ADCET — Department of Civil Engineering

Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVBS101, Applied Mathematics I**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial	3/1
Credits	4
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVBS101_1	**Solve** the system of linear equations by using matrix method and numerical techniques.
2CVBS101_2	**Calculate** Eigen values and Eigen vectors and power of matrix by using Cayley-Hamilton theorem
2CVBS101_3	**Fit** the curves for bivariate data by **applying** least square techniques.
2CVBS101_4	**Apply** Taylor series to find the expansion of functions.
2CVBS101_5	**Compute** the nth power and roots of the complex number by using De-Moivre's Theorem.

Course Contents:

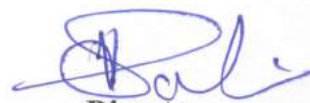| Unit No.	Title	Hrs.
Unit 1	**Matrices and Solution of Linear System Equations:** Rank of a matrix, Normal form of a matrix, echelon form, Consistency of linear system of equations (system of homogeneous and non-homogeneous linear equation).	07
Unit 2	**Eigen Values and Eigen Vectors:** Vectors, Linear dependence and linear independence of vectors, Eigen values, Properties of Eigen values, Eigen vectors, Properties of Eigen vectors, Cayley-Hamilton Theorem (Inverse and Higher powers of matrix).	08
Unit 3	**Numerical Solution of System of Simultaneous Linear Equations:** Gauss Elimination Method, Gauss-Jordan Method, Iterative Method – Gauss Jacobi method and Gauss Seidel method, Eigen value using Power method.	06
Unit 4	**Statistics and Curve fitting:** Method of Least Squares, Fitting of Straight Line, Fitting of Parabola, Fitting of exponential curves, Lines of Regression.	06
Unit 5	**Expansion of Functions and Indeterminate Forms:** Taylor's series, Maclaurin's series, Standard expansions, Expansion of function using Standard series, Indeterminate forms.	07
Unit 6	**Complex Numbers:** De Moivre's theorem, Roots of a complex number, Expansion of sin(nx) and cos(nx) in powers of sinx and/or cosx, Circular functions of a complex variable, Hyperbolic functions, relation between circular and hyperbolic functions, Inverse Hyperbolic functions.	08

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Sr. No.	Title of Tutorials
1	Matrices and Solution of Linear System Equations: Normal form, system of homogeneous linear equation.
2	System of non- homogeneous linear equation.
3	Eigen Values and Eigen Vectors.
4	Cayley-Hamilton Theorem.
5	Numerical Solution of System of Simultaneous Linear Equations:
6	Curve Fitting I: Fitting of Straight Line and Fitting of Parabola.
7	Curve Fitting II: Fitting of exponential curves and Lines of Regression.
8	Expansion of function.

Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Numerical Methods in Engineering & Science	Dr. B. S Grewal	Khanna Publishers	9th	2010
02	Advanced Engineering Mathematics	H. K. Das	S. Chand	22nd	2018
03	A textbook of Applled Mathematics	P.N. Wartikar & J. N. Wartikar	Pune Vidyarthi Griha Prakashan	1st	2008
04	Higher Engineering Mathematics	B. V. Ramana	Tata McGraw Hill Publ.	6th	2010

Reference Books / Handbooks

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publishers	44th	2018
02	Advanced Engineering Mathematics	N. P. Bali,Manish Goyal	Infinity science press	7th	2010
03	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley Publishers	10th	2017
04	Numerical Methods	Dr. P. Kandasamy, Dr.K.Thilagavathy, Dr. K. Gunavathi	S. Chand	1st	2010

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	2CVBS102, Applied Physics
Prerequisite/s	-------------------
Teaching Scheme: Lecture/Tutorial	3/0
Credits	3
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVBS102_1	**Apply** suitable optical theory to determine wavelength and divergence of monochromatic and polychromatic sources of light using relevant optical methods of testing.
2CVBS102_2	**Calculate** the interplaner spacing, lattice constant and properties of unit cell for a given crystal system based on the crystallographic study using laws of material science.
2CVBS102_3	**Use** concept of Nanotechnology to express Production technique and tools of nano material using different synthesis methods and microscopes.
2CVBS102_4	**Solve** engineering problems based on Architectural acoustics and Ultrasonic's using appropriate theories and formulae.
2CVBS102_5	**Apply** principles of Quantum mechanics to calculate observables on known wave functions using fundamental quantum mechanical processes in nature.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	**Wave Optics :** **Diffraction:**-Introduction, construction of plane diffraction grating, Diffraction at multiple slits, Determination of wavelength of particular colour using plane diffraction grating, Resolving power of grating, Numericals. **Polarization:**- Polarization of light, Polarization by double refraction, Positive and Negative crystals, Optical activity, Laurent's half shade Polarimeter, Numericals.	06
Unit 2	**Laser and Fibre Optics :** **Laser:**Introduction to laser, Laser and ordinary light, Interaction of radiation with matter- Absorption, Spontaneous emission, Stimulated emission, Pumping (Three level and four level), Population inversion, Metastable state, Laser beam Characteristics, Solid State laser (Ruby Laser), Industrial and medical applications of laser, Holography- Difference between ordinary photography and Holography, Construction and reconstruction of Hologram. **Optical fibre**: Introduction, Basic principle (total internal reflection), Structure of optical fibre, Propagation of light through optical fibre, Acceptance angle and acceptance cone (no derivation), Fractional refractive index change, Numerical aperture (no derivation), Classification of optical fibre, Advantages and disadvantages of optical fibre, Applications of optical fibres, Numericals.	08

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Unit 3	**Structure of Solids and its Characterization:** Crystalline state, Lattice, Space lattice, Basis and crystal structure, Unit cell, lattice parameters, Crystal system in brief, (Cubic, Monoclinic…Triclinic), Fourteen Bravais lattices, Properties of unit cell (number of atoms per unit cell, coordination number, atomic radius, packing fraction), Calculation of lattice constant (Relation between lattice constant and density), Symmetry elements in cubic crystal, Miller indices:- Procedure, Features and Sketches for different planes. **X-ray diffraction** (Laue method)**,** Bragg's law, Bragg's X-ray diffractometer, Numericals.	08
Unit 4	**Nano Physics:** Introduction, Concept of nanotechnology, Production techniques:- Top-down (eg. Ball milling) and Bottom-up (eg. Sol-gel process), Tools – Scanning Electron Microscope (SEM) and Atomic Force Microscope (AFM), Applications of nano- materials, Carbon Nano Tube (CNT):- Structure, two types, properties and applications.	06
Unit 5	**Architectural acoustics and Ultrasonic :** **Architectural Acoustics**: Introduction, Basic requirements for acoustically good hall, Reverberation, Time of Reverberation, Sabine's formula (no derivation), Absorption coefficient, Factors affecting the architectural acoustics and their remedy, Numericals. **Ultrasonic waves:** Introduction, Properties of ultrasonic waves, Production of ultrasonic waves by magnetostriction method, Determination of wavelength and velocity of ultrasonic waves by using acoustic diffraction method, Detection of ultrasonic waves, Applications of ultrasonic waves, Numericals. **Microwaves-** Properties, Advantages, Disadvantages and its applications.	07
Unit 6	**Quantum Physics:** Introduction to Quantum mechanics, Plank"s Quantum Theory, Photoelectric Effect, Compton Effect with theory, Wave Particles Duality, Matter waves, Properties of Matter wave, Heisenberg Uncertainty principle for position and momentum of particle, Problems.	07

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Physics	G Vijayakumari	Vikas Pub. House (P) Ltd	3rd	2009
02	A Text Book of Engineering Physics	M.N.Avadhanulu & P. G. Kshirsagar	S. Chand Publication.	12th	2006
03	Engineering Physics	P. K. Palanisamy	Sci Tech pub. (P) Ltd.	2nd	2009
04	Introduction to Nano science and Nanotechnology:	K.K. Chattopadhyay and A.N. Banerjee,	PHI Learning	3rd	2009

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Physics	Resnick Halliday, Krane,	John Wiley & Sons Pub.	8th	2008
02	Engineering Physics	R. K. Gaur & Gupta S. L	Dhanapat Rai Publication	8th	2008
03	Solid State Physics:	S. O. Pillai	New Age International Ltd.	6th	2007
04	Introduction to Solid State Physics	Charles Kittle,	Wiley India Pvt. Ltd	7th	2008
05	Materials Science and Engineering –	V. Raghvan,	PHI Learning.	5th	2006
06	Engineering Physics:	D. K. Bhattacharya and A.Bhaskaran,	Oxford University Press	6th	2010

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVPC103, Applied Mechanics**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial	3/0
Credits	3
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVPC103_1	**Interpret** the resultant force and reactions at support for a force system based on concepts of resolution and composition.
2CVPC103_2	**Calculate** forces in members of truss under point load with their nature.
2CVPC103_3	**Compute** moment of inertia for a composite plane lamina by using parallel and perpendicular axis theorem.
2CVPC103_4	**Apply** the concept of dynamic equilibrium for rigid bodies in motion using principle of kinetics.
2CVPC103_5	**Illustrate** the motion of rigid bodies after impact using principle of conservation of momentum.

