey instruments, their care and adjustment - Ranging and chaining - Reciprocal ranging - Setting perpendiculars - well-conditioned triangles.
COMPASS SURVEYING: Prismatic compass - Surveyor's compass - Bearing - Systems and conversions - Local attraction – Magnetic declination - Dip

UNIT-II: Different methods of determining elevations: Spirit, Trignometric and Barometric methods Spirit leveling-Definitions of terms, Principle, Temporary and permanent adjustment of levels. Sensitivity of bubble tube, Auto & Dumpy levels, Levelling staff, Methods of spirit leveling Booking and reduction of field notes. Types of leveling:- Reciprocal, Profile, Differential, Precise leveling, Plotting of profiles Correction:- Curvature and refraction. CONTOURING; Direct and Indirect methods of contouring. Interpolation of contours, Drawing section from contour map, Application and Modern methods of depicting relief on a Map.

UNIT - III: THEODOLITE AND TRAVERSING: Vernier theodolites, Temporary and permanent adjustments, Requirements of nonadjustable parts, Measurement of horizontal angle by repetition and reiteration method, Measurement of vertical angles.
AREA AND VOLUMES; Computation of area and volume by different mathematical methods.

UNIT - IV: PLANE TABLE SURVEYING: Principles, Advantages and disadvantages, Plane table equipment, Use of Telescopic Alidade, Different methods of Plane Table Surveying, Resection-Two and Three point problems. Fields work in Plane Table Surveying.

UNIT-V: CURVES: Classification of curves; Elements of Simple, Compound, Reverse and Transition curves, Method of setting out Simple and Compound curves. Special field problems.

NAME OF TEXT BOOKS:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)
Surveying (Vol. I & II) – Kanetkar (Pune VidyarthiGrihaPrakashan, Pune)
urveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)
Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)
Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)
Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)

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SYLLABUS **(SEMESTER-III)**

Subject Code: **CE3LPC01**

Subject: Surveying-I Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

List of experiments

1. Linear measurement & offsetting using metric chain.
2. Determination of the area of the given field by cross staff survey.
3. Compass open traversing using prismatic compass and elimination of local attraction.
4. Compass closed traversing using prismatic compass and elimination of local attraction by bowditch method.
5. To find the difference in elevation between the two non intervisible stations by the method of differential levelling.
6. To draw longitudinal sectional profile of the road by the method of profile levelling.
7. To draw cross-sectional profile of the road by the method of profile levelling.
8. Contour and its plotting by grid method.
9. Measurement of horizontal angle by repetition method.
10. Measurement of horizontal angle by reiteration method.
11. Traversing of the given area by radiation method using plane table survey.
12. Traversing of the given area by intersection method using plane table.

Text Book:

Surveying and Leveling. N.N.Basak,1st Edition ,Tata McGraw Hill

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)

Surveying (Vol. I & II) – Kanetkar (Pune VidyarthiGrihaPrakashan, Pune)

NAME OF REFERENCE BOOKS:

Surveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)

Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)

Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)

Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)

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SYLLABUS **(SEMESTER-III)**

Subject Code: **CE3LPC02**

Subject: Fluid Mechanics Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

List of experiments

1. To calculate the total energy at different points and plot the graph between total energy vs. distance.
(Verification of Bernoulli's equation)
2. To determine the Meta centric height with angle of ship model.
3. To determine the co-efficient of Discharge Cd for Venturimeter
4. To determine the co-efficient of Discharge Cd forOrificemeter.
5. To determine the co-efficient of discharge and the co-efficient of velocity for Orifice.
6. To determine the co-efficient of discharge and the co-efficient of velocity for Mouthpiece.
7. To determine the coefficient of discharge Cd of Rectangular Notch.
8. To determine the coefficient of discharge Cd V Notch - 45^0
9. To determine the coefficient of discharge Cd V Notch - 60^0
10. To determine the friction factor for Darcy-Weisbach equation
11. Experimental determination of critical velocity in pipe.
12. To determine the coefficient of impact for vanes
13. To find the co-efficient of pitot tube
14. To plot velocity profile across the cross section of pipe
15. To determine the Reynold's Number in pipe
16. Calibration of rectangular sharp cornered weir and to study the pressure distribution on the upstream face of the weir.
17. Calibration of rectangular streamlined weir and to study the pressure distribution on the upstream face of the weir

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SYLLABUS **(SEMESTER-III)**

Subject Code: **CE3LES05**

Subject: Material Testing Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	-
-	-	3	30	-	30	20

List of experiments

Testing of cement

1. Normal Consistency, Fineness of Cement, Setting times of Cement
2. Specific Gravity of Cement
3. Soundness of Cement
4. Compressive strength of cement

Testing of aggregate

5. Fineness modulus of Fine and Coarse aggregate
6. Bulk density of aggregate
7. Specific Gravity and Water Absorption of Aggregate
8. Bulking of Sand

Testing of bricks

9. Compressive strength, Water Absorption &Efflorescence of Bricks

Testing of concrete

10. Workability of Concrete
11. Compressive strength
12. Modulus of Elasticity
13. Tensile Strength of Concrete
14. NDT Test of Concrete

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SYLLABUS **(SEMESTER-IV)**

Subject Code: **CE4THS03**

Subject: Engineering Economics

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

Unit 1: Basic Concepts and Definitions, Methodology of Economics, Demand and Supply – elasticity,Theory of the Firm and Market Structure, Price and output determinations in different types of market

Unit 2: Public Sector Economics –Welfare economics, Central and commercial marks and their functions, Industrial policies, theory of localization, weber &surgent Florence theory, investment analysis-NPV, ROI, IRR, Payback period, SWOT analysis.

Unit 3: Monetary and Fiscal Policy;Tools, impact on the economy , Inflation, Business Cycle, Cash Flow-2,3,4 Model.

Unit 4: Business Forecasting – Elementary techniques., Cost and Revenue Analysis, Capital Budget, Break Even Analysis.

Unit 5: Indian economy; Urbanization, Unemployment–Poverty, Regional Disparities, Unorganized Sectors-Roll of Plans, Reforms-Post Independent period.

