PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2021-22 onwards)

Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem	Internal	Total
CBTE-101	Engineering Mathematics-I	3	1	-			Min: 40 (D Grade)	(Nil)	(Nil)	(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: Nil	Lab Performance / Quiz/Attendance -Max. Marks: Nil	

Pre-Requisite	Fundamental knowledge of function and continuity, Matrix, Elementary differentiation and integration.
Course Objective	The objective of this course is to familiarize the prospective engineers with techniques in calculus, multivariate analysis, Ordinary Differential Equations. Matrices and Numerical Analysis. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.
Course Outcomes	**Student will be able to learn:** 1. Solve Partial Differentiation, Maxima and Minima value along with its Applications. 2. Applications of Integration in Solving the Multiple Integral for Area and Volume of the Curve. 3. Solve Linear & Non Linear Partial Differential Equations of First Order. 4. Discuss Rank ,Consistency of Equation, Eigen Values and Eigen Vectors of matrix 5. Apply Numerical Methods for Solving Quadrature and Ordinary Differential Equation.

Unit	Contents (Theory)	Marks Weightage
I	**Differential Calculus:** Expansion of functions by Maclaurin's and Taylor's theorem, Partial differentiation, Euler's theorem, Maxima and minima for one and two variable.	14
II	**Integral Calculus:** Definite Integrals : Definite Integrals as a limit of a sum , Its application in Summation of series, Beta and Gamma Functions , Double and Triple Integrals, Change of Order of Integration.	14
III	**Ordinary Differential Equations:** Differential Equations of First Order and First Degree (Leibnitz linear, Bernoulli's, and Exact), Differential Equations of First Order and Higher Degree, Higher order differential equations with constants coefficients, Homogeneous Linear Differential equations, Simultaneous Differential Equations.	14
IV	**Matrices:** Rank of a Matrix, Solution of Simultaneous linear equations by elementary transformation, Consistency of Equation, Eigen Values and Eigen Vectors, Diagonalization of Matrices, Cayley-Hamilton theorem and its applications to find inverse.	14
V	**Numerical Analysis:** Difference operators, Interpolation, Inverse interpolation, Numerical integration by using Simpson's method, Weddle's rule and Trapezoidal rule. **Solutions of Ordinary Differential Equations:** Taylor's Series, Picard's Method, Euler's Method, Modified Euler's method, Runge-Kutta Method.	14

Text Book/References Books/ Websites

1. D.C. Aggarwal; Engg. Mathematics – I;Shree Sai Publication.
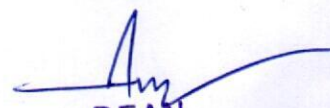
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2. D.C. Aggarwal; Engg. Mathematics – III;Shree Sai Publication
3. D.K Jain; Engg. Mathematics – I; Shri RAM Publication.
4. Ramana; Advance Engineering Mathematics; Tata McGraw hill.
5. B.S. Grewal; Higher Engineering Mathematics; Hanna Publication.
6. S. Arumungam; Mathematics for Engineers; SCITECH Publication.
7. Narayan S.and Mittal P. K.; Differential Calculus and Integral Calculus; S. Chand & Company Ltd.

Suggested List of Laboratory Practical (Expandable): Nil

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100) Min: 40 (D Grade)	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)
CBTE-102	Engineering Physics	3	1	1						

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

Pre-Requisite	Basic knowledge of Physics and Mathematics.
Course Objective	The objective of this course is to create understanding among the students for basic concepts and principles of physics to analyze practical engineering problems and apply its solutions effectively and meaningfully.
Course Outcomes	Student will be able to learn: 1. To understand concept of Laser and Fiber Optics and its industrial applications. 2. Able to develop a fundamental knowledge of Quantum and Nanophysics. 3. To apply principles and concept of nuclear and particle physics for solving various engineering problems. 4. To able to analyze the intensity variation of light due to Interference and Diffraction. 5. To develop the understanding of solid state physics and superconductivity.

Unit	Contents (Theory)	Marks Weightage
I	**Laser and Fiber Optics:** Introduction, Interaction of radiation with matter, Conditions for light amplification, population inversion, active medium, pumping, Optical resonators, characteristics of laser beam, applications of laser, Types of lasers: Ruby & He- Ne. Introduction of optical fiber, applications & types of optical fiber, Propagation of light through a cladded fiber, acceptance angle, numerical aperture, V Number, attenuation.	14
II	**Quantum and Nanophysics:** De Broglie Hypothesis, Group and particle velocities & their relationship, Uncertainty principle, Compton Effect, Wave function, time dependent and time independent Schrödinger wave equation, Application of time independent Schrödinger wave equation for a particle trapped in a one-dimensional square potential well. Introduction of nanophysics, concept of nanostructures and materials, characterization, applications and future of nanotechnology.	14
III	**Nuclear Physics:** Atomic Nucleus, Nuclear density, Atomic mass unit, Mass defect, Binding energy, Nuclear Models: liquid drop model, shell model, Accelerators: Drift tube LINAC, Cyclotron, Betatron, Nuclear Fission, Nuclear Fusion, Chain Reaction Nuclear Reactor and Geiger - Muller Counter.	14
IV	**Wave Optics:** Interference: Principle of superposition, Condition for interference, coherence, Young's double slit experiment, Interference in thin films, Newton's rings and their applications. Diffraction: Definition and condition for Diffraction, kinds of diffraction, diffraction grating single slit and grating, Resolving Power, Resolving Power of telescope and grating.	14