Course Contents:

Unit No.	Title	Hrs
Unit 1	**Introduction to Engineering mechanics:** Basic concepts - Particle, Body, Rigid body, Force, Types of force systems, Law of transmissibility of force, Resolution of a force, Resultant force, Moment of a force, couple, Varignon's theorem.	06
Unit 2	**Equilibrium of forces** Concept of equilibrium, Conditions of equilibrium, Free Body Diagram, Law of moment, Introduction to surface friction, Types of Loads, Types of supports, Types of Beams, Analysis of Simple and Compound beams using conditions of equilibrium.	08
Unit 3	**Analysis of Truss** Introduction of roof truss, Types of Trusses, Determinacy of a Truss, Assumptions for analysis of truss, Analysis of truss using method of Joint and method of Section.	07
Unit 4	**Centroid and Moment of Inertia** Introduction to Centroid and Center of Gravity, Centroid of plain laminae, Moment of Inertia, Moment of Inertia of Standard shapes from first principle, Parallel and perpendicular axis theorem, Moment of Inertia of plain and composite figures, Radius of Gyration.	07
Unit 5	**Kinetics of Linear and Circular motion** Equation of linear motion and motion under gravity, Introduction to surface friction, Kinetics of linear motion, D' Alembert's Principle, Work- Energy Principle, Impulse Momentum Principle, Kinetics of Circular Motion, Torque.	08

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Unit 6	**Collision** Introduction to Phenomenon of Collision, Law of Conservation of Momentum, Newton's law of Collision of Elastic Bodies, Coefficient of Restitution, Types of Collisions, Direct Collision of Two Bodies, Loss of Kinetic Energy During Collision.	06

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Mechanics	S. Ramamrutham	Dhanpat Rai Publishing Company (P). Ltd	9th	2010
02	Engineering Mechanics	R. S. Khurmi	S. Chan	Revised	2006
03	Engineering Mechanics	R. K. Bansal Sanjay Bansal	Laxmi Publications Pvt. Ltd.	6th	2013
04	Engineering Mechanics	K. L. Kumar	Tata McGraw Hill Education	4th	2012
05	Engineering Mechanics	S. B. Junnarkar	Charotar Publications	16th	2011
06	Engineering Mechanics	S.S. Bhavikatti	New Age International Pvt. Ltd.	4th	2012

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Mechanics	Timoshenko and Young	McGraw Hill Publishers	3rd	2006
02	Engineering Mechanics	Irving H. Shames	Prentice Hall of India, New Delhi	5th	2011
03	Vector Mechanics for Engineers Vol.-I and II	F. P. Beer and E. R. Johnson	Tata McGraw Hill Education	6th	2011
04	Engineering Mechanics: Statics & Dynamics	Ferdinand Singer	Harper and Row Publications	9th	2009
05	Fundamentals of Engineering Mechanics	S. Rajasekaran	Vikas Publishing House Pvt. Ltd.	3rd	2005

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVES104, Engineering Graphics**
Prerequisite/s	-------------------
Teaching Scheme: Lecture/Tutorial	2/0
Credits	2
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVES104_1	**Sketch** projection of simple geometries (curves & Planes).
2CVES104_2	**Sketch** projection of solids & its sectional views.
2CVES104_3	**Produce** the orthographic projection.
2CVES104_4	**Produce** the isometric projection.
2CVES104_5	**Prepare** Perspective drawing of simple objects.

Course Contents:

Unit No.	Title	Hrs
Unit 1	**Fundamental of engineering graphics :** Introduction to drawing instrument and their uses. Different types of lines used in drawing practice, the dimensioning system as per BSI. **Engineering Curves:** Introduction to First angle and third angle methods of projection. Construction of curves used in drawing only Ellipse, Hyperbola and Parabola.	04
Unit 2	**Projections of Solids** Projections of Prisms, Pyramids, Cylinder and Cones inclined to both reference planes. (Excluding Frustum and Sphere)	06
Unit 3	**Sections of Solids :** Prisms, Pyramids, Cylinders and Cones in simple positions and inclined to one reference plane and parallel to other.	04
Unit 4	**Orthographic projection-** Lines used, selection of views, the spacing of views, dimensioning and sections. Drawing required views from given pictorial views (conversion of pictorial views into orthographic views). Including sectional orthographic views	06
Unit 5	**Isometric Projections** Introduction to isometric. Isometric scale, Isometric projections and Isometric views /drawings. Circles in isometric view. Isometric views of simple solids and objects.	04
Unit 6	**Perspective Views** Introduction, Simple Objects for Perspective Drawing.	04

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Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing	N D Batt & V M Panchal	Charotor Publication House, Bombay	50th	2010
02	Engineering Drawing	Dhananjay A Jhole	Tata Mc-Graw Hill	5th	2011
03	Fundamentals of Engineering Drawing	Warren. J. Luzadder	Prentice-Hall of India.	11th	1999
04	Engineering Drawing	P. S. Gill	Katson books	9th	2012

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing	N D Batt & V M Panchal	Charotor Publication House, Bombay	50th	2010
02	Engineering Drawing	Dhananjay A Jhole	Tata Mc-Graw Hill	5th	2011
03	Fundamentals of Engineering Drawing	Warren. J. Luzadder	Prentice-Hall of India.	11th	1999
04	Engineering Drawing	P S Gill	Katson books	9th	2012
05	Fundamentals of Engineering Mechanics	S. Rajasekaran	Vikas Publishing House Pvt. Ltd.	3rd	2005

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVHS105, Professional Communication Skills**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/4
Credits	2
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS105_1	**Exhibit** the skill of sentence construction considering the frame of English language rules accurately for effective and sound communication.
2CVHS105_2	**Present** their portfolio confidently considering SWOT analysis by using digital tools convincingly as per the corporate expectations.
2CVHS105_3	**Write** formal letters proficiently by following required techniques that helps in maintaining professional affairs at workplace.
2CVHS105_4	**Produce** professional presentations proficiently on assigned topics in convincing manner using necessary tools and techniques.
2CVHS105_5	**Justify** own role in communicative events with balanced zeal, in well-organized manner.

List of Experiments

Exp. No.	Title of Experiments
1	Checking My English Communication
2	Self - Introduction
3	Presenting my Career Choices
4	Preparing my Portfolio
5	Enriching Vocabulary
6	Avoiding Common Errors
7	Presenting My Portfolio
8	Note Making
9	Getting Smart with Technical Description of charts/ Images/ Processes
10	Delivering Professional Presentation
11	Application and Resume Writing
12	Email Writing
13	GD (General)
14	Introducing Guest/ Friend
15	Extempore
16	GD (Technical)
17	Mock Interview
18	Organizing an Event

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Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	The Professional: Defining the New Standard of Excellence at Work	Subroto Bagchi	Penguin Books India Pvt. Ltd.	Revised Edition	2011
02	Cambridge Guide to IELTS	Pauline Cullen, Amanda French	Cambridge University Press	Reprint	2017
03	A Practical Course in Effective English Speaking Skills	J. K. Gangal	PHI Learning Private Limited, New Delhi	Print	2012
04	Personality Development and Soft Skills	Barun K. Mitra	Oxford University Press, New Delhi , India	Seventh Impression	2012

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	High-school English Grammar and Composition	Wren and Martin	S. Chand and Co., New Delhi	1st	2015
02	The Ace of Soft Skills	Ajai Chowdry, Bala Balchandran	Pearson Publication, Delhi	8th	2013
03	Effective Technical Communication	M. Ashraf Rizvi	Mc Graw Hill Education, Chennai	Second Edition	2017
04	Business Communication	Hory Sankar Mukerjee	Oxford University Press, New Delhi , India	Second Edition	2013

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVBS106, Applied Physics Laboratory**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs): Project

Upon successful completion of the project, the student will be able to:

2CVBS106_1	**Apply** suitable optical theory to calculate wavelength and divergence of monochromatic and polychromatic sources of light using plane diffraction grating.
2CVBS106_2	**Calculate** band gap energy and Specific rotation for a given semiconductor and sugar solution using appropriate theories and formulae.
2CVBS106_3	**Demonstrate** symmetries, planes and properties of unit cell for a given crystal system based on the crystallographic study using laws of material science.
2CVBS106_4	**Communicate** effectively about laboratory work both orally and writing.
2CVBS106_5	**Practice** professional and ethical behavior to carry forward in their life.