Text/Reference Books:

1. Mankiw Gregory N.(2002), Principles of Economics, Thompson Asia
2. V. Mote, S. Paul, G. Gupta(2004), Managerial Economics, Tata McGraw Hill
3. Misra, S.K. and Puri (2009), Indian Economy, Himalaya
4. PareekSaroj (2003), Textbook of Business Economics, Sunrise Publishers

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4TPC03

Subject: Building Planning & Drawing

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

Part-A (60% weight age)

UNIT – I Principles of building Planning;

UNIT – II BUILDING BYELAWS AND REGULATIONS: Introduction – Terminology – Objectives of building byelaws – Floor Area Ratio (FAR) – Floor Space Index (FSI) – Principles underlying building byelaws – classification of buildings – Open space requirements – built up area limitations – Height of Buildings – Wall thickness – lighting and ventilation requirement. UNIT – III RESIDENTIAL & PUBLIC BUILDINGS: Minimum standards for various parts of residential and public buildings – requirements of different rooms and their grouping – characteristics of various types of residential buildings.

UNIT – IV SIGN CONVENTIONS AND BONDS: Brick, Stone, Plaster, Sand filling, Concrete, Glass, Steel, Cast iron, Copper alloys, Aluminum alloys etc., Lead, Zinc, tin, white lead etc., Earth, Rock, Timber and Marble. English bond & Flemish bond odd & even courses for one, one and half, two and two and half brick walls in thickness at the junction of a corner.

Part-B (40% weight age)

UNIT – V BUILDING DRAWING: Preparation of plan, elevation and section of residential buildings-single storey (load bearing structures), double storey (R.C.C.Framed structure) by using principles of planning and local building bye- laws. For this unit students have to draw the problem on the drawing sheet in the examination.

Text books: 1. Building planning designing and scheduling, (5th Edition) by Gurucharan Singh and Jagadish Sing, Standard Publications Distributers, Delhi, 2010.

2. Building planning and drawing, (3rdedition) by Kumara Swami N., Anand Charotar Publishing House Pvt Ltd, 2010.

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SYLLABUS **(SEMESTER-IV)**

Subject Code: **CE4TBS06**

Subject: Numerical Analysis & Computer Applications

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	-
3	0	-	10	20	10	40	60

UNIT – I Approximations and Errors in Computation: Errors and their analysis, Types of errors Curve fitting : Method of Least squares , fitting of a straight line , polynomial fit : Non linear Regression (second degree parabola), Numerical Solution of Algebraic and Transcendental Equations: Secant Method ,Regulafalsi Method, Newton Raphson Method, Solution of a system of simultaneous linear algebraic Equations Direct method: Gauss elimination Method, Gauss Jordan method, Iterative methods .Jacobi Iterative Method, Gauss Seidel Iterative method.

UNIT – II The Calculus of Finite Differences: Finite differences, Difference formula, operators and relation between operators. Inverse Operator, Interpolation with equal intervals: - Newton's forward and backward interpolation formula. Interpolation with Unequal intervals: - Lagrange's interpolation Newton's difference formula, inverse interpolation,

UNIT –III Numerical Differentiation and Integration: - Numerical Differentiation Newton's forward and Backward difference interpolation formula. Maxima and Minima of a Tabulated function, Numerical Integration :- Trapezoidol rule , simpson is (1/3)rd and (3/8) th rule , Boole's rule, weddle rule , Difference Equations -: Definition ,order and degree of a diference equation ., Linear difference equations, Difference equations reducible to Linear form . simultaneous difference equations with constant coefficients

UNIT – IV Numerical solution of ordinary differential equation : Taylor series method , Euler's method, Modified Euler method Runge's method RungeKutta method ,. Numerical solution of partial differential Equations : Classification of P.D.E. of the second order Elliptic equations , solution of Laplace equation , solution of poisson's Equation, solution of elliptic equations by Relaxation method parabolic equations ,

UNIT – V

Programming in ANSI 'C' language: Overview of 'C', Constants, Variables, Data types, Operators and Expression, Decision making and Branching, Decision making and looping, Arrays, Programs in C or C++ language.

Name of Text Books:

1. JAIN & IYNGAR Numerical Methods for Scientific and Engineering Computations.
2. RAO G.S. Numerical Anlysis.
3. Grewal B S Numerical Methods In Engineering and Science.
4. Das K K Advance Engineering Methods.
5. Rajaraman V Computer Oriented Numerical Methods
6. E Balagurusamy-Programming in ANSI 'C'

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SYLLABUS (SEMESTER-IV)

Subject Code: **CE4TPC04**

Subject: Surveying-II

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT 1: Tacheometery: Definitions, Principles of stadia systems. Instrument constants, Substance and Tangential Systems. Construction and use of Reduction Tacheometers.

UNIT 2: Triangulation::Principle and classification of Triangulation System, Triangulation chains, Strength of Figures, Station marks and Signals, Satellite station, Intersected and Resected points, field work-Reconnaissance, Intervisibility of station, Angular measurement, Base line measurement and its extension.

UNIT 3: Adjustment Computations: Weighting of observations. Treatment of random errors, probability equation, Normal law of error, Most Probable Value, Propagation of errors and variances. Most probable value, Principle of Least square, Observations and correlative Normal Equations. Adjustment triangulation figures and level nets.

UNIT 4: Photographic surveying: Photo theodolite, principle of the method of terrestrial photogrammetry, stereo Photogrammetry.Aerial surveying; Aerial surveying, scale and distortion of the vertical and tilted photograph, comparison between air photograph and map.

UNIT 5: Hydrographic surveying: Introduction, shore line survey, soundings methods, gauges, equipment required for hydrographic surveying.EDM : Principle, Type, Use

TEXT BOOKS:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)

Surveying (Vol. I & II) – Kanetkar T.P. (Pune VidyarthiGrihaPrakashan, Pune)

REFERENCE BOOKS:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)
Surveying (Vol. I & II) – Kanetkar (Pune VidyarthiGrihaPrakashan, Pune)
Surveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)
Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)
Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)
Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)
Borden D. Dent, Jeffrey Troguson, Thomas W. Hodler, Cartography: Thematic Map Design, McGraw-Hill Higher Education, 2008.
Gopi, Advanced Surveying: Total Station, GIS and Remote Sensing, Pearson Education India, 2007.
Hoffman.B, H.Lichtenegga and J.Collins, Global Positioning System - Theory and Practice, Springer -Verlag Publishers, 2001.
Punmia B. C, Ashok K. Jain, Arun K. Jain, Higher Surveying, Laxmi Publications, 2005.
Engg Surveying Technology – Kennie, T.J.M. and Petrie G. (Blackie & Sons Pvt.Ltd.,London, 1990)
Solving Problems in Surveying – Bannister A. and Baker, R. (Longman Scientific Technical)

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SYLLABUS **(SEMESTER-IV)**

Subject Code: **CE4TPC05**

Subject: Structural Analysis-I

CREDITS: 4			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	1	-	10	20	10	40	60

UNIT-I: Principle of superposition, virtual work principle, Maxwell reciprocal theorem, deflection of beams using conjugate beam method. Deflection of beams and truss using energy method (Castigliano theorem), Analysis of plane truss using tension coefficient method (determinate),

UNIT-II:Three-hinged Arches: Bending Moment, Shear force, axial force for three-hinged arches, Analysis of Suspension bridge without stiffening girders.

