SHRI SHANKARACHARYA TECHNICAL CAMPUS, BHILAI

(An Autonomous Institute affiliated to CSVTU, Bhilai)

SCHEME OF TEACHING AND EXAMINATION (Effective from 2020-2021 Batch)

B-Tech (Civil Engineering) Third Semester

S. No.	Board of Studies(BOS)	Courses (Subject)	CourseCode	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1.	Mathematics	Applied Mathematics-III	AM100301	2	1	-	100	20	30	150	3
2.	Civil Engg.	Introduction to Fluid Mechanics	CE101302	2	1	-	100	20	30	150	3
3.	Civil Engg.	Mechanics of Solids	CE101303	3	-	-	100	20	30	150	3
4.	Civil Engg.	Plane Surveying	CE101304	3	-	-	100	20	30	150	3
5.	Civil Engg.	Construction Materials	CE101305	3	-	-	100	20	30	150	3
6.	Civil Engg.	Fluid Mechanics Lab	CE101391	-	-	2	25	-	25	50	1
7.	Civil Engg.	Surveying Lab	CE101392	-	-	2	25	-	25	50	1
8.	Civil Engg.	Construction Material Lab	CE101393	-	-	2	25	-	25	50	1
9.	Civil Engg.	Software Lab/Mini Project – I	CE101394	-	-	2	25	-	25	50	1
10.	Civil Engg.	Health Hygiene & Yoga	CE100395	-	-	2	-	-	25	25	1
11.	IT Engg.	Cyber Laws and Ethics	IT100396	-	-	-	-	-	25	25	-
Total				**13**	**2**	**10**	**600**	**100**	**300**	**1000**	**20**

Note:

(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment

(b)The duration of end semester examination of all theory papers will be of three hours.

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SCHEME OF TEACHING AND EXAMINATION (Effective from 2020-2021 Batch)

B-Tech (Civil Engineering) Fourth Semester

S. No.	Board of Studies(BOS)	Courses (Subject)	CourseCode	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1.	Civil Engg.	Structural Analysis-I	CE101401	3	1	-	100	20	30	150	4
2.	Civil Engg.	Building Planning and Construction Drawing	CE101402	2	1	-	100	20	30	150	3
3.	Civil Engg.	Surveying And Geomatics	CE101403	3	-	-	100	20	30	150	3
4.	Civil Engg.	Hydraulic Engineering	CE101404	3	-	-	100	20	30	150	3
5.	Civil Engg.	Transportation Engineering-I	CE101405	3	-	-	100	20	30	150	3
6.	Civil Engg.	Building Drawing Lab	CE101491	-	-	2	25	-	25	50	1
7.	Civil Engg.	Surveying and Geomatics Lab	CE101492	-	-	2	25	-	25	50	1
8.	Civil Engg.	Hydraulic Lab	CE101493	-	-	2	25	-	25	50	1
9.	Civil Engg.	Engineering Geology Lab/ Mini Project – II	CE101494	-	-	2	50	-	25	75	1
10.	Chemistry	Biology for Engineers	AC100495	-	-	-	-	-	25	25	-
Total				**14**	**2**	**8**	**625**	**100**	**275**	**1000**	**20**

Note:

(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment

(b)The duration of end semester examination of all theory papers will be of three hours.

SHRI SHANKARACHARYA TECHNICAL CAMPUS BHILAI

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code: AM100301	APPLIED MATHEMATICS-III	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	25	25	150	3 Hours

Course Objectives	Course Outcomes
Course Objectives: The objective of this course is to familiarize the prospective engineers with techniques in calculus of multivariable and infinite series expansion of continuous function as well as some statistical treatment of discrete functions. More precisely, the objectives are: • To instigate a thorough knowledge of partial differential equations which arise in mathematical descriptions of situations in engineering. • To develop the tool of Fourier series for learning advanced Engineering Mathematics. • To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differential equations. • To originate a thorough study about random quantities and their description in terms of their probability. • To introduce the tools of differentiation and integration of functions of complex variable that is used in various techniques dealing engineering problems.	**On successful completion of the course, the student will be able to:** CO 1: To have a thorough knowledge of PDE which arise in mathematical descriptions of situations in Engineering. CO 2: To make the students understand that Fourier series analysis is powerful methods where the formulas are integrals and to have knowledge of expanding periodic functions that explore variety of applications of Fourier series. CO3: To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differentials equations. CO4: To study about a quantity that may take any of a given range of values that can't be predicted as it is but can be described in terms of their probability CO5: To provide a sound background of complex analysis to perform a thorough investigation of major theorems of complex analysis and to apply these ideas to a wide range of problems that include the evaluation of both complex line integrals and real integrals.