List of Experiments	
Exp. No.	**Title of Experiments**
1	Plane Diffraction Grating
2	Resolving power of Grating
3	Resolving power of telescope
4	Laurent's Half Shade Polarimeter
5	Kund's tube for determination of velocity of sound
6	Divergence of The LASER Beam
7	Wavelength of LASER
8	Inverse Square Law
9	Band Gap energy
10	Seven Crystal System
11	Symmetry Element of Cube
12	Numerical aperture of optical fibre
13	Double Refraction
14	Material Characterization using ultrasound.

Minimum **EIGHT** experiments should be perform from the above list.

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Physics	G Vijayakumari	Vikas Pub. House (P) Ltd	3rd	2009
02	A Text Book of Engineering Physics	M.N.Avadhanulu & P. G. Kshirsagar	S. Chand Publication.	12th	2006
03	Engineering Physics	P. K. Palanisamy	Sci Tech pub. (P) Ltd.	2nd	2009
04	Introduction to Nano science and Nanotechnology:	K.K. Chattopadhyay and A.N. Banerjee,	PHI Learning	3rd	2009

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Physics	Resnick Halliday, Krane,	John Wiley & Sons Pub.	8th	2008
02	Engineering Physics	R. K. Gaur & Gupta S. L	Dhanapat Rai Publication	8th	2008
03	Solid State Physics:	S. O. Pillai	New Age International Ltd.	6th	2007
04	Introduction to Solid State Physics	Charles Kittle,	Wiley India Pvt. Ltd	7th	2008
05	Materials Science and Engineering –	V. Raghvan,	PHI Learning.	5th	2006
06	Engineering Physics:	D.K. Bhattacharya and A.Bhaskaran,	Oxford University Press	6th	2010

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVPC107, Applied Mechanics Laboratory**
Prerequisite/s	------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs): Project

Upon successful completion of the project, the student will be able to:

2CVES107_1	**Compute** resultant and moments of a force system to verify the laws for forces for static state of body.
2CVES107_2	**Relate** the magnitude of support reactions of a simply supported beam using experimental and analytical method.
2CVES107_3	**Choose** the position of centroid for a plane lamina by using experimental method.
2CVES107_4	**Interpret** forces in the members of truss using experimental and analytical method.
2CVES107_5	**Calculate** the coefficient of friction of different material surfaces.

List of Experiments	
Exp. No.	**Title of Experiments**
1	To verify law of polygon of forces using force table.
2	To verify lami's theorem using force table.
3	To verify law of moments by Bell crank lever.
4	To calculate support reactions of beam.
5	To compute centroid of plain lamina.
6	To calculate coefficient of friction of different material surfaces.
7	To find out support reactions of a beam by graphical method.
8	To calculate forces in member of truss with their nature.

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Mechanics	S. Ramamrutham	Dhanpat Rai Publishing Company (P). Ltd	9th	2010
02	Engineering Mechanics	R.S. Khurmi	S. Chand	Revised	2006
03	Engineering Mechanics	R. K. Bansal and Sanjay Bansal	Laxmi Publications Pvt. Ltd.	6th	2013
04	Engineering Mechanics	K. L. Kumar	Tata McGraw Hill Education	4th	2012
05	Engineering Mechanics	S. B. Junnarkar	Charotar Publications	16th	2011
06	Engineering Mechanics	S.S. Bhavikatti	New Age International Pvt. Ltd.	4th	2012

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Mechanics	Irving H. Shames	Prentice Hall of India, New Delhi	5th	2011
02	Vector Mechanics for Engineers Vol.-I and II	F. P. Beer and E. R. Johnson	Tata McGraw Hill Education	6th	2011
03	Engineering Mechanics: Statics & Dynamics	Ferdinand Singer	Harper and Row Publications	9th	2009
04	Fundamentals of Engineering Mechanics	S. Rajasekaran	Vikas Publishing House Pvt. Ltd.	3rd	2005
05	Mechanics of Materials	Dr. B. C. Punmia	Laxmi Publications Pvt. Ltd.	Reprint	2010

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVES108, Engineering Graphics and CAD Laboratory**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/4
Credits	2
Evaluation Scheme: ISE	50

Course Outcomes (COs): Project

Upon successful completion of the project, the student will be able to:

2CVES108_1	**Prepare** drawing of Points, lines, Planes using Auto Cad.
2CVES108_2	**Plot** projection of solids.
2CVES108_3	**Produce** the orthographic projection.
2CVES108_4	**Plot** the isometric projection.
2CVES108_5	**Prepare** sectional view of solids.

Course Contents:

Unit No.	Title	Hrs
Unit 1	**Introduction to AutoCAD** Introduction & Review of Previous knowledge Capability of AutoCAD Starting AutoCAD Various Visualization commands Documentation Quick tour Creating and Accessing documentation Layout and plotting Concept of hardware & software	06
Unit 2	**Getting started (Principle & Concept)** Starting AutoCAD. AutoCAD & interface Setting new drawing. Accessing command Opening & saving existing file & function keys etc.	04
Unit 3	**Creating objects (coordinate system)** Co-ordinates system and their type. Drawing line objects. Drawing curve objects and solid filled areas.	04
Unit 4	**Editing methods and controlling drawing display** Working with named objects Editing objects using the object property tool bar and various method. Zooming & Panning drawing, redrawing screen, regenerating the drawing.	06

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Unit 5	**Basic dimensioning geometric dimensioning & tolerancing.** Adding text to drawing Need for Dimensioning. Detailed discussion on Dimensioning and tolerance method in AutoCAD Editing method. Adding text with various engineering symbols.	04
Unit 6	**Perspective drawing**	04

List of Experiments

Exp. No.	Title of Experiments
1	Computer aided drafting of Curves.
2	Computer aided drafting of solids upto hexagonal base shape and cylindrical/ Conical shape inclined to the reference planes.
3	Computer aided drafting of orthographic vies of simple 3d objects. (04)
4	Computer aided drafting of Isometric view.
5	Plotting of perspective views of given solids or small 3D objects.

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing	N D Batt& V M Panchal	Charotor Publication House, Bombay	50th	2010
02	Engineering Drawing	Dhananjay A Jhole	Tata Mc-Graw Hill	5th	2011
03	Fundamentals of Engineering Drawing	Warren. J. Luzadder	Prentice-Hall of India.	11th	1999
04	Engineering Drawing	P S Gill	Katson books	9th	2012

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing & Graphics	K. Venugopal	New Age Publication	5th	2012
02	Engineering Drawing	M. B. Shaha and B. C. Rana	Pearson Education	2nd	2012
03	ABC's of Auto CAD	George Omura	BPB Publication.	-	-
04	Engineering graphic with Auto CAD 2002,	Bethune	Pearson Publication	-	-

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVES109, Design Thinking Laboratory**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	1/0/2
Credits	2
Evaluation Scheme: ISE	50

Course Outcomes (COs): Project
Upon successful completion of the project, the student will be able to:

2CVES109_1	**Apply** the design thinking techniques to empathize the customer through arranging survey and/or interview.
2CVES109_2	**Identify** and Formulate the solution for real world problem using design thinking technique.
2CVES109_3	**Create and Exhibit** Prototype, for defined problem using design thinking approach.
2CVES109_4	**Test** developed prototype for defined problem to meet user's requirements.
2CVES109_5	**Adapt** ethical practices and professional skills to provide a reliable solution for defined real world problem through participating in team activities.