UNIT-III: Influence Lines: Basic concept of moving load and influence line; influence lines for reactions, Shearing for.es and bending moments for determinate beams; absolute maximum shearing force and bending moment.

UNIT-IV: Influence lines for three-hinged arches and stresses in simply supported plane determinate trusses

UNIT-V: Static and kinematic indeterminacy of structure, Method of structural analysis, Analysis of fixed beam, continuous beam using Theorem of three moments Effect of yielding of supports.

REFERENCE BOOK:

Elementary structural Analysis by A.K. Jain

Advanced Structural Analysis by A. K. Jain

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4TPC06

Subject: Fluid Mechanics-II

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT 1: Turbulent flow in pipe: Nature of turbulence, free and wall turbulence, turbulent flow in pipes, equation for velocity distribution over smooth and rough surfaces, Colebrook-White equation, Moody's diagram, Explicit equation for friction factors.

UNIT 2: Boundary layer Analysis: Boundary layer thickness, boundary layer over a flat plate, laminar boundary layer, turbulent boundary layer, and laminar sub layer, Application of momentum equation, local and average friction coefficient. Fluid flow past submerged bodies. Drag and lift, drag on sphere and cylinder Magnus effect.

UNIT 3:Non-uniform flow in open channel: Specific energy, critical flow, analysis of flow over hump and transition, equation of gradually varied flow, hydraulic jump and evaluation of its elements in rectangular channel.

UNIT 4: Compressibility effect in pipe flow: Transmission of pressure waves in rigid and elastic pipes, water hammer Dimensional analysis and Hydraulic similitude.Dimensional analysis, Buckingham's theorem, important dimensionless numbers and their significances, geometric, kinematics and dynamic similarity, model study.

UNIT 5: Hydraulic Machines: Turbines: Classification of turbines, draft tube, specific speed, unit quantities, and characteristics curves of turbines, and governing of turbine. Pump: Introduction, Centrifugal pumps, efficiencies, specific speed, cavitations, slip, percentage slip

NAME OF TEXT BOOKS:

Fluid Mechanics and Machines – Dr. A.K. Jain (Khanna Publications)

Fluid Mechanics and Machines – Dr. R.K. Bansal (Laxmi Publications)

Fluid Mechanics – Dr. P.N. Modi (Standard Book House)

Mechanics of Fluid – Irving H. Shames (McGraw Hill)

Introduction to Fluid Mechanics – James A. Fay (Prentice Hall India)

NAME OF REFERENCE BOOKS:

Fluid Machines – Dr.JagdishLal (Metropolitan Book Company Private Ltd.)

Fluid Machines – John P. Douglas (Pearson Publication)

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4LPC03

Subject: Civil Engineering Drawing

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

Name of drawing plates

1. Graphical Symbols: Doors, Windows, Drains, Pipes, Sanitary, Plumbing, Alphabetical, Fitment, Electrical fitting symbols
2. To draw the foundation details of internal walls of load bearing structure showing all detail.
3. To draw the foundation details of external walls of load bearing structure showing all detail.
4. To draw the single line plan of a single storey residential building.
5. To draw the doble line plan, elevation and section of single story residential building.
6. To draw the single line plan of a primary school building.
7. To draw the single line plan of a primary health centre building.
8. To draw the doble line plan, elevation and section of a primary health centre building.
9. To draw section and elevation of flush shutter, paneled shutter doors and windows.
10. To draw section and elevation of fully glazed, half glazed, half glazed and half paneled doors and windows.
11. To draw king post truss showing all detail.
12. To draw Queen post truss showing all detail.
13. To draw the two point perspective view of simple blocks.
14. To draw the two point perspective view of stepped blocks.

Recommended Books:

A course in Civil Engineering Drawing – V.B. Sikka (Katson Technical Publications)

Civil Engineering Drawing – Shah, Kala and Patki (Tata McGraw Hill)

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4LPC03

Subject: Surveying-II Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

Name of surveying field work

1. Find the plane table instrument station using Resection method (Two point problem)
2. Find the plane table instrument station using Resection method (Three point problem)
3. Determination of Tacheometric constants.
4. Determination of elevation and height by tangential method when both angles are angles of elevation.
5. Determination of elevation and distance when line of sight inclined upward.
6. Determination of elevation and distance when line of sight inclined downward.
7. To perform the experiment for reduction to centre from different positions of a satellite station when: (i) Satellite station in north position, (ii) Satellite station in left position.
8. To perform the experiment for reduction to centre from different positions of a satellite station when: (i) Satellite station in south position, (ii) Satellite station in right position.
9. To find the most probable value of angle for combined triangle by method of difference.
10. To find the most probable value of triangles of a quadrilateral shapes by method ofcorrelates.
11. Adjustment of two connected triangles.
12. Adjustment of quadrilateral by method of least square.
13. Adjustment of geodetic triangles with central station by method of least square.
14. Study of Total Station

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CBCS

SYLLABUS (SEMESTER-IV)

Subject Code: CE4TBS06

Subject: Numerical Analysis & Computer Applications

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	0	-	10	20	10	40	60

UNIT – I Approximations and Errors in Computation: Errors and their analysis, Types of errors Curve fitting : Method of Least squares , fitting of a straight line , fitting of an exponential cures , polynomial fit : Non linear Regression (second degree parabola) ; Least Square Approximation , Method of moments.