UNIT – I: PARTIAL DIFFERENTIAL EQUATION **CO-1**

Formation, Solution by direct integration method, Linear equation of first order, Homogeneous linear equation with constant coefficients, Non-homogeneous linear equations, Method of separation of variables; Equation of vibrating string (wave equation). **[8 Hrs]**

UNIT – II: FOURIER SERIES **CO-2**

Euler's formula; Functions having point of discontinuity; Change of interval; Even and Odd function; Half range series; Harmonic Analysis. **[7 Hrs]**

UNIT – III: LAPLACE TRANSFORM **CO-3**

Definition; Transform of elementary functions; Properties of Laplace transform; Inverse Laplace Transform (Method of partial fraction, Using properties and Convolution theorem); Transform of Unit step function and Periodic functions; Application to the solution of ordinary differential equations. **[7 Hrs]**

Subject Code: AM100301	APPLIED MATHEMATICS-III	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	25	25	150	3 Hours

UNIT – IV: PROBABILITY DISTRIBUTIONS **CO-4**

Random variable; Discrete and continuous probability distributions; Mathematical expectation; Mean, Variance and Moments; Moment generating functions; Probability distribution (Binomial, Poisson and Normal distributions). **[7 Hrs]**

UNIT – V: COMPLEX ANALYSIS **CO-5**

Analytic functions; Cauchy-Riemann equations and its applications to flow problems; Complex integration; Cauchy theorem (without proof), Cauchy Integral formula (without proof); Expansion of complex functions (Taylor's and Laurent's series); Cauchy Residue theorem (without proof) and its application in evaluation of real definite integrals. **[7 Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Higher Engineering Mathematics	B.S. Grewal	Khanna Publishers
2	Advanced Engineering Mathematics	H. K. Dass	S. Chand Publication
3	Advanced Engineering Mathematics	Erwin Kreyszig	John Wiley & Sons
4	Applied Engineering Mathematics	Madan Mohan Singh	BS Publications
5	Linear Algebra: A Modern Introduction	D. Poole	Brooks/Cole

Reference Books:

S. No.	Title	Authors	Publisher
1	Calculus and Analytic geometry	G. B. Thomas and R. L. Finney	Pearson, Reprint
2	Engineering Mathematics for first year	T. Veerarajan	Tata McGraw-Hill, New Delhi
3	Higher Engineering Mathematics	B. V. Ramana	Tata McGraw Hill New Delhi
4	A text book of Engineering Mathematics	N.P. Bali and Manish Goyal	Laxmi Publications

SHRI SHANKARACHARYA TECHNICAL CAMPUS BHILAI

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code: CE101302	INTRODUCTION TO FLUID MECHANICS	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
Course Objectives: • Be familiar with different fluids. • Be familiar with different fluids flow condition. • Learning different flow & losses in pipes. • Be familiar with flow in open channel & different sections.	**On successful completion of the course, the student will be able to:** CO 1**:** Apply the concept of fluid statics in different engineering problem. CO 2: Apply the principle of fluid kinematics. CO 3: Apply the energy and momentum principle. CO 4: Analyse the pipe flow and open channel flow. CO 5**:** Analyse the flow through mouthpiece, orifice, notch and weir.

UNIT – I: **CO-1**

Introduction - Fluid and continuum, 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 plan surface, centre of pressure, buoyancy, stability of immersed and floating bodies, metacentric height. **[8 Hrs]**

UNIT – II: **CO-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, streak lines and path lines, circulation and vorticity, rotational and irrotational flow, velocity potential and stream function, continuity equation. **[7 Hrs]**

UNIT – III: **CO-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, nozzles, momentum equation and its application to stationary and moving plates/vanes, pipe bends, problems related to combined application of energy and momentum equations. **[7 Hrs]**

UNIT – IV: **CO-4**

Flow in Pipes - Reynolds's experiment, experimental determination of critical velocity, transition from laminar to turbulent flow, Laminar flow through circular tubes, minor losses in pipe lines, loss due to sudden contraction, expansion, etc; Hot wire anemometer and LDA. Flow in open Channel Comparison between open channel and pipe flow, definition of uniform and non-uniform flow, uniform flow formulae, Chezy's and Manning's Formula, Hydraulically efficient channel section of rectangular and trapezoidal shape. **[7 Hrs]**

Subject Code: CE101302	INTRODUCTION TO FLUID MECHANICS	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

UNIT – V: **CO-5**

Flow through mouthpiece and orifices - Hydraulic coefficients of orifice, bell mouthed orifice, mouthpieces, Borda's mouthpiece, running free and submerged. Notches and Weirs- Rectangular, triangular and trapezoidal notches and weir, cippoletti and broad crested weir.