Unit No.	Content	Hrs.
Unit 1	Introduction to Design Thinking, Design Thinking Process	02
Unit 2	Empathize Phase: Empathy and Ethics, User Perspective, Activities – Empathy Map, Planning, Persona building.	02
Unit 3	Customer Journey Mapping, Observation of stakeholders, Defining and Conceptualization of problem	02
Unit 4	Ideation, Activities – 5 Whys & 1 How, Story boarding, Brainstorming.	02
Unit 5	Prototype – Types, Mindsets, Tools.	02
Unit 6	Testing – Scenario, Methods, Refinements & Recommendations.	02

Expt. No	Title of the Experiment
1	Identification and Selection of Problems
2	Designing of Empathy Map
3	Customer Survey and Analysis
4	Persona Building
5	Customer Journey Map
6	Defining the problem
7	Poster Presentation
8	Ideation
9	Prototype Building
10	Testing

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Understanding Design Thinking, Lean, and Agile	Jonny Schneider	O'Reilly	---	2017
02	Introduction to Design Thinking	S. Salivahanan, S. Suresh Kumar, D. Praveen Sam,	Tata Mc Graw Hill,	---	2019
03	Karmic Design Thinking - A Buddhism-Inspired Method to Help Create Human-Centered Products & Services	Prof. Bala Ramadurai,	Self-Published	--	2020
04	Design: Creation of Artifacts in Society	Prof. Karl Ulrich, U. Penn	University of Pennsylvania	--	2011

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Design for How People Think	John Whalen	O'Reilly	---	2019
02	Change by Design	Tim Brown	HarperCollins	---	2009
03	Creative Confidence: Unleashing the Creative Potential Within Us All	Kelley, D. & Kelley, T	New York: William Collins	---	2014
04	Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days	Jack Knapp and others	Simon & Schuster	---	2009

Other Books/E-material

Sr. No	Title	Instructor	Publisher
01	NPTEL Course- Design Thinking A Primer	Prof. Ashwin Mahalingam & Prof. Bala Ramadurai	www.nptel.ac.in
02	NPTEL Course- Innovation by Design	Dr. B.K. Chakravarthy	www.nptel.ac.in

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Course Details:

Class	F.Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVHS110A, Badminton**
Prerequisite/s	----------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS110A_1	**Improve** physical fitness.
2CVHS110A_2	**Understand** the basic rules and how they can play the game of badminton.
2CVHS110A_3	**Provide** opportunities for playing modified games to promote student learning
2CVHS110A_4	**Develop** students' critical thinking skills, problem solving skills, self-management skills, collaboration skills, risk assessment etc.
2CVHS110A_5	**Learn** various technical motor skills in badminton and how you can move better in the court.
2CVHS110A_6	**Acquiring** a satisfactory level of knowledge and experience of the sport, to enable students to play by themselves for recreation.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to badminton – Aim – Objectives – Short reference in Badminton history Understand the basic rules and how they should play normal game.	04
Unit 2	Skills - Service, Net shot, Clear, Drop, Smash. Skills - Service Forehand & Backhand, Net shot, Drive (Presentation and practice to the court)	06
Unit 3	Skills – Clear, Drop, Smash Implementation of singles rules	05
Unit 4	Footwork 1 Footwork 2	05
Unit 5	Implementation of doubles rules. Forehand strokes. Motor skills practice 1	06
Unit 6	Motor skills practice 2 Motor skills practice 3 Motor skills practice 4	04

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVHS110B, Volley Ball**
Prerequisite/s	--------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS110B_1	**To send** the ball over the net, according to the regulations, to the ground on the opponents ground
2CVHS110B_2	The ball is put into **play** through the service right back player within the service zone
2CVHS110B_3	**The Ball** must hit with one hand or one arm and directly send over the net opponent's court.
2CVHS110B_4	**To valley** the ball over the net before it touches on the ground
2CVHS110B_5	The players **use** their hands to volley the ball.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction & Understand basic volleyball rules, terminology, and scoring procedures.	04
Unit 2	Demonstrate basic skills associated with volleyball, including passing, setting, serving, attacking (spiking), and blocking.	06
Unit 3	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	05
Unit 4	Demonstrate an understanding of the typical game sequencing: serve, pass, attack, defense, transition, and defense.	05
Unit 5	Understand and apply the knowledge of basic rules of volleyball. Skill Practice	06
Unit 6	Demonstrate proper etiquette and good sportsmanship. And Skill related Practice. Skill Practice	04

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	2CVHS110C, Kabaddi
Prerequisite/s	---------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS110C_1	**Acquire,** analyze and interpret basic skills
2CVHS110C_2	**Appraise** the rules and regulation.
2CVHS110C_3	**Demonstrate** and assess various basic skills/techniques and game strategies.
2CVHS110C_4	**Develops** confidence, concentration and tolerance in players.
2CVHS110C_5	This game also **Provides** an opportunity for healthy competitions among equal players and help them make friends.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Kabaddi – Aim – Objectives – Short reference in Kabaddi history Understand the basic rules and how they should play normal game.	04
Unit 2	Demonstrate basic skills associated with Kabaddi, including pushing, Bonus, Tackling, attacking, and blocking	06
Unit 3	Demonstrate an understanding of the typical game sequencing: service, Bonus, attack, defense, Raiding and defense.	05
Unit 4	Demonstrate the ability to perform individual offensive and defensive skills and strategies. Stepping Practice.	05
Unit 5	Skill Demo – Stepping, Bonus, Foot touch, Toe touch, Thrust, Squat leg, Kicks & Practice.	06
Unit 6	Skill Practice And Shadow Practice	04

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Course Details:

Class	F.Y. B. Tech, Sem.-I
Course Code and Course Title	2CVHS110D, Foot Ball
Prerequisite/s	--------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS110D_1	**By applying** these principles through active participation, students develop the necessary Skills and knowledge to play football.
2CVHS110D_2	**Provides** students with opportunities to improve physical fitness acquire knowledge of fitness concepts and practice positive personal and social skills.
2CVHS110D_3	**Students** will gain an understanding of how a wellness lifestyle affects one's health, fitness and physical performance

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Football – Aim – Objectives – Short reference in Football history Understand the basic rules and how they should play normal game.	04
Unit 2	Introduce students to the basic skills and knowledge associated with football. Understand basic football rules, terminology, and safety concerns.	06
Unit 3	Demonstrate the basic football skills of passing, three point stance, catching, blocking, hand-offs, punting, the carry and kicking & Practice.	05
Unit 4	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	05
Unit 5	Improve personal fitness through participation in yoga, muscular strength, muscular endurance, and flexibility activities & Practice.	06
Unit 6	Successfully participates in skill improvement and offensive game strategies & Practice	04

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVHS110E, Bharatnatyam Classical Dance**
Prerequisite/s	--------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS110E_1	**Interpolation** of Indian classical dance forms & basic types of Bharatnatyam.
2CVHS110E_2	**Subdivide** bharatnatyam in terms of Nrutt, Nrutya & Nattya.
2CVHS110E_3	**Show** the perform base on signal & combine hand posture in terms of Ganesh Vandana & Mahalaxmi Ashtak

Course Contents:

Unit No.	Title	Hrs.
Unit 1	History of Bharatnatyam Dance style & information about all Indian classical dance forms.	01
Unit 2	Basic types of Bharatnatyam :- Tatty Advu, Natty advu, Vishru advu, Kuddit Mett advu, Mett advu, tatti kuddit mett advu & Tirmanam (small). Study of Navras Abhinay. Singal Hand posture , Footwork , Shirobhed(head movement),	10
Unit 3	Combine Hand posture. Meaning of Guruvandna, Ganesh, mahalaxmi shlok. Definition of Nrutt, Nrutya & Nattya.	06
Unit 4	Practical session of Ganesh vandna Shlok in classical music.	06
Unit 5	Practice Sessions. & Presentation Of Ganesh vandna	07
Unit 6	History of Bharatnatyam Dance style & information about all Indian classical dance forms.	01

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Course Details:

Class	F.Y. B. Tech, Sem.-I
Course Code and Course Title	2CVHS110F, Harmonium Classical Music
Prerequisite/s	---------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS110F_1	**Outline** in History Harmonium & different Raags.
2CVHS110F_2	**Perform** on different songs
2CVHS110F_3	**Role play** the different music by means of harmonium.