UNIT – II Numerical Solution of Algebraic and Transcendental Equations: Graphical method bisection Method, Secant Method ,Regulfalsi Method, Newton Raphson Method, Iteration Method Solution of a system of simultaneous linear algebraic Equations Direct method: Gauss elimination Method, Gauss Jordan method, Iterative methods .Jacobi Iterative Method, Gauss Seidel Iterative method.

UNIT – III The Calculus of Finite Differences: Finite differences, Difference formula, operators and relation between operators. Inverse Operator, Interpolation with equal intervals: - Newton's forward and backward interpolation formula. Central difference interpolation formula:-gauss's forward and backward interpolation formula, Sterling's formula Bessel's formula, Lap lace – Everett is formula, choice of interpolation formula. Interpolation with Unequal intervals: - Lagrange's interpolation Newton's difference formula, inverse interpolation,

UNIT –IV Numerical Differentiation and Integration: - Numerical Differentiation Newton's forward and Backward difference interpolation formula. Maxima and Minima of a Tabulated function, Numerical Integration :- Newton-cote's quardrative formula Trapezoidol rule , simpson is (1/3)rd and (3/8) th rule , Boole's rule, weddle rule , Difference Equations -: Definition ,order and degree of a diference equation ., Linear difference equations, Difference equations reducible to Linear form . simultaneous difference equations with constant coefficients

UNIT – V Numerical solution of ordinary differential equation : Taylor series method , Picard's Method , Euler's method, Modified Euler method Runge's method RungeKutta method ,. Numerical solution of partial differential Equations : Classification of P.D.E. of the second order Elliptic equations , solution of Laplace equation , solution of poisson's Equation, solution of elliptic equations by Relaxation method parabolic equations ,

Name of Text Books:

1. JAIN & IYNGAR Numerical Methods for Scientific and Engineering Computations.
2. RAO G.S. Numerical Anlysis.
3. Grewal B S Numerical Methods In Engineering and Science.
4. Das K K Advance Engineering Methods.
5. Rajaraman V Computer Oriented Numerical Methods

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TPC01

Subject: Fluid Mechanics-I

CREDITS: 3			SESSIONAL - TA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT 1: Introduction: Fluid, physical properties of fluids Ideal and real fluid, Newtonian and Non-Newtonian Fluid Fluid Statics: Pressure density height relationship, pressure measurement by Manometers, Pressure on plane and curved surfaces, centre of pressure, buoyancy, stability of immersed and floating bodies, metacentric height.

UNIT 2:Kinematics of fluid flow : Steady and unsteady flow, uniform and non-uniform flow, laminar and turbulent flow, one, two and three dimensional flow, streamlines and path lines, rotational and irrotational flow, continuity equation, three dimensional continuity equation. velocity potential and stream function.

UNIT 3: Dynamics of fluid flow: Euler's equation of motion along a streamline and its integration, Bernoulli's equation and its applications – Pitot tube, Venturimeter, orificemeter, problems related to application of momentum equations.

UNIT 4:Flow in Pipes: Major and minor losses in pipe lines, loss due to sudden contraction & expansion, Pipes in series and parallel Flow in open Channel: Comparison between open channel and pipe flow, definition of uniform and non-uniform flow, Chezy's and Manning's Formula, Hydraulically efficient channel section of rectangular, trapezoidal.

UNIT 5: Flow through mouthpieces and orifices: Hydraulic coefficients of orifice, flow through large rectangular orifice, mouthpieces, Borda's mouthpieces. Notches and Weirs: Rectangular, triangular and trapezoidal notches and weir, cippoletti and broad crested weir.

NAME OF TEXT BOOKS:

Fluid Mechanics and Machines – Dr. A.K. Jain (Khanna Publications)
Fluid Mechanics and Machines – Dr. R.K. Bansal (Laxmi Publications)
Fluid Mechanics & Hydraulic Machines – Dr.P.N.Modi&S.M.Seth,(Narosa Publishing House)

NAME OF REFERENCE BOOKS:

Mechanics of Fluid – Irving H. Shames (McGraw Hill)
Introduction to Fluid Mechanics – James A. Fay (Prentice Hall India)
Fluid Mechanics – R.J. Garde (New Age International Publication)
Fluid Mechanics – Streeter V.L. & Wylie E.B. (Tata McGraw Hills)
Fluid Mechanics – John F Dougles (Pearson Publication)
Introduction to Fluid Mechanics Fox, R.W. and McDonald, A.T., John Wiley & Sons.
Fluid Mechanics", Streeter, V.L. and Benjamin, W.E., "McGraw-Hill.
Fluid Mechanics and Fluid Mechanics Som, S.K. and Biswas, G.,Tata McGraw Hill.
Introduction to Fluid Mechanics, Fox, R. W. and A. T. McDonald, 6th ed., John Wiley, New York, (2004)

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TES05

Subject: Strength of Materials

CREDITS: 4			SESSIONAL - TA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	1	-	10	20	10	40	60

UNIT 1: Simple Stresses -Strain and compound stresses: Types of stresses and strains, Mechanicals properties, Hooke's law, stress– strain curve for mild & Cast iron, hardness, Impact strength, Poisson's ratio, Relation between the elastic moduli & Poisson's ratio, Bars subjected to varying loads, Temperature stresses in composite bars, Elongation of bars of constant and varying sections. Stress at a point. Components of stress in rectangular coordinates, stresses on an inclined plane, Principal stresses & principle plane, Mohr's circle of stresses.

UNIT : Shear Force - Bending Moment and Bending Stress: Shear Force & Bending Moment diagrams in statically determinate beams loaded with different load combination, Relationship between Load intensity- Shear Force - Bending Moment, Thrust diagram, Point of contraflexure, loading diagram & Bending moment diagram from shear force diagram, beam with internal hinge.

UNIT 3: Shear Stresses in Beams and Slope-Deflections of Beams: Derivation of Shear Stress formula, assumptions, Shear stresses in symmetrical elastic beam with different sections. Derivation of differential equation for deflection, Slope & Deflection of Beams by Double integration method, Macaulay's method & Moment area method. Propped cantilever.

UNIT 4: Torsion and Columns: Equation of Pure Torsion, Assumptions, Power transmitted, Stiffness of Shafts, Comparison of Solid & Hollow shaft, Strain energy in Torsion. Stable and unstable equilibrium, Short columns, Euler's formula for long columns, Equivalent length, Limitation of Euler's formula, Rankine's formula.