[7 Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1	Fluid Mechanics and Machines	Dr. R.K. Bansal	Laxmi Publications
2	Fluid Mechanics	Dr. P.N. Modi	Standard Book House
3	Fluid Mechanics and Machines	Dr. A.K. Jain	John Wiley & Sons

Reference Books:

S. No.	Title	Authors	Publisher
1	Mechanics of Fluid	Irving H. Shames	McGraw Hill
2	Introduction to Fluid Mechanics	James A. Fay	Prentice Hall India
3	Fluid Mechanics	R.J. Garde	New Age International Publication
4	Fluid Mechanics	Streeter V.L. & Wylie E.B.	Tata McGraw Hills

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code: CE101303	MECHANICS OF SOLIDS	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
The objective of this course is to familiarize the prospective engineers with different types of stresses and strains in the materials as well as bending and combined stresses in the material. More precisely, the objectives are: • To understand the basic concepts of strength of materials which is the base of structural engineering. • To know the relation between stress, strain and between different elastic constants. • To draw the bending moment and shear force diagram and to find out bending and shear stresses at any point in a cross section of the beam. • To analyze column, retaining walls and gravity dams. • To understand the concept behind unsymmetrical bending and torsion.	**On successful completion of the course, the student will be able to:** CO 1: Define and explain the basic concepts of Mechanics of Solids and to be able apply the stress-strain equations to find out stress-strain in bars. CO2: Analyze stresses and strains in a rectangular element and to find out the maximum stress in an inclined plane and its location. CO3: Draw bending moment and shear force diagram for loaded beams and to be able to find out bending and shear stresses at the cross-section of the beam. CO4: Calculate the critical load for columns and be capable of analyzing dams and retaining walls. CO5: Apply the concepts of unsymmetrical bending and torsion to solve the power transmission problems along with design of spring for shock-absorption.

UNIT – I Stress-Strain Relations: **CO-1**

Types of stresses and strains, Mechanical properties and testing of steel, Hooke's law, Uniaxial tensile test, stress – strain curve, hardness, impact, Poisson's ratio, Modulus of rigidity, Bulk modulus, Relation between the elastic constants, Thermal effects, Elongation of bars of constant and varying sections, statically indeterminate problems in tension and compression, Thin- cylindrical and spherical vessels. **[7 Hrs]**

UNIT – II Analysis of Stresses and Strains: **CO-2**

Two dimensional stress-system, Stress at a point on an inclined plane, Principal stresses and principal planes, Transformation equations, Mohr's circle for plane stress and their applications, Two dimensional Strain-system, Normal and shear strain, Strain components at a point on a plane, Transformation-equations, Principal strains. **[8 Hrs]**

UNIT – III Bending of Beams: **CO-3**

Theory of simple bending - limitations - bending stresses in beams of different cross sections, beams of two materials, shear stresses in symmetrical elastic beams transmitting both shear and bending moment. Shear force and bending moment diagrams for simply supported, overhanging and cantilever beams, relation between shear force, bending moment and intensity of loading. **[7Hrs]**

Subject Code: CE101303	MECHANICS OF SOLIDS	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

UNIT – IV Columns and Combined stresses: **CO-4**

Short columns, Eccentrically loaded short column, Kern of rectangular and circular sections, Middle third rule, Stable and unstable equilibrium, Euler's formula for long columns with different end conditions, Rankin's formula, stability of gravity dams and retaining walls. **[7 Hrs]**

UNIT–V Unsymmetrical Bending and Torsion: **CO-5**

Unsymmetrical bending - Location of neutral axis, Torsion of circular solid and hollow circular shafts - power transmission, Closed-coiled and Open-Coiled helical springs. **[7Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Strength of Materials	R.K. Rajput	S. Chand Publicatin
2	Mechanics of Materials	B.C. Punmia	Laxmi Publication

Reference Books:

S. No.	Title	Authors	Publisher
1	Mechanics of Structures (Vol-I)	Junarkar	Charotar Publications
2	Strength of Materials	Timo shenko, S. &Gere	CBS Publishers
3	Introductions to Solid Mechanics	Shames & Pitarresi	Prentice Hall of India
4	Engineering Mechanics of Solid	Popov	Pearson Publication
5	Strength of Materials	S. Ramamurtham	Dhanpat Rai Publications

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Scheme of Examination and Syllabus 2021
Second Year B. Tech. Civil Engineering

3rd semester

Subject Code: CE101304	PLANE SURVEYING	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
Course Objectives: • To introduce the principle of surveying. • To impart awareness on the various fields of surveying and types of instruments • To understand the various methods of surveying and computations. • Gather knowledge about theodolite	**On successful completion of the course, the student will be able to:** CO1: Understand various methods of surveying. CO2: Estimate distance, angle and height through different instruments. CO3: Prepare plans using Theodolite surveys. CO4: Adopt appropriate survey method for field problems. CO5: Set out simple circular curves.

UNIT – I Introduction and Basic Concepts: **CO-1**

Introduction, Objectives, classification and principles of surveying, Scales, Shrinkage of Map, Conventional symbols and Code of Signals, Surveying accessories, phases of surveying. Measurement of Distances and Directions Linear distances- Approximate methods, Direct Methods- Chains- Tapes, ranging, Tape corrections, indirect methods- optical methods. Prismatic Compass- Bearings, included angles, Local Attraction, magnetic dip and declination. **[8 Hrs]**

UNIT – II Leveling & Contouring: **CO-2**

Definition, principle: Object, Principle, Construction, Temporary and permanent adjustment of levels. Sensitivity of bubble tube, Curvature and refraction, Reciprocal leveling Barometric leveling, Study of Automatic levels.
Contouring – characteristics and uses of contours maps, Methods of contouring- Direct and Indirect. Interpolation of contours. **[7 Hrs]**

UNIT – III Thedolite and Traversing: **CO-3**

Venire and microptic theodolites, Temporary and permanent adjustments, Requirements of nonadjustable parts, Measure of horizontal and vertical angles by different methods Principle of traversing by theodolite, Field work and checks, Computation of coordinates, Source of errors, Precision of traversing, Checking and adjusting of traverses, Omitted measurements. **[7 Hrs]**

UNIT-IV Plane Table Surveys & Minor Instruments: **CO-4**

Principles, Advantages and disadvantages, Plane table equipment, Use of Telescopic Alidade and Indian Pattern tangent Clinometer, Different methods of Plane Table Surveying, Resection-Two and Three point problems. Fields work in Plane Table Surveying and contouring.
Minor Instruments : Hand level, Abney Level, clinometers, ceylon ghat tracer, Box Sexant, Pentagraph, planimeter, ediograph. **[7 Hrs]**

Subject Code: CE101304	PLAIN SURVEYING	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

UNIT – V Curves: **CO-5**

Classification of curves; Elements of Circular, Transition and Vertical curves, Theory and method of setting out Simple, Transition and Vertical curves, Special field problems. **[7 Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Surveying (Vol. I &II)	B.C. Punmia,	Laxmi Publicatios, New Delhi
2	Surveying (Vol. I & II)	T.P. Kanetkar	Pune Vidyarthi Griha Prakashan, Pune
3	Surveying (Vol. I & II)	R Agor	KHANNA PUBLISHERS

Reference Books:

S. No.	Title	Authors	Publisher
1	Surveying (Vol. I & II)	K.R Arora	Standard Book House, Delhi, 1993
2	Fundamentals of Surveying	S.K. Roy	Prentice Hall of India
3	Surveying (Vol. I & II)	S.K. Duggal	Tata McGraw Hill New Delhi

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code: CE101305	CONSTRUCTION MATERIAL	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
The objective is to make the students understand and conceptualize the- • To introduce about the properties of common building materials. • To introduce the basic concepts of Timber and Eco-friendly Material. • To introduce Composite and Miscellaneous material in construction. • To introduce about the characteristic of paint, varnishes etc. • To introduce about the steel, aluminium, glass etc.	**On successful completion of the course, the student will be able to:** CO1: Identify properties of common building material. CO2: Understand basic concepts of Timber and Eco-friendly Material. CO3: Describe characteristic of Composite and Miscellaneous material in construction CO4: Extend the knowledge about characteristic of paint, varnishes etc. CO5: Extend the knowledge about steel, aluminium, glass etc.