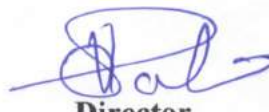**Course Contents:**

Unit No.	Title	Hrs.
Unit 1	History & Introduction of Harmonium.	02
Unit 2	Harmonium presentation of Raag :- Bhoop raag / Bhimpalash raag.	12
Unit 3	Practice sessions.	03
Unit 4	Practice song notations & Harmonium Dhoon (percussion)	08
Unit 5	Practice sessions & students presentations	05
Unit 6	History & Introduction of Harmonium.	02

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Course Details:

Class	F. Y. B. Tech, Sem.-I
Course Code and Course Title	**2CVHS110G, Indian Folk Dance**
Prerequisite/s	---------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS110G_1	**Discuss** different types in Indian Folk dance.
2CVHS110G_2	**Demonstrate** Navras Abhinay, Tribal dance, Dhangari & Lavni dance.
2CVHS110G_3	**Compose** dance on different folk dance style.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Indian Folk dance & its forms.	02
Unit 2	Basic steps of folk dance styles.	03
Unit 3	Importance of expressions (Acting) in dance, Navras Abhinay & its types. (9 type of navras)	03
Unit 4	Tribal dance, & its different styles.	06
Unit 5	Practice sessions.	04
Unit 6	History of Dhangari & Lavni dance. Types of dhangari & lavni dance.	01
Unit 7	Steps (dance composition) of Dhangari & Lavni dance.	07
Unit 8	Practice sessions & Students performance	04

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Course Details:

Class	F.Y. B. Tech, Sem.- I
Course Code and Course Title	**2CVHS110H, Karaoke Singing.**
Prerequisite/s	----------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS110H_1	**Understand** notation of the songs.
2CVHS110H_2	**Perform** happy, sad, love deviational, patriotic songs.
2CVHS110H_3	**Compose** songs in many variations.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Song Notation	04
Unit 2	Happy song / Sad song (classical & semi classical)	08
Unit 3	Love song / Deviational song / Patriotic songs	08
Unit 4	Song composition	05
Unit 5	Practice session & students presentation	05

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVBS111, Applied Mathematics II**
Prerequisite/s	-------------------
Teaching Scheme: Lecture/Tutorial	3/1
Credits	4
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVBS111_1	**Solve** problems on partial derivatives by using fundamental concepts of derivative and apply it to find Jacobian, Maxima and Minima of functions of several variables.
2CVBS111_2	**Solve** Ordinary Differential Equation by using analytical method and numerical techniques.
2CVBS111_3	**Use** technique of finite difference and interpolation to compute the value of function for given data.
2CVBS111_4	**Apply** the concept of Special Functions to evaluate improper integrals.
2CVBS111_5	**Evaluate** proper and improper type of multiple integrals by using fundamental concepts of integration and apply it to find Area and Mass of a given region.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	**Partial Differentiation and Its Applications:** Function of two or more variables, Partial derivatives, Euler's theorem, Change of variables, Jacobin, Maxima and minima of functions of two variables.	08
Unit 2	**Ordinary Differential Equation (First order and First degree):** Linear differential equation, Equation reducible to linear differential equation, Exact differential equation, Equation reducible to exact equation.	07
Unit 3	**Numerical Solution of Ordinary Differential Equation (First order and First degree):** Picard's method, Taylor's series method, Euler's method, modified Euler's method, Runge-kutta method.	06
Unit 4	**Finite Differences and Interpolation:** Finite differences, Newton's Interpolation formulae, central difference interpolation formulae (stirling formula), interpolation with unequal interval (Lagrange's formula)	06
Unit 5	**Special Functions:** Gamma function, Properties of Gamma function, Beta function, Properties of Beta function, Relation between Beta and Gamma functions.	07
Unit 6	**Multiple Integral and It's Applications:** Double Integrals, Triple integral, Change of Order of Integration, Change to polar, Applications to Area and Mass of plane lamina.	08

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Sr. No.	Title of Tutorials
1	Partial Differentiation and homogeneous function
2	Applications of Partial Differentiation
3	Linear and non-differential equation.
4	Exact and non-differential equation
5	Numerical Solution of Ordinary Differential Equation
6	Newton's Interpolation formulae: forward and backward difference formulae
7	Central difference interpolation formulae (stirling formula) and Lagrange's interpolation formula.
8	Special functions

Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publishers	44th	2018
02	Advanced Engineering Mathematics	N. P. Bali, Manish Goyal	Infinity science press	7th	2010
03	Advanced Engineering Mathematics	H. K. Das	S. Chand	22nd	2018
04	Numerical Methods in Engineering & Science	Dr. B. S Grewal	Khanna Publishers	9th	2010

Reference Books / Handbooks

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	A textbook of Applied Mathematics	P. N. Wartikar & J. N. Wartikar	Pune Vidyarthi Griha Prakashan	1st	2008
02	Higher Engineering Mathematics	B. V. Ramana	Tata McGraw Hill Publ.	6th	2010
03	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley Publishers	10th	2017
04	Numerical Methods	Dr. P. Kandasamy, Dr.K.Thilagavathy, Dr. K. Gunavathi	S. Chand	1st	2010

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVBS112, Applied Chemistry**
Prerequisite/s	------------------
Teaching Scheme: Lecture/Tutorial	3/0
Credits	3
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVBS112_1	**Apply** principles of water testing to identify water quality parameters and methods of water softening using fundamental laws.
2CVBS112_2	**Classify** fuels and analytical methods to identify their characteristics using basic principles of chemistry.
2CVBS112_3	**Select** engineering, ceramic materials on the basis of its properties and applications using their chemical composition.
2CVBS112_4	**Apply** the methods of prevention of corrosion to a given metal considering it's types and factors affecting corrosion.
2CVBS112_5	**Compute** the values of hardness of water and calorific values of fuels using fundamental equations.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	**Water Technology:** Introduction, impurities in natural water, Water Testing: acidity, alkalinity and chlorides, hardness of water (definition, causes and significance), Calculations of total hardness, disadvantages of hard water in domestic and industrial applications. Scales and sludges: Formation in boilers and removal, Treatment of hard water by ion- exchange process, Zeolite process, Desalination of brackish water by Reverse Osmosis.	07
Unit 2	**Chemical and Instrumental Techniques:** Chemical analysis, its types, Different ways to express concentration of solution. Numerical problems. Standards and its types. p^H-**metry:** Introduction, pH measurement using glass electrode and applications. **Spectrometry**: Introduction, Laws of spectrometry (Lamberts and Beer-Lambert's law). Instrumentation and applications of UV-Visible spectrophotometer, **Chromatography**: Introduction, Principle, instrumentation and applications of gas-liquid chromatography (GLC).	07
Unit 3	**Engineering Materials:** A) **Polymers**: Introduction, plastics, thermo-softening and thermosetting plastics, industrially important plastics like phenol-formaldehyde, urea formaldehyde. Conducting polymers, biodegradable polymers (properties and applications), composites, fibre-reinforced plastics (FRP) and glass reinforced plastics (GRP). B) **Lubricants**: Introduction, classification of lubricants (solid, semisolid and liquid), lubrication and it's types, characteristics of lubricants: viscosity, viscosity	07

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	index, flash point, fire point, cloud point and pour point.	
Unit 4	**Fuels and Non-conventional Energy Sources:** **Fuels:** Introduction, classification, characteristics of good fuels, comparison between solid, liquid and gaseous fuels, types of calorific value (higher and lower), Bomb calorimeter and Boy's calorimeter. Numericals on Bomb and Boy's calorimeter. **Batteries:** Introduction, Characteristics of a battery, Rechargeable Li- ion batteries (Diagram, charging-discharging reactions, advantages and applications). **Fuel Cells:** Introduction, H_2-O_2 Fuel cell (Construction, working and applications), applications of fuel cells.	07
Unit 5	**Corrosion & Green Chemistry:** **Corrosion:** Introduction, causes, types, Atmospheric corrosion (oxidation corrosion), Electrochemical corrosion (hydrogen evolution and oxygen absorption mechanism), factors affecting rate of corrosion. Prevention of corrosion by proper design and material selection, hot dipping (galvanizing and tinning), cathodic protection method, electroplating, metal cladding. **Green Chemistry:** Definition, Twelve principles of green chemistry, Research and industrial applications.	07
Unit 6	**Metallic & Ceramic Materials:** **Alloys:** Introduction, alloy definition and classification, purposes of making alloys. Ferrous alloys: Plain carbon steels (mild, medium and high). Nonferrous alloys: Copper alloy (Brass), Nickel alloy (Nichrome), Aluminum alloy (Duralumin and Alnico). **Ceramic Materials:** Introduction, types of ceramics, types of cement & their applications, Manufacture of Portland Cement by wet process, Composition of Portland Cement & their functions- a) Chemical composition, b) Compound composition, Setting & hardening of Portland Cement.	07