UNIT 5: Thin -Thick Cyl;inders-Spheres and Rivet-welded Connection: Stresses in Thin Cylinders, Changes in Dimensions of Cylinder, Rivetted Cylinders, Thin Spherical Shells. Thick Cylinders, Lame's equation. Riveted Joints, Method of riveting, Types of joints, assumptions made in analysis of riveted joints, pitch of Rivets, Failure of a Riveted joint, Strength of a riveted joint, Efficiency of a Joint, Design of Riveted joints for axial load. Welded connection, Types of joints, strength of joints, size of weld, comparison of welded & Riveted joints.

TEXT BOOKS: Strength of Materials – R.K. Rajput (S. Chand & Co.)

NAME OF REFERENCE BOOKS:

Mechanics of Structures (Vol. – I) – Junarkar (Charotar Publications)
Strength of Materials – Timoshenko, S. & Gere (CBS Publishers)
Introductions to Solid Mechanics –Shames &Pitarresi (Prentice Hall of India)
Engineering Mechanics of Solid – Popov (Pearson Publication)
Strength of Materials–S. Ramamurtham (DhanpatRai Publications)
Strength of Materials (Part-I) – Timoshenko (CBS Pubishers)

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TBS05

Subject: Engineering Mathematics-III

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT-I Functions of a complex variable: Complex variable, function of complex variable, limit, continuity, and differentiability, of a function of a complex variable. Analytic functions, Cauchy- Riemann equations, Orthogonal curves, harmonic functions, conformal mapping, bilinear transformation (Mobius transformation) Cauchy integral theorem, Cauchy integral formula, Cauchy's inequality Taylor theorem, Laurent's theorem.

UNIT-II Fourier series and Fourier transform: Periodic function, Fourier series, Dirichlet's conditions for a Fourier series. Advantages of Fourier series and determination of Fourier coefficients, Fourier series of function of periods 2π, change of interval, Even Odd functions, Half range sine and cosine series, practical harmonic analysis, Fourier transformation, Fourier sine and cosine transform , properties of Fourier transform.

UNIT-III Laplace transformation: Laplace transformation, properties of Laplace transformation, first shift theorem,Laplace transform of the derivative of f(t), multiplication and division by t. Unit step function: Laplace transformation of unit function, second shifting theorem, Laplace transform of function and periodic function. Inverse Laplace transformation Multiplication by s, division by s, first shifting property, second shifting property, inverse Laplace transform of derivatives, solution of differential equations by Laplace transform

UNIT-IV Correlation& Regression : Scatter diagram , Linear Correlation , Measures of Correlation . Karl Pearson's Coefficient of correlation , Limits for correlation coefficients, Coefficient of correlation for bivariate frequency distribution , Rank correlation , Linear Regression, Equations to the line of Regression. Regressioncoefficient. Angle between two lines of Regression.

UNIT –V Theoretical Distributions: Discrete and Continuous probability distribution's .Mathematical expectation, Mean and Variance, Moments, Moments generating function, probability distribution ,Binomial, Poisson and Normal distribution ,Test of siginificance based on chi-square , T,F, and Z distribution, degree of freedom , conditions for applying X2 (chi-square) test , student's test.

TEXT BOOKS:

1) Prasad C "Advanced Engineering mathematics", 2) Pati T "Functions of complex variables", 3) Dass H.K. " Advanced Engineering mathematics", 4) Ray M. " Mathematics statistics", 5) Higher Engg. Mathematics by Dr. B.S. Grewal– Khanna Publishers., 6) Advanced Engg. Mathematics by Erwin Kreyszig – John Wiley & Sons, 7) Advanced Engg.Mathematics by R.K. Jain and S.R.K. Iyengar – Narosa Publishing House., 8) Applied Mathematics by P.N.Wartikar& J.N. Wartikar. Vol- II– Pune VidyarthiGrihaPrakashan,Pune., 9) Applied Mathematics for Engineers & Physicists by Louis A. Pipes- TMH

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TES06

Subject: Building Materials &Construction

CREDITS: 4			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	0	0	10	20	10	40	60

UNIT I: Stones, Bricks, Tiles, Timber; Properties, Classification&Uses
UNIT 2: Miscellaneous Engineering Materials; Ceramics & glass; Plastics & Rubber; Paints, Varnishes and distempers; Composite materials; Adhesives; Thermal, Electrical & Sound Insulators.
UNIT III: Cement, Aggregate, Concrete and Steel; classification, properties & uses.
UNIT-IV: Foundations, Masonry, Arches & Lintels; Classification, Requirements & Uses.
UNIT-V: Shoring, Underpinning, Formwork, Advanced construction materials & Techniques.

NAME OF TEXT BOOKS:

Building Materials – S.K. Duggal (New Age Publication)
Building Materials – S. C. Rangwala (Charotar Publication)
Building Construction by S.G. Rangwala, Charter Publishing House, Anand, India.
Building Construction by Sushil Kumar, Standard Publ. and Distributors, New Delhi
Building Construction by Punmia B.C., Lakshmi Publications, New Delhi.
Advanced Building Materials and Construction by Mohan Rai and Jai Sing, CBRI Publications, Roorkee
Concrete Technology – A.M. Neville & J.J. Brooks (Pearson Education)
Concrete Technology – M.S. Shetty (S. Chand & Co.)
Engineering Materials – Surendra Singh (Laxmi Publication)
Construction Engineering and Management – S. Seetharaman (UmeshPublication)
Building Materials – Gurucharan Singh (Standard Publishers, Delhi)

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SYLLABUS (SEMESTER-III)