UNIT – I: **CO1**

Bricks: Nominal and actual dimensions of modular and traditional bricks. Frog. Good brick earth, moulding, characteristics of good bricks, compression test and absorption test, classification of bricks.

Cement and Aggregate: Ingredients of cement, manufacturing process of Portland cement Bouges compound, Hydration of cement, field and lab tests. Classification of Aggregates (Coarse and Fine), grading curve and fineness modules, Ennore sand, Classification of Pozzolanas and applications.

[7 Hrs.]

UNIT – II: **CO2**

Timber and Low cost materials - Characteristics of good timber, wood products plywood, veneers, hard boards, particle board, fibre board need for wood substitutes, form work. Low cost materials for construction –cost effective materials, industrial wastes, agricultural wastes and other materials for green buildings **[7 Hrs.]**

UNIT – III: **CO3**

Composites: Polymerization Mechanism, resins, constituents of plastics, properties of plastics, Rubber, Classification of Rubbers, Uses of Rubber, Plastics-Reinforced polymers FRP-Celular cores.

Miscellaneous Material: adhesive Asbestos, Decorative GRC Materials, Heat Insulating materials, sound Insulating Materials, Geosynthetics. **[8 Hrs.]**

UNIT – IV: **CO4**

Paints and Varnishes, Bitumen and asphaltic materials - Composition of oil paint, PVC and PVCN of paint, Material for White washing, colour washing, varnishing and distempering, painting on wood and steel or metal, enamels. Bitumen and asphalt -types and uses**.** **[7 Hrs.]**

Subject Code: CE101305	CONSTRUCTION MATERIAL	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

UNIT–V: **CO5**

Other Engineering materials- Steel - structural steel properties, composition, use and grade of steels, Aluminium and its alloys: properties, uses and advantages. Glass and their uses, plastics with/ without reinforcement- types and uses, Ceramics, types of tiles, Refractories, paver block. **[7 Hrs.]**

Text Books:

S. No	Title	Authors	Publisher
1	Building Materials	S.K. Duggal	New Age Publication
2	Building Materials	S. C. Rangwala	Charotar Publication
3	Building Materials	M.L. Gambhir, Neha Jamwal	Mc- Grawhill

Reference Books:

S. No	Title	Authors	Publisher
1	Building Materials	Gurucharan Singh	Standard Publishers, Delhi
2	Engineering Materials	Surendra Singh	Laxmi Publication
3	Concrete Technology	A.M. Neville & J.J. Brooks	Pearson Education
4	Concrete Technology	M.S. Shetty	S. Chand & Co.

Subject Code: CE101391	FLUID MECHANICS LAB	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	-	25	50	

List of Experiments: (At least ten experiments are to be performed by each student)

1. To determine the meta-centric height of a ship model.
2. Verification of Bernoulli's equation.
3. Verification of momentum equation.
4. To calibrate a venturimeter and study the variation of the coefficient of discharge with the Reynolds number.
5. To calibrate an orificemeter and study the variation of the coefficient of discharge with the Reynolds number.
6. Experimental determination of critical velocity in pipe.
7. Determination of head loss coefficient due to sudden expansion in pipe.
8. Determination of head loss coefficient due to sudden contraction in pipe.
9. Determination of head loss coefficient in pipe bends.
10. To determine the hydraulic coefficients (C*c*, C*d* and C*v*) of an orifice.
11. To determine the coefficient of discharge of a mouth piece.
12. To calibrate a triangular notch.

Equipment/Machines/Instruments/Tools/Software Required:

- Ship Model
- Bernoulli's Apparatus
- Apparatus for momentum theorem
- Venturimeter
- Orificemeter
- Pipe Flow Apparatus
- Orifice Apparatus
- Mouth Piece Apparatus
- Notch Apparatus
- Vortex Flow Apparatus

Recommended Books:

S. No.	Title	Authors	Publisher
1)	Hydraulics Laboratory Manual	S.K. Likhi	New Age International Ltd.
2)	Fluid Mechanics	JagdishLal	Metropolitan Educational, New Delh-2

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code: CE101392	SURVEYING LABORATORY LAB	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	-	25	50	

List of Experiments: (At least Ten experiments are to be performed by each student)