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	A Text Book of Engineering Chemistry	S. S. Dara	S. Chand & Co. Ltd., New Delhi.	11th	2008
02	A Text book of Engineering Chemistry	Shashi Chawala	Dhanpat Rai Publishing Co. New Delhi.	3rd	2007
03	A Test Book of Applied Chemistry	Ziyauddin D. Sande, Vijayalaxmi M. Vairat, Pratapsingh V. Gaikwad	Wiley Publications	1st	2018

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Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing Co., New Delhi.	16th	2015
02	Industrial Chemistry	B. K. Sharma	Goel publication (P) Ltd.	10th	1999
03	Fundamentals of Engineering Chemistry	S. K. Singh	New Age International (P) Ltd, New Delhi.	1st	2009
04	Instrumental Methods of Chemical Analysis	Chatwal and Anand	Himalaya Publishing House, Mumbai.	5th	2005
05	Engineering Chemistry	Wiley India	Wiley India Pvt. Ltd., New Delhi.	1st	2012

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVPC113, Fundamentals of Civil Engineering**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial	4/0
Credits	4
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVPC113_1	**Develop** the components of residential building for a given site condition with the help of building planning rules and regulations
2CVPC113_2	**Apply** the knowledge of surveying techniques considering the IS code
2CVPC113_3	**Discuss** the principles of planning with building bye laws and property transaction
2CVPC113_4	**Describe** aspects of civil engineering field & masonry construction for residential building considering client's requirements
2CVPC113_5	**Make** use of Transportation, Environmental and Irrigation Engineering in civil engineering sector considering national building code

Course Contents:

Unit No.	Title	Hrs
Unit 1	**Introduction to Civil Engineering:** Branches & applications of civil engineering, Role of civil engineer, Types of structure, types of loads, Elements & functions of sub structure, types of soil and rocks, concept of bearing capacity, types of foundations, Elements of super-structures and their functions, Concept of Green Building	10
Unit 2	**Surveying** Principles & Classification of surveys, Dumpy level, Auto Level, Theodolite, Terms used in levelling, levelling instruments, methods of reduction of levels, types of levelling. Contours: Characteristics of contours, use of contour maps. Introduction to EDM and Total station.	06
Unit 3	**Building Materials & formwork:** Applications and properties of the following building materials: Bricks, Steel, Cement, Aggregate, Plastic, Aluminium, Water, M.S., S.S., FRP sheets, Gypsum, wood, glass, stone, tiles, bitumen, ceramic Formwork: Requirement, economy and material	12
Unit 4	**Masonry:** Stone masonry - Random Rubble, Uncoursed Rubble, Coursed Rubble and Ashlar Masonry. Brickwork and Brick Bonds - English, Flemish, and Rat trap bond (one- brick thick). Composite masonry, various types of composite masonry walls Arches: Technical terms in arches, types of arches. Lintel: Necessity, types of lintels Basic requirements of a building as a whole:	11

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Unit 5	**Introduction to Transportation, Environmental and Irrigation Engineering** Components of rigid & flexible pavement, Cross section of road in cutting & filling. Components of railway track(Broad Guage) Green Building – Introduction & rating system, Smart cities, Sustainability, Carbon footprint. Components of water supply scheme (flow diagram). Introduction to Gravity and Earthen Dam.	08
Unit 6	**Building Planning:** Procedure of Building Permission, significance of commencement, plinth completion or occupancy certificate, orientation of building, National Building code, types of building, Principles of planning, building bye laws, Line plan of residential building	09

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Surveying	N. Basak	Tata Mac Graw Hill Publications	1st	2016
02	Engineering Hydrology	K Subramanya	Mac Graw Hill Publications	4th	2013
03	Basic Civil Engineering	G. K. Hiraskar	Dhanpatrai Publications	1st	2008
04	Basic Civil Engineering	S. S. Bhavikatti	New Age International Publications	2nd	2003
05	Surveying Vol. I, II, II	B. C. Punmia	Laxmi Publications	2nd	2001

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Introduction to Environmental Engineering	Mackenzie Davis and David Cornwell	McGraw Hill Education;	6th	2020
02	The A To Z of Practical Building Construction and its Management	Sandeep Mantri	Satya Prakashan	1st	2010
03	Engineering Surveying	Schofield W.	Taylor and francies	6th	2007
04	Advanced Surveying: Total Station, GIS and Remote Sensing	Satheesh Gopi, R. Sathikumar, N. Madhu	Pearson Education India	1st	2006
05	Surveying	A.Bannister, S. Raymond, R.Baker	Pearson	7th	2002

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	2CVES114, Basic Electrical Engineering
Prerequisite/s	-------------------
Teaching Scheme: Lecture/Tutorial	2/0
Credits	2
Evaluation Scheme: ISE / MSE / ESE	40 / 30 / 30

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVES114_1	**Explain** basic terminologies related to DC, AC and magnetic circuits to relate the operations of electrical devices using electrical laws.
2CVES114_2	**Relate** the concepts of AC fundamentals to single-phase and three-phase AC circuits to describe the generation of AC with phasor representation.
2CVES114_3	**Demonstrate** wiring circuits and earthing systems using circuit diagrams on the basis of different applications & workspaces.
2CVES114_4	**Describe** the working principle of AC and DC Machines using electromagnetic laws with constructional features & types for various applications.
2CVES114_5	**Apply** conceptual understanding of AC& DC parameters to solve electrical circuits and provide a solution

Course Contents:

Unit No.	Title	Hrs
Unit 1	**DC Circuits** Definitions: EMF, Current, Electrical Work, Power, Energy, Ohm's Law, Kirchhoff's Laws, Factors affecting resistance, Analysis of DC Circuits using KCL & KVL [Numerical treatment].	05
Unit 2	**Magnetic Circuits** Magnetic circuits & definitions, Comparison between Electric and Magnetic circuit, Magnetic Leakage and Fringing, Magnetization (B-H) curve.	04
Unit 3	**Fundamentals of AC Circuits** Generation of alternating voltage and current, concept of RMS value, Average value, phasor representation, AC circuits- pure R, L, C, and series R-L-C circuits [Numerical Treatment]. Generation of three-phase AC voltage, Advantages of the three-phase system over single-phase system	05
Unit 4	**Earthing and Wiring Circuits** Concept of earthing, necessity of earthing, plate and pipe earthing, HRC fuse, Simple wiring, Staircase wiring, Godown wiring. [Theoretical treatment only].	04
Unit 5	**Single Phase Transformer** Working principle of a Transformer, Construction, Core type, and Shell type transformer, EMF Equation, Transformation ratio & applications.	05
Unit 6	**Electrical Machines** **D.C.Motor:** Working principle of a DC motor, Construction, Type, and applications.	05

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Single phase AC motor: Double Field Revolving Theory, Working principle of Split phase I.M, applications. **Universal Motor:** Construction, working principle, applications. [Theoretical treatment only].	

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Basic Electrical Engineering	V. K. Mehta Rohit Mehta	S. Chand Publications, New Delhi	5th	2016
02	A Textbook of Electrical Technology	B L Theraja & A K Theraja	S. Chand Publications, New Delhi	1st (Reprint)	2016
03	Basic Electrical Engineering	J. M. Kharade, M. D. Patil, D. B. Kanase	Wiley India	1st	2018
04	Basic Electrical Engineering	I.J. Nagrath D. P. Kothari	Tata McGraw Hill	3rd	2013

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Electrical Engineering Concepts and Applications	PV Prasad & S. Shivanaraju	CENGAGE Learning	1st	2012
02	Fundamentals of Electrical Engineering	Bharati Dwivedi, Anurag Tripathi	Wiley	2nd	2014
03	Electrical Engineering Fundamental	Vincent Del Toro	Pearson Publication	2nd	2003
04	Fundamentals of Electrical Engineering	Ashfaq Husain	DhanpatRai& co.	3rd	2008
05	Basic Electrical & Electronics Engineering	S. K. Bhattarachya	Pearson Publication	1st	2012

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVBS115, Applied Chemistry Laboratory**
Prerequisite/s	-------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVBS115_1	**Determine** the hardness acidity, alkalinity, chloride content using appropriate methods of titration for given sample of water.
2CVBS115_2	**Estimate** rate of corrosion in acidic and alkaline medium by depreciation of weight.
2CVBS115_3	**Use** pH meter to determine pH value of given solution and validate the findings with suitable optical method (photo-colorimeter) and graphical methods.
2CVBS115_4	**Analyze** coal sample, lubricants and aqueous solutions to get the percentage compositions using appropriate methods.
2CVBS115_5	**Communicate** effectively about laboratory work both orally and writing.