Subject Code: CE3TPC02

Subject: Surveying-I

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT-I: INTRODUCTION AND CHAIN SURVEYING: Definition - Principles - Classification - Fields and office work - Scales - Conventional signs – Survey instruments, their care and adjustment - Ranging and chaining - Reciprocal ranging - Setting perpendiculars - well-conditioned triangles.
COMPASS SURVEYING: Prismatic compass - Surveyor's compass - Bearing - Systems and conversions - Local attraction – Magnetic declination - Dip
UNIT-II: Different methods of determining elevations: Spirit, Trignometric and Barometric methods Spirit leveling-Definitions of terms, Principle, Temporary and permanent adjustment of levels. Sensitivity of bubble tube, Auto & Dumpy levels, Levelling staff, Methods of spirit leveling Booking and reduction of field notes. Types of leveling:- Reciprocal, Profile, Differential, Precise leveling, Plotting of profiles Correction:- Curvature and refraction.
CONTOURING; Direct and Indirect methods of contouring. Interpolation of contours, Drawing section from contour map, Application and Modern methods of depicting relief on a Map.
UNIT - III: THEODOLITE AND TRAVERSING: Vernier theodolites, Temporary and permanent adjustments, Requirements of nonadjustable parts, Measurement of horizontal angle by repetition and reiteration method, Measurement of vertical angles.
AREA AND VOLUMES; Computation of area and volume by different mathematical methods.
UNIT - IV: PLANE TABLE SURVEYING: Principles, Advantages and disadvantages, Plane table equipment, Use of Telescopic Alidade, Different methods of Plane Table Surveying, Resection-Two and Three point problems. Fields work in Plane Table Surveying.
UNIT-V: CURVES: Classification of curves; Elements of Simple, Compound, Reverse and Transition curves, Method of setting out Simple and Compound curves. Special field problems.
NAME OF TEXT BOOKS:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)
Surveying (Vol. I & II) – Kanetkar (Pune VidyarthiGrihaPrakashan, Pune)
urveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)
Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)
Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)
Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)

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SYLLABUS (SEMESTER-III)

Subject Code: CE3LPC01

Subject: Surveying-I Lab

CREDITS: 2			SESSIONAL - TA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

List of experiments

1. Linear measurement & offsetting using metric chain.
2. Determination of the area of the given field by cross staff survey.
3. Compass open traversing using prismatic compass and elimination of local attraction.
4. Compass closed traversing using prismatic compass and elimination of local attraction by bowditch method.
5. To find the difference in elevation between the two non intervisible stations by the method of differential levelling.
6. To draw longitudinal sectional profile of the road by the method of profile levelling.
7. To draw cross-sectional profile of the road by the method of profile levelling.
8. Contour and its plotting by grid method.
9. Measurement of horizontal angle by repetition method.
10. Measurement of horizontal angle by reiteration method.
11. Traversing of the given area by radiation method using plane table survey.
12. Traversing of the given area by intersection method using plane table.

Text Book:

Surveying and Leveling. N.N.Basak,1st Edition ,Tata McGraw Hill

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)

Surveying (Vol. I & II) – Kanetkar (Pune VidyarthiGrihaPrakashan, Pune)

NAME OF REFERENCE BOOKS:

Surveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)

Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)

Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)

Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)

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SYLLABUS (SEMESTER-III)

Subject Code: CE3LPC02

Subject: Fluid Mechanics Lab

CREDITS: 2			SESSIONAL - IA			ESE*
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

List of experiments

1. To calculate the total energy at different points and plot the graph between total energy vs. distance. (Verification of Bernoulli's equation)
2. To determine the Meta centric height with angle of ship model.
3. To determine the co-efficient of Discharge Cd for Venturimeter
4. To determine the co-efficient of Discharge Cd forOrificemeter.
5. To determine the co-efficient of discharge and the co-efficient of velocity for Orifice.
6. To determine the co-efficient of discharge and the co-efficient of velocity for Mouthpiece.
7. To determine the coefficient of discharge Cd of Rectangular Notch.
8. To determine the coefficient of discharge Cd V Notch - 45^{o}
9. To determine the coefficient of discharge Cd V Notch - 60^{o}
10. To determine the friction factor for Darcy-Weisbach equation
11. Experimental determination of critical velocity in pipe.
12. To determine the coefficient of impact for vanes
13. To find the co-efficient of pitot tube
14. To plot velocity profile across the cross section of pipe
15. To determine the Reynold's Number in pipe
16. Calibration of rectangular sharp cornered weir and to study the pressure distribution on the upstream face of the weir.
17. Calibration of rectangular streamlined weir and to study the pressure distribution on the upstream face of the weir

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SYLLABUS (SEMESTER-III)

Subject Code: CE3LES05

Subject: Material Testing Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	-
-	-	3	30	-	30	20

List of experiments

Testing of cement

1. Normal Consistency, Fineness of Cement, Setting times of Cement
2. Specific Gravity of Cement
3. Soundness of Cement
4. Compressive strength of cement

Testing of aggregate

5. Fineness modulus of Fine and Coarse aggregate
6. Bulk density of aggregate
7. Specific Gravity and Water Absorption of Aggregate
8. Bulking of Sand

Testing of bricks

9. Compressive strength, Water Absorption &Efflorescence of Bricks

Testing of concrete

10. Workability of Concrete
11. Compressive strength
12. Modulus of Elasticity
13. Tensile Strength of Concrete
14. NDT Test of Concrete

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4THS03

Subject: Engineering Economics

CREDITS: 3			SESSIONAL - TA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

Unit 1: Basic Concepts and Definitions, Methodology of Economics, Demand and Supply – elasticity,Theory of the Firm and Market Structure, Price and output determinations in different types of market

Unit 2: Public Sector Economics –Welfare economics, Central and commercial marks and their functions, Industrial policies, theory of localization, weber &surgent Florence theory, investment analysis-NPV, ROI, IRR, Payback period, SWOT analysis.

Unit 3: Monetary and Fiscal Policy;Tools, impact on the economy , Inflation, Business Cycle, Cash Flow-2,3,4 Model.

Unit 4: Business Forecasting – Elementary techniques., Cost and Revenue Analysis, Capital Budget, Break Even Analysis.

Unit 5: Indian economy; Urbanization, Unemployment–Poverty, Regional Disparities, Unorganized Sectors- Roll of Plans, Reforms-Post Independent period.