1. To determine the elevation of a point with respect to reference elevation by Fly Leveling
2. To determine sensitivity of bubble tube of a dumpy level.
3. Contouring and its plotting.
4. Measurement of horizontal angle by repetition method.
5. Measurement of horizontal angle by reiteration method.
6. To determine the height of object when base is accessible.
7. To determine the height of tower when base is inaccessible and instrument stations are in same vertical plane.
8. To find out the position of points by the Plane Table Radiation and Intersection method.
9. Determination of location of a point with the help of Two point problem.
10. Determination of location of a point with the help of Three point problem.
11. Setting out of curve by ordinates or offsets from long chord.
12. Setting out of curve by successive bisection of arcs.
13. Setting out of curve by offsets from chords produced .
14. Setting out of curve by two theodolite method.
15. Setting out of curve by Rankine's method.
16. To measure bearings of a closed traverse by prismatic compass and to adjust the traverse by graphical method.

Equipment/Machines/Instruments/Tools/Software Required:

- Metric Chain (30 m)
- Tape (15m, 30 m)
- Ranging Rod (2 m, 3m)
- Plumb bob Arrows
- Theodolite, Leveling Staff (Folding and Non-folding)
- Wooden Pegs
- Plain Table Accessories (Drawing Board – 70 x 60 x 1.5 cm,
- Spirit Level,
- Trough Compass,
- Tripod Stand,
- Alidade,
- Plumb bob for centering) Offset Rod
- Optical Square
- Cross Staff

Recommended Books:

S. No.	Title	Authors	Publisher
1	Surveying (Vol. I &II)	B.C. Punmia,	Laxmi Publicatios, NewDelhi
2	Surveying (Vol. I & II)	T.P. Kanetkar	Pune Vidyarthi Griha Prakashan, Pune
3	Surveying (Vol. I & II)	R Agor	KHANNA PUBLISHERS

Subject Code: CE101393	CONSTRUCTION MATERIAL - LAB	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	-	25	50	3 Hours

Experiments to be performed (Minimum 10 experiments to be performed)

1. Determination of Water Absorption test on bricks.
2. Determination of Compressive strength test on bricks.
3. Determination of Fineness of cement by sieve analysis.
4. Determination of Initial and Final setting time of cement.
5. Determination of Compressive strength of cement.
6. Determination of Tensile strength of cement.
7. Determination of Soundness of cement.
8. Determination of Fineness of cement by Blain Apparatus.
9. To determine Sieve analysis and Fineness Modulus of fine aggregate.
10. To determine Sieve analysis and Fineness Modulus of coarse aggregate.
11. Determination of Specific gravity and water absorption of aggregate.
12. To determine Uniaxial Tensile Test of mild steel.
13. To determine Izod Charpy Value of given mild steel.
14. To determine Compressive Strength of Wood: (a) Along the fibre and (b) Across the fibre.
15. To determine Abrasion Test on tiles.
16. To determine Impact test on tiles.
17. To determine Flexural Strength of Tiles.
18. To study the Cupping Test Machine and determine Ericheser value of mild steel sheet.

List of Equipments / Machine Required:

a) Cube mould 7.06 cm size
b) IS Sieve 80, 40, 20, 10, 4.75, 2.36, 1.18 mm and 600, 300, 150, 90 Micron
c) Sieve Shakers
d) Tensile Strength Testing Machine
e) Oven Wire Basket
f) Spring Balance and Weighing Balance
g) Air permeability blain apparatus
h) Abrasion Testing Machine
i) Flexural Strength Testing Machine for tiles
j) Universal Testing Machine
k) Hardness Testing Machine
l) Impact Testing Machine

Recommended Books:

1. Lab Manual Concrete Lab – M.L. Gambhir (Tata McGraw Hill)
2. Concrete Technology – M.S. Shetty (S. Chand & Co.)

Subject Code: CE101394	SOFTWARE LAB	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25	-	25	50	

List of Experiments: (At least ten experiments are to be performed by each student)

1. Analysis of a cantilever beam with concentrated loadings using MD Solids 4.0.
2. Analysis of a cantilever beam with uniformly distributed loading using MD Solids4.0.
3. Analysis of cantilever beam with combination of loading using MD Solids 4.0.
4. Analysis of simply supported beam using concentrated loadings using MD Solids 4.0.
5. Analysis of simply supported beam using uniformly distributed load loadings using MD Solids 4.0.
6. Analysis of simply supported beam with combination of loading using MD Solids 4.0.
7. To plot Mohr's Circle to determine Principal stresses and position of principal planes using MD Solids 4.0.0
8. To plot Mohr's Circle to determine Maximum shear stress and its position using MD Solids 4.0.
9. To determine the Torque a shaft can safely transmit if shear stress is given using MD Solids 4.0.
10. To determine buckling load of column when the permissible stresses and material, dimensions of the column are given using MD Solids 4.0
11. Virtual Study: http://sl-iitr.vlabs.ac.in/sl-iitr/
    - Profile Leveling using Auto Level
    - Observations of Vertical and Horizontal angles using Total Station
    - Carry out Contouring in the field
12. Virtual Study: http://sl-iitr.vlabs.ac.in/sl-iitr/
    - Study of Global Positioning System (GPS) and its Accessories
    - Observations using GPS