List of Experiments	
Exp.No.	**Title of Experiments**
1	Determination of acidity of water sample. (Neutralization Titration)
2	Determination of alkalinity of water sample. (Acid- Base Titration).
3	Determination of chloride content of water by Mohr's method. (Precipitation Titration).
4	Determination of total hardness of water sample by EDTA method.
5	Determination of moisture, voltile and ash content in a given coal sample. (Proximate analysis)
6	Preparation of Urea-formaldehyde resin.
7	Determination of viscosity of lubricating oil.
8	Estimation of zinc in brass solution (Displacement Titration)
9	Estimation of copper in brass solution (Displacement Titration)
10	Determination of rate of corrosion of aluminium in acidic and basic medium
11	Determination of pH of sample solution by pH meter
12	Determination of calorific value of fuel using Bomb calorimeter.
13	Demonstration of Photo-colorimeter.

Minimum 8 experiments should be performed from the list out of which two experiments should be or instrumental methods.

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Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	A Text Book of Engineering Chemistry	S. S. Dara	S. Chand & Co. Ltd., New Delhi.	11th	2008
02	A Text Book of Engineering Chemistry	Shashi Chawala	Dhanpat Rai Publishing Co. New Delhi.	3rd	2007

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Materials Science and Engineering –	V. Raghvan	PHI Learning.	5th	2006
02	Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing Co., New Delhi.	15th	2010
03	Industrial Chemistry	B. K. Sharma	Goel publication (P) Ltd.	10th	1999

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVPC116, Fundamental of Civil Engineering Laboratory**
Prerequisite/s	-------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs): Project
Upon successful completion of the project, the student will be able to:

2CVPC116_1	**Draw** building components of residential by using AutoCAD considering requirement of owner
2CVPC116_2	**Calculate** reduced levels of different points by levelling.
2CVPC116_3	**Calculate** linear angular and area measurement by Total Station.
2CVPC116_4	**Understand** the documents required for municipal submission drawing

List of Experiments

Exp. No.	Title of Experiments
1	Determination of reduced levels for different points by HI & Rise and fall method.
2	Angular measurement by using theodolite.
3	Visit to construction site and visit report.
4	Collection of the various documents required for municipal sanctioning of plan
5	Draw various building components- Staircase & openings
6	Draw a line plan of residential building by applying principles of planning.
7	Study of total station and Linear & Angular measurement.
8	Area measurement by using total station.
9	Traversing by total station.

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Building Drawing: With An Integrated Approach To Built Environment	S. Y. Patki, M G Shah, C M Kale	McGraw Hill India	6th	2021
02	Basic Civil Engineering	G. K. Hiraskar	Dhanpatrai Publications	1st	2008
03	Surveying	N. Basak	Tata Mac Graw Hill, Publications	1st	2008
04	Basic Civil Engineering	S. S. Bhavikatti	New Age International Publications	2nd	2003
05	Surveying Vol. I, II, II	B. C. Punmia	Laxmi Publications	2nd	2001

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Introduction to Environmental Engineering	Mackenzie Davis and David Cornwell	McGraw Hill Education;	6th	2020
02	The A To Z of Practical Building Construction and its Management	Sandeep Mantri	Satya Prakashan	1st	2010
03	Engineering Surveying	Schofield W.	Taylor and francies	6th	2007
04	Advanced Surveying: Total Station, GIS and Remote Sensing	Satheesh Gopi, R. Sathikumar, N. Madhu	Pearson Education India	1st	2006
05	Surveying	A.Bannister, S.Raymond, R.Baker	Pearson	7th	2002
06	Civil Engineering Handbook	P.N.Khanna	Engineer's Publishers	17th	1999

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVES117, Basic Electrical Engineering Laboratory**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs): Project
Upon successful completion of the project, the student will be able to:

2CVES117_1	**Identify** electrical components, equipment, Lamps and different illumination schemes using electrical apparatus & symbols to handle it properly for experimentation.
2CVES117_2	**Measure** electrical parameters with appropriate measuring instruments on the basis of ratings and type of connections.
2CVES117_3	**Demonstrate** the circuital laws, perform testing on electric machine to find the solutions with the help of various instruments for domestic and industrial appliacations.
2CVES117_4	**Correlate** and comment the observations and results of experiment with different laws to provide solution for given system.
2CVES117_5	**Practice** safety precautions in day to day life& communicate effectively with ethics about laboratory work both orally and in writing.

List of Experiments

Exp. No.	Title of Experiments
1	Study of electrical components, equipment's, & measuring instruments.
2	Safety Precautions and earthing Test
3	Kirchhoff's Voltage and Kirchhoff's current Law
4	B-H curve for magnetic material
5	RLC Series Circuit
6	Demonstration of different Wiring Circuits
7	Lamps and Illumination Schemes
8	Effect of Temperature on Resistance
9	Load Test on Single Phase Transformer
10	Load Test on DC Shunt Motor.

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01	Basic Electrical Engineering	V. K. Mehta Rohit Mehta	S. Chand Publications, New Delhi	5th	2016
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05	Basic Electrical & Electronics Engineering	S. K. Bhattarachya	Pearson Publication	1st	2012

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Course Details:

Class	F. Y. B. Tech, Sem.- II
Course Code and Course Title	**2CVES118, Programming for Problem Solving Laboratory**
Prerequisite/s	------------------
Teaching Scheme: Lecture/Tutorial/Practical	1/0/2
Credits	2
Evaluation Scheme: ISE/ESE (POE)	50 / 50

Course Outcomes (COs): Project		
Upon successful completion of the project, the student will be able to:	
2CVES118_1	**Prepare** an algorithm and draw a flowchart to accurately solve various mathematical problems by using structured approach.
2CVES118_2	**Apply** the fundamental concepts like data types, operators, looping constructs to solve mathematical problems by using the decision and looping controls.
2CVES118_3	**Develop** a C program to demonstrate the modular approach by using the concept of function, structure and pointer.
2CVES118_4	**Demonstrate** a solution for various mathematical problems by using the fundamental concepts of C.
2CVES118_5	**Write,** Compile and debug C program for various problem statements by using structured approach.

Course Contents:

Unit No.	Title	Hrs
Unit 1	**Introduction to Information Technology** Computer, hardware, software, computer generation, I/O devices-CPU-Memory devices-processors-keyboard-printers. Operating systems- introduction, types of OS, Functions of OS.	02
Unit 2	**Problem Solving** The meaning of algorithms, Flowcharts, Pseudo codes, Writing algorithms and drawing flowcharts for simple exercises, C Program development environment. Importance of 'C' Language, History, Structure of 'C' Program, Sample 'C' Program.	02
Unit 3	**C Fundamentals** Constants, variables and data types. Operators and expressions, Managing input / output operations, Control statements-Decision making, Case control & Looping Constructs.	03
Unit 4	**Array** The meaning of an array, one dimensional and two dimensional arrays, declaration and initialization of arrays, reading , writing and manipulation of above types of arrays, multidimensional arrays.	02
Unit 5	**Functions** Need of user defined functions, elements of User defined functions, defining functions, return values and their types, function calls, function declaration, methods of parameter passing, Scope rule of functions	02

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| Unit 6 | **Structure & Pointers**
Need of Structure, Defining a structure, declaring and accessing structure variables, structure initialization, copying and comparing structure variables, structures and functions, Unions.
Understanding pointers, accessing the address space of a variable, declaring and initialization pointer variables, accessing a variable through its pointer | 03 |

List of Experiments

Exp. No.	Title of Experiments
1	Write an algorithm and draw flowchart for given problem statement.
2	Program using different data types and operators in C.
3	Program using if ,if else and if else if construct
4	program to demonstrate looping constructs(while, for loop, do while)
5	Program using nested loop (for loop, while loop).
6	program to demonstrate one dimensional array
7	program to demonstrate two dimensional array
8	Implement a program to demonstrate user defined functions.
9	program to demonstrate concept of structures in c.
10	program to demonstrate pointers and pointer arithmetic in c.