Text/Reference Books:

1. Mankiw Gregory N.(2002), Principles of Economics, Thompson Asia
2. V. Mote, S. Paul, G. Gupta(2004), Managerial Economics, Tata McGraw Hill
3. Misra, S.K. and Puri (2009), Indian Economy, Himalaya
4. PareekSaroj (2003), Textbook of Business Economics, Sunrise Publishers

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4TPC03

Subject: Building Planning & Drawing

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	IA	TOTAL	
3	-	-	10	20	10	40	60

Part-A (60% weight age)

UNIT – I Principles of building Planning;

UNIT – II BUILDING BYELAWS AND REGULATIONS: Introduction – Terminology – Objectives of building byelaws – Floor Area Ratio (FAR) – Floor Space Index (FSI) – Principles underlying building byelaws – classification of buildings – Open space requirements – built up area limitations – Height of Buildings – Wall thickness – lighting and ventilation requirement. UNIT – III RESIDENTIAL & PUBLIC BUILDINGS: Minimum standards for various parts of residential and public buildings – requirements of different rooms and their grouping – characteristics of various types of residential buildings.

UNIT – IV SIGN CONVENTIONS AND BONDS: Brick, Stone, Plaster, Sand filling, Concrete, Glass, Steel, Cast iron, Copper alloys, Aluminum alloys etc., Lead, Zinc, tin, white lead etc., Earth, Rock, Timber and Marble. English bond & Flemish bond odd & even courses for one, one and half, two and two and half brick walls in thickness at the junction of a corner.

Part-B (40% weight age)

UNIT – V BUILDING DRAWING: Preparation of plan, elevation and section of residential buildings-single storey (load bearing structures), double storey (R.C.C.Framed structure) by using principles of planning and local building bye- laws. For this unit students have to draw the problem on the drawing sheet in the examination.

Text books: 1. Building planning designing and scheduling, (5th Edition) by Gurucharan Singh and Jagadish Sing, Standard Publications Distributers, Delhi, 2010.

2. Building planning and drawing, (3rdedition) by Kumara Swami N., Anand Charotar Publishing House Pvt Ltd, 2010.

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CBCS

SYLLABUS (SEMESTER-IV)

Subject Code: CE4TBS06

Subject: Numerical Analysis & Computer Applications

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	0	-	10	20	10	40	60

UNIT – I Approximations and Errors in Computation: Errors and their analysis, Types of errors Curve fitting : Method of Least squares , fitting of a straight line , polynomial fit : Non linear Regression (second degree parabola), Numerical Solution of Algebraic and Transcendental Equations: Secant Method ,Regulafalsi Method, Newton Raphson Method, Solution of a system of simultaneous linear algebraic Equations Direct method: Gauss elimination Method, Gauss Jordan method, Iterative methods .Jacobi Iterative Method, Gauss Seidel Iterative method.

UNIT – II The Calculus of Finite Differences: Finite differences, Difference formula, operators and relation between operators. Inverse Operator, Interpolation with equal intervals: - Newton's forward and backward interpolation formula. Interpolation with Unequal intervals: - Lagrange's interpolation Newton's difference formula, inverse interpolation,

UNIT –III Numerical Differentiation and Integration: - Numerical Differentiation Newton's forward and Backward difference interpolation formula. Maxima and Minima of a Tabulated function, Numerical Integration :- Trapezoidol rule , simpson is (1/3)rd and (3/8) th rule , Boole's rule, weddle rule , Difference Equations -: Definition ,order and degree of a diference equation ., Linear difference equations, Difference equations reducible to Linear form . simultaneous difference equations with constant coefficients

UNIT – IV Numerical solution of ordinary differential equation : Taylor series method , Euler's method, Modified Euler method Runge's method RungeKutta method ,. Numerical solution of partial differential Equations : Classification of P.D.E. of the second order Elliptic equations , solution of Laplace equation , solution of poisson's Equation, solution of elliptic equations by Relaxation method parabolic equations ,

UNIT – V

Programming in ANSI 'C' language: Overview of 'C', Constants, Variables, Data types, Operators and Expression, Decision making and Branching, Decision making and looping, Arrays, Programs in C or C++ language.

Name of Text Books:

1. JAIN & IYNGAR Numerical Methods for Scientific and Engineering Computations.
2. RAO G.S. Numerical Anlysis.
3. Grewal B S Numerical Methods In Engineering and Science.
4. Das K K Advance Engineering Methods.
5. Rajaraman V Computer Oriented Numerical Methods
6. E Balagurusamy-Programming in ANSI 'C'

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4TPC04

Subject: Surveying-II

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT 1: Tacheometery: Definitions, Principles of stadia systems. Instrument constants, Substance and Tangential Systems. Construction and use of Reduction Tacheometers.

UNIT 2: Triangulation::Principle and classification of Triangulation System, Triangulation chains, Strength of Figures, Station marks and Signals, Satellite station, intersected and Resected points, field work- Reconnaissance, Intervisibility of station, Angular measurement, Base line measurement and its extension.

UNIT 3: Adjustment Computations: Weighting of observations. Treatment of random errors, probability equation, Normal law of error, Most Probable Value, Propagation of errors and variances. Most probable value, Principle of Least square, Observations and correlative Normal Equations. Adjustment triangulation figures and level nets.

UNIT 4: Photographic surveying: Photo theodolite, principle of the method of terrestrial photogrammetry, stereo Photogrammetry.Aerial surveying; Aerial surveying, scale and distortion of the vertical and tilted photograph, comparison between air photograph and map.

UNIT 5: Hydrographic surveying: Introduction, shore line survey, soundings methods, gauges, equipment required for hydrographic surveying.EDM : Principle, Type, Use

TEXT BOOKS:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)

Surveying (Vol. I & II) – Kanetkar T.P. (Pune VidyarthiGrihaPrakashan, Pune)

REFERENCE BOOKS:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)
Surveying (Vol. I & II) – Kanetkar (Pune VidyarthiGrihaPrakashan, Pune)
Surveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)
Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)
Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)
Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)
Borden D. Dent, Jeffrey Troguson, Thomas W. Hodler, Cartography: Thematic Map Design, McGraw-Hill Higher Education, 2008.
Gopi, Advanced Surveying: Total Station, GIS and Remote Sensing, Pearson Education India, 2007.
Hoffman.B, H.Lichtenegga and J.Collins, Global Positioning System - Theory and Practice, Springer -Verlag Publishers, 2001.
Punmia B. C, Ashok K. Jain, Arun K. Jain, Higher Surveying, Laxmi Publications, 2005.
Engg Surveying Technology – Kennie, T.J.M. and Petrie G. (Blackie & Sons Pvt.Ltd.,London, 1990)
Solving Problems in Surveying – Bannister A. and Baker, R. (Longman Scientific Technical)

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4TPC05

Subject: Structural Analysis-I

CREDITS: 4			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	1	-	10	20	10	40	60

UNIT-I: Principle of superposition, virtual work principle, Maxwell reciprocal theorem, deflection of beams using conjugate beam method. Deflection of beams and truss using energy method (Castigliano theorem), Analysis of plane truss using tension coefficient method (determinate),

UNIT-II:Three-hinged Arches: Bending Moment, Shear force, axial force for three-hinged arches, Analysis of Suspension bridge without stiffening girders.