Equipment/Machines/Instruments/Tools/Software Required:

- Computer system with good connectivity to Internet, any specific software is not required.
- MD Solids 4.0

Recommended Books:

S. No.	Title	Publisher
1	https://web.mst.edu/~mdsolids/download.htm	Software and manual

SHRI SHANKARACHARYA TECHNICAL CAMPUS BHILAI

(An Autonomous Institute affiliated to CSVTU,Bhilai)

Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code CE100395	Health, Hygiene and Yoga	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	---	--	25	25	---

Course Objective	Course Outcomes
Course Objective: • To provide understanding and importance of health • To provide insight into the hygiene aspect and quality of lifestyle • To study the concepts of various medical therapy • To practice different types of yogasan and pranayama. • To provide knowledge about common diseases and its cure through yogasan and pranayama. • To develop and improve concentration through various methods	**On successful completion of the course, the student will be able to:** ▪ Demonstrate a better understanding about mental and physical health for human life ▪ Understand the correlation of mental and physical health with hygiene and yoga ▪ Demonstrate the understanding about the health hazards resulting due to improper lifestyle ▪ Display understanding about eminent yogis and primary texts on yoga ▪ Apply various techniques of yoga to counter various lifestyle issues ▪ Understand the utility of health, hygiene and yoga for society welfare

UNIT – I **CO1**

(A) Health:

- Concept of Health – Physical and Mental Health and Wellbeing
- Meaning and definition of Health according to WHO and Ayurveda Charaksamhita
- Primary Health Care –Food, Nutrition and Cleanliness
- Human Psychology and Health Consciousness

(B) Hygiene:

- Meaning, definition and importance of Hygiene in life
- Types of Hygiene and general rules for Hygiene and Cleanliness
- Ayurveda: Ayurveda, Vata, Pitta and Cough **[2 Hrs.]**

UNIT – II **CO2**

(A) Medicinal Cure:

- Introduction and basic concepts of common streams of medicinal cure
- Introductory knowledge about modes of operation of Alopathy, Ayurveda, Homoeopathy, Bio-chemic, Unani, Siddha, Acupressure, Acupuncture and Naturopathy
- Introduction of Anatomy and Physiology concerned

(B) Occupational Health:

- Diseases and their occupational relevance, risk factors for deficiency diseases
- Drugs, Tobacco, Alcohol and Food intoxication: chemical agents, side effects and control measures
- Stress, anxiety, depression and emotional imbalance: causes and prevention

(C) Modern Silent Killers:

- High blood pressure, diabetes and cancer – causes and cure

- Common health problems due to stomach disorders such as indigestion, acidity, etc.

[2 Hrs.]

UNIT – III **CO3**

(A) Yogasans:

- Meaning, concept and importance of Yoga for healthy life
- Yogasans and its mode of operation, Prone and Supine Posture
- Common Yogasans such as Bhujangasan, Halasan, Padmaasan, Sarvangasan, Shavasan, Surya Namaskar, Utshep Mudra, Vajrasan, Jal-Neti, etc.
- Asans for Brain: Shirshpadasan, Shashankasan
- Asans for Eye Sight: Tratak, Neti-Kriya

(B) Yogis and Yogic Texts:

- Ashtang yoga from Patanjali Yoga Sutra
- Somantic and Psychosomatic from Yog Vashishth
- Bhagwad Geeta
- Basic knowledge of Shat Darshan **[2 Hrs.]**

UNIT – IV **CO4**

(A) Pranayama:

- Definition, concept and types of Pranayama
- NadiShodhan, Anulom Vilom, Bhastrika, Bhramari, Shitakari, etc.
- Usefulness of Pranayama for students
- Introduction to Kumbhak

(B) Meditation:

- Basic concept of Meditation
- Concentration of mind: Dhyan
- Concentration on breath; Japa, Ajapajap, Internal Silence
- Concentration on point of light, Concentration on feeling, Concentration on figure
- Visualization in mental sky **[2 Hrs.]**

UNIT – V **CO5**

Social Awareness and Community Health:

- NSS / NCC activities for society and nation
- Health and family welfare
- Nutrition and welfare programmes for childs, elders and divyangs
- Blood Donation and health check-up campaign
- Green environment campaign - Plantation
- Co-management of HIV and TB diseases
- Gender Equity and National Integrity
- Natural calamities and Disaster Management
- Road safety awareness, Swachhataa awareness, etc. **[2 Hrs.]**

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Text Books:	**Reference Books:**
1. Health, Hygiene & Yoga; Dr P. B. Deshmukh; Gyan Book Private Ltd. New Delhi. **2.** Health, Hygiene and Yoga; Dr. Manju Shukla; Gyan Bharti Publications, New Delhi.	**1.** Yogic MateriaMedica. **2.** Asan, Pranayama Mudrabandha; Swami Satyananda Saraswati; Yoga Publication Trust, Munger (Bihar). **3.** Fundamentals of Yogic Practices - A Complete Guide on Yoga; Shrikant, R. Kushwah, Y. Kushwah; KhelSahitya Kendra, Delhi.

SHRI SHANKARACHARYA TECHNICAL CAMPUS BHILAI

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code (IT100396)	CYBER LAWS & ETHICS	L	T	P	Credits=0
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	-	-	25	25	--

Course Objectives	Course Outcomes
1. To explore brief idea about the CYBER LAWS. 2. To get the basic idea about IT ACT. 3. Awareness about ecommerce and related cyber laws. 4. Awareness regarding Trademarks, Copyrights and Patents. 5. Awareness regarding Cyber Ethics.	**After the completion of course, student will be** **CO 1**. Understand Cyber laws **CO 2**. Understand IT Act. **CO 3**.Describe Information Technology act and Related Legislation. **CO 4**. Demonstrate Electronic business and legal issues. **CO 5**. Interpret Cyber Ethics.

UNIT – I: Introduction to Cyber law: CO 1

Evolution of computer Technology, emergence of cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, Cyberspace Web space, Web hosting and web Development agreement, Legal and Technological Significance of domain Names, Internet as a tool for global access.

UNIT – II: Information Technology Act: CO 2

Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

UNIT – III: Cyber law and Related Legislation: CO 3

Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code.

UNIT – IV: Electronic Business and legal issues: CO 4

Evolution and development in E-commerce, paper vs paper less contracts E-Commerce models- B2B, B2C, E security. Business, taxation, electronic payments, supply chain, EDI, E-markets, Emerging Trends.

UNIT-V: Cyber Ethics: CO 5

The Importance of Cyber Law, Significance of cyber Ethics, Need for Cyber regulations and Ethics. Ethics in Information society, Introduction to Artificial Intelligence Ethics: Ethical Issues in AI and core Principles, Introduction to Block chain Ethics

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Scheme of Examination and Syllabus 2021

Second Year B. Tech. Civil Engineering

3rd semester

Subject Code IT100396	**CYBER LAWS & ETHICS**	**L**	**T**	**P**	**Credits=0**
EvaluationScheme	**ESE**	**CT**	**TA**	**Total**	**ESEDuration**
	-	**-**	**25**	**25**	**--**

TextBooks:

S.No.	Title	Authors	Publisher
1)	Cyber Laws: Intellectual property & E Commerce, Security	Kumar K	dominant Publisher
2)	Cyber Ethics 4.0, Christoph Stuckelberger	Pavan Duggal	Globethic
3)	Information Security policy & Implementation Issues	NIIT	PHI
4)	Computers, Internet and New Technology Laws	Karnika Seth	Lexis Nexis Butterworths Wadhwa Nagpur

ReferenceBooks:

S.No.	Title	Authors	Publisher
1)	Legal Dimensions of Cyber Space	Verma S, K, MittalRaman	Indian Law Institute, New Delhi
2)	Cyber Law	JonthanRosenoer	Springer, New York, (1997)
3)	The Information Technology Act 2005	A Handbook	OUP Sudhir Naib,, New York, (2011)
4)	Information Technology Act, 2000	S. R. Bhansali	University Book House Pvt. Ltd., Jaipur (2003)
5)	Cyber Crimes and Law Enforcement	Vasu Deva	Commonwealth Publishers, New Delhi, (2003)