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Computer Practice	Sheela Kumar	Anuradha Publishers	-	2003
02	Programming And Problem Solving Using C Language	ISRD Group	McGraw-Hill Publications	-	2012
03	Let Us C	Yashwant Kanetkar	BPB	3rd	2011

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	The 'C' Programming Language	D. M. Ritchie	Pearson	2nd	1998
02	The Complete Reference C	Herbert Schildt	McGraw-Hill Publications	4th	2000
03	Test your C Skills	Yashwant Kanetkar	BPB Publications	5th	2013

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Course Details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	**2CVHS119A, Table –Tennis**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS119A_1	The students **define** table tennis game.
2CVHS119A_2	**Willingly** participates in Table Tennis as a component of an active lifestyle.
2CVHS119A_3	The students **explain** foot- work in forehand and backhand spin.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction & Understand basic Table Tennis rules, terminology, safety concerns, and scoring procedures.	04
Unit 2	Demonstrate proper court etiquette and good sportsmanship.	06
Unit 3	Demonstrate basic skills associated with table tennis including forehand, backhand, spins, grips & serves.	05
Unit 4	Demonstrate Exposition and Applying forehand and backhand straight strike.	05
Unit 5	Assess current personal fitness levels & Practice.	06
Unit 6	Use a variety of stroke placements to keep opponent moving during a table tennis match. Practice.	04

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Course Details:

Class	F.Y. B. Tech, Sem.-II
Course Code and Course Title	2CVHS119B, Kho-Kho
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS119B_1	**Helps** In Motor Development.
2CVHS119B_2	It **helps** in social and mental development of the student
2CVHS119B_3	Kho-Kho **helps** the student to off depression, anxiety, stress and, increase self-esteem.
2CVHS119B_4	It **develops** team spirit and leadership skill.
2CVHS119B_5	It **improves** physical fitness.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Kho-Kho – Aim – Objectives – Short reference in Kho-Kho history Understand the basic rules and how they should play normal game.	04
Unit 2	Demonstrate basic skills associated with Kho-Kho, including Fundamental Skills. Chasing Skills- a)Giving Kho b) Taking Direction c) Sudden Change d) Tapping	06
Unit 3	Demonstrate basic skills associated with Kho-Kho, including Fundamental Skills. Chasing Skills-e)Turning Round the Post f) Trapping g) Diving h) Fake Kho i) Late kho & Practice.	05
Unit 4	Demonstrate basic skills associated with Kho-Kho, including Running Skills a)Position on the court b) Avoiding Trapping c) Positioning near post d) Dodging	05
Unit 5	Demonstrate basic skills associated with Kho-Kho, including Running Skills e)Front Dodge f) Back Dodge c) Round the post dodge & Practice	06
Unit 6	Kho-Kho Skills Practice & Matches.	04

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Course Details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	**2CVHS119C, Basket Ball**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS119C_1	**Introduce** students to the basic skills and knowledge associated with basketball.
2CVHS119C_2	**By applying** these principles through active participation, students develop the necessary skills and knowledge to play basketball
2CVHS119C_3	**Provides** students with opportunities to improve physical fitness, acquire knowledge of fitness concepts and practice positive personal and social skills
2CVHS119C_4	Students **will gain** an understanding of how a wellness lifestyle affects one's health, fitness and physical performance.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction & Understand basic basketball rules, terminology, and safety concerns.	04
Unit 2	Demonstrate the six basic basketball skills of a) Running b) Jumping c) Passing d) catching e) Dribbling and f) Shooting.	06
Unit 3	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	05
Unit 4	Understand and apply the knowledge of basic rules of basketball. Skills Practice.	05
Unit 5	Demonstrate proper etiquette and good sportsmanship. Successfully participates in skill improvement and offensive game strategies.	06
Unit 6	Identify and apply injury prevention principles related to aerobic activities. Practice & Matches.	04

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Course Details:

Class	F.Y. B. Tech, Sem.-II
Course Code and Course Title	**2CVHS119D, Hand Ball**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS119D_1	The student has a **basic knowledge** of the team values of sports games
2CVHS119D_2	**Acquainting** with the characteristics and trends in the development of the discipline.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction & Understand basic Handball rules, terminology, and safety concerns.	04
Unit 2	Health and safety rules. Rules for obtaining credit for the course, Reminder of the history, methodology and basic rules of the game, Exercises to improve passing, grips and throws. The game. Reminder of the refereeing rules.	06
Unit 3	Improving the technique of passing and grips in a team setting. Individual ways of freeing oneself from the opponent and the organization of positional attacks with their use	05
Unit 4	Exercises improving feints and individual defense technique. Everyone's defense system. Principles of individual defense & Practice.	05
Unit 5	Improving the technique of passing and grips in a team setting. Individual ways of freeing oneself from the opponent and the organization of positional attacks with their use. The game & Practice.	06
Unit 6	Identify and apply injury prevention principles related to aerobic activities. Practice & Matches	04

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Course Details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	**2CVHS119E, Katthak Classical Dance**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS119E_1	**Explain** Importance of katthak with respect to Indian culture.
2CVHS119E_2	**Demonstrate** Guruvandana, Tatkar.
2CVHS119E_3	**Compose** Katthak dance with consideration of classical & semi classical music.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Classical dance katthak & its importance.	01
Unit 2	Guruvandana & Tatkaar. (teen taal)	03
Unit 3	Chakri & Hast-sanchalan	03
Unit 4	Tode. (Tigida-tigdig-thai)	03
Unit 5	Practice sessions.	02
Unit 6	Paran & Tihaei	05
Unit 7	Classical dance on Song	05
Unit 8	Practice sessions.	08

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Course Details:

Class	F.Y. B. Tech, Sem.-II
Course Code and Course Title	2CVHS119F, Tabla Classical instruments
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):
Upon successful completion of this course, the student will be able to:

2CVHS119F_1	**Discover** History of table wadan.
2CVHS119F_2	**Demonstration** of different Taal in table wadan.
2CVHS119F_3	**Develop** notation on new music with help of table wadan.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Hostory & Introduction to Tabla Wadan.	01
Unit 2	Tabla presentation of Taal. Tritaal/ Dadra/ Zaptaal/ Kerwa/ Bhajni	05
Unit 3	Practice sessions.	06
Unit 4	Practice with notation ,& Set one song with tabla	08
Unit 5	Practice sessions & students presentations.	10

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Course Details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	**2CVHS119G, Western Dance**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):	
Upon successful completion of this course, the student will be able to:	
2CVHS119G_1	**Describe** History of Western dance & basic of western dance.
2CVHS119G_2	**Organize** western dance individually as well as group with help of western music.
2CVHS119G_3	**Compose** western dance on songs.

Course Contents:		
Unit No.	**Title**	**Hrs.**
Unit 1	History of Western dance style & information about western dance.	02
Unit 2	Basic types of western dance: - worm-up, Hand- legs movements.	04
Unit 3	Teaching Basic style (focus on dance / music / movements, how to control body, emotion/feeling of music/ dance.)	06
Unit 4	Training western dance with music (original dance form of western, free style dance)	08
Unit 5	Dance composition.	05
Unit 6	Practice session , & Students Presentation	05

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Course Details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	**2CVHS119H, Yoga**
Prerequisite/s	--------------------
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	1
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2CVHS119H_1	**Discus** importance of Yoga with respect to different forms of exercise.
2CVHS119H_2	**Perform** Different styles of Yoga.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction , importance of yoga, Basic exercise, sun salutation, shavasana taught yogic & excises types	06
Unit 2	Omkar & sleeping position seats (aasn yogic excise type)to teach omkar in a scientific way, to teach mercatasan , makrasan, setubandhan,	04
Unit 3	Opposite sleeping position. Shalabhasan, chakras an, Bhungasan, Makrasan. Pranayam;- Anulom-Vilom,,Bhasarika, Sheetkari, Bhramari, shitali pranayam. Rapid respiration(jalad shwasan)	05
Unit 4	Practice sessions	05
Unit 5	Seats in the sitting position:- padmasan, Wajrasan, Wakrasan, Ardh-machindrasana, Urshtrasan.	04
Unit 6	Seats in Fine Position. (Dand stithi):- Ekpaad vrukrashasan, Veerasan, Patangasan,Trikonasan.	06

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