UNIT-III: Influence Lines: Basic concept of moving load and influence line; influence lines for reactions, Shearing for.es and bending moments for determinate beams; absolute maximum shearing force and bending moment.

UNIT-IV: Influence lines for three-hinged arches and stresses in simply supported plane determinate trusses

UNIT-V: Static and kinematic indeterminacy of structure, Method of structural analysis, Analysis of fixed beam, continuous beam using Theorem of three moments Effect of yielding of supports.

REFERENCE BOOK:

Elementary structural Analysis by A.K. Jain

Advanced Structural Analysis by A. K. Jain

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4TPC06

Subject: Fluid Mechanics-II

CREDITS: 3			SESSIONAL - IA				ESE
L	T	P	CT	MSE	TA	TOTAL	
3	-	-	10	20	10	40	60

UNIT 1: Turbulent flow in pipe: Nature of turbulence, free and wall turbulence, turbulent flow in pipes, equation for velocity distribution over smooth and rough surfaces, Colebrook-White equation, Moody's diagram, Explicit equation for friction factors.

UNIT 2: Boundary layer Analysis: Boundary layer thickness, boundary layer over a flat plate, laminar boundary layer, turbulent boundary layer, and laminar sub layer, Application of momentum equation, local and average friction coefficient. Fluid flow past submerged bodies. Drag and lift, drag on sphere and cylinder Magnus effect.

UNIT 3:Non-uniform flow in open channel: Specific energy, critical flow, analysis of flow over hump and transition, equation of gradually varied flow, hydraulic jump and evaluation of its elements in rectangular channel.

UNIT 4: Compressibility effect in pipe flow: Transmission of pressure waves in rigid and elastic pipes, water hammer Dimensional analysis and Hydraulic similitude.Dimensional analysis, Buckingham's theorem, important dimensionless numbers and their significances, geometric, kinematics and dynamic similarity, model study.

UNIT 5: Hydraulic Machines: Turbines: Classification of turbines, draft tube, specific speed, unit quantities, and characteristics curves of turbines, and governing of turbine. Pump: Introduction, Centrifugal pumps, efficiencies, specific speed, cavitations, slip, percentage slip

NAME OF TEXT BOOKS:

Fluid Mechanics and Machines – Dr. A.K. Jain (Khanna Publications)

Fluid Mechanics and Machines – Dr. R.K. Bansal (Laxmi Publications)

Fluid Mechanics – Dr. P.N. Modi (Standard Book House)

Mechanics of Fluid – Irving H. Shames (McGraw Hill)

Introduction to Fluid Mechanics – James A. Fay (Prentice Hall India)

NAME OF REFERENCE BOOKS:

Fluid Machines – Dr.JagdishLal (Metropolitan Book Company Private Ltd.)

Fluid Machines – John P. Douglas (Pearson Publication)

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SYLLABUS (SEMESTER-IV)

Subject Code: CE4LPC03

Subject: Civil Engineering Drawing

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

Name of drawing plates

1. Graphical Symbols: Doors, Windows, Drains, Pipes, Sanitary, Plumbing, Alphabetical, Fitment, Electrical fitting symbols
2. To draw the foundation details of internal walls of load bearing structure showing all detail.
3. To draw the foundation details of external walls of load bearing structure showing all detail.
4. To draw the single line plan of a single storey residential building.
5. To draw the doble line plan, elevation and section of single story residential building.
6. To draw the single line plan of a primary school building.
7. To draw the single line plan of a primary health centre building.
8. To draw the doble line plan, elevation and section of a primary health centre building.
9. To draw section and elevation of flush shutter, paneled shutter doors and windows.
10. To draw section and elevation of fully glazed, half glazed, half glazed and half paneled doors and windows.
11. To draw king post truss showing all detail.
12. To draw Queen post truss showing all detail.
13. To draw the two point perspective view of simple blocks.
14. To draw the two point perspective view of stepped blocks.

Recommended Books:

A course in Civil Engineering Drawing – V.B. Sikka (Katson Technical Publications)
Civil Engineering Drawing – Shah, Kala and Patki (Tata McGraw Hill)

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CBCS

SYLLABUS (SEMESTER-IV)

Subject Code: CE4LPC03

Subject: Surveying-II Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

Name of surveying field work

1. Find the plane table instrument station using Resection method (Two point problem)
2. Find the plane table instrument station using Resection method (Three point problem)
3. Determination of Tacheometric constants.
4. Determination of elevation and height by tangential method when both angles are angles of elevation.
5. Determination of elevation and distance when line of sight inclined upward.
6. Determination of elevation and distance when line of sight inclined downward.
7. To perform the experiment for reduction to centre from different positions of a satellite station when: (i) Satellite station in north position, (ii) Satellite station in left position.
8. To perform the experiment for reduction to centre from different positions of a satellite station when: (i) Satellite station in south position, (ii) Satellite station in right position.
9. To find the most probable value of angle for combined triangle by method of difference.
10. To find the most probable value of triangles of a quadrilateral shapes by method ofcorrelates.
11. Adjustment of two connected triangles.
12. Adjustment of quadrilateral by method of least square.
13. Adjustment of geodetic triangles with central station by method of least square.
14. Study of Total Station

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CBCS

Subject Code: CE4LBS03

Subject: Numerical Analysis & Computer Applications Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

Programming based on C or C++ for the numerical methods given in the subject Numerical Analysis & Computer Applications (CE4LBS03)

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CBCS

Subject Code: **CE4LBS03**

Subject: Numerical Analysis & Computer Applications Lab

CREDITS: 2			SESSIONAL - IA			ESE
L	T	P	IA	MSE	TOTAL	
-	-	3	30	-	30	20

Programming based on C or C++ for the numerical methods given in the subject Numerical Analysis & Computer Applications (CE4LBS03)

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