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Programme: **Bachelor of Technology**   Semester –I/II

V	**Solid State Physics and Superconductivity**: Free electron model theory, Band theory for solids, Fermi Dirac distribution function, Fermi level of intrinsic and extrinsic semiconductor, photodiode, solar cell, Hall effect. Superconductivity: Introduction, Meissner effect, Type I and Type II superconductors, BCS theory, Josephson Effect, applications of superconductors.	14

Text Book/References Books/ Websites:

1. M.N. Avadhanulu; Engineering Physics; S Chand Pub.
2. Beiser; Concepts of Modern Physics; McGraw-Hill
3. Navneet Gupta, S.K. Tiwary; Engineering Physics; Dhanpat Rai & Co.
4. Edward L. Wolf; Nanophysics and Nanotechnology; Wiley India
5. C. Kittel; Introduction to Solid State Physics; John Wiley

Suggested List of Laboratory Practical (Expandable):

1. To determine the width of single slit using He- Ne Laser source.
2. To determine the numerical aperture of an optical fiber.
3. To determine the frequency of A.C. mains using electrical vibrator.
4. To determine the height of a building by the help of Sextant.
5. To determine the operating plateau for the Geiger tube.
6. To determine the wavelength of sodium light by Newton's Ring experiment.
7. To determine the specific rotation of cane sugar solution with the help of half shades polar meter.
8. To determine the wavelength of violet and green light using diffraction grating.
9. To determine the width of single slit of using Laser source.
10. To determine refractive index of prism.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem (35)	Internal (15)	Total (50)
CBTE-103	Basic Electrical and Electronics Engineering	3	1	1			Min: 40 (D Grade)			Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

Pre-Requisite	Knowledge of Physics and Mathematics.
Course Objective	Impart a basic knowledge of electrical quantities such as current, voltage, power, energy, frequency to understand the impact of technology.
Course Outcomes	Student will be able to learn: 1. Basic concepts of Electrical Engineering. 2. Enhance basics of AC circuits. 3. Principle of transformer with background of magnetic circuits. 4. Understand basic concept of Electrical machines. 5. Understand the characteristics of diodes, transistors and digital electronic components.

Unit	Contents (Theory)	Marks Weightage
I	**D.C. Networks:** Introduction, Classification of elements – Active, Passive, Unilateral, Bilateral, linear, Nonlinear, Lumped and Distributed; Electric circuit, Ohm's law, Kirchhoff's laws, Mesh and Nodal analysis, Delta-Star and Star-Delta Transformations, Superposition theorem, Thevenin's and Norton's theorems, Maximum power transfer theorem (Only independent sources).	14
II	**Single Phase A.C. Circuits:** Production of AC voltage, Waveforms and basic definitions, Root mean square and average values of alternating currents and voltage, Form factor and peak factor, Phasor representation of alternating quantities, The j operator and phasor algebra, analysis of circuits, Series circuits, Parallel circuits, Series parallel circuits, Power in A.C. circuits.	14
III	**Three Phase A.C. circuits:** Introduction, Generation of Three-phase EMF, Phase sequence, Connection of Three-phase Windings - Delta and Star connection: Line and Phase quantities, Phasor diagrams, Power equations in balanced conditions. **Magnetic Circuits:** Introduction, Magneto motive force (MMF), Magnetic field strength, Reluctance, B-H curve, Comparison of the Electric and Magnetic Circuits, Series-Parallel Magnetic Circuit, Leakage flux and fringing, Magnetic Hysteresis, Eddy currents.	14
IV	**Single phase Transformers:** Introduction, Principles of operation, Constructional details, Ideal Transformer and Practical Transformer, EMF equation, Rating, Phasor diagram on no load, Losses, Efficiency calculations. **Direct Current Machines:** Constructional details, Principle of operation of DC machines, e.m.f. equation, Torque production, Classification of DC machines, Starting of DC motors.	14

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	(Only elementary treatment with simple problems on all the topics in this unit).	
V	**Diodes:** PN junction diode. Biasing of PN junction diode. V-I characteristics of diode. Effect of temperature on the V-I characteristics. Diode as a rectifier. **Special Diodes:** Zener diode, Tunnel diode, PIN diode, LED & photodiode. **Digital Electronics:** Introduction to Number Systems, Types-Decimal, Binary, Octal, Hexadecimal; Conversion from one number system to other. Basic logic gates, Universal gates, De-Morgon's Theorem.	14

Text Book/References Books/ Websites:

1. V.N. Mittle and Arvind Mittal; Basic Electrical Engineering; Second Edition, Tata McGraw Hill.
2. Del Torro, Vincent; Electrical Engineering Fundamentals; Second Edition Prentice Hall of India Pvt. Ltd
3. D.P. Kothari and I.J. Nagrath; Theory and Problems of Basic Electrical Engineering; PHI.
4. I.J. Nagrath and D.P. Kothari; Electrical Machines; Tata McGraw Hill.
5. Ashfaq Hussain; Fundamentals of Electrical Engineering; Third Edition, Dhanpat Rai & Company.
6. Navneet Gupta; Basic Electronics; Dhanpat Rai & Company.
7. R.P.Jain; Digital Electronics; TMH Publication.
8. Natrajan & Ramesh Babu; Electrical & Electronics Engineering; SCITECH Publication.

Suggested List of Laboratory Practical (Expandable):

1. To study the connection of electrical household appliance
2. To verify Thevenin's theorem and Norton's theorem.
3. To verify Kirchhoff's Current Law and Kirchhoff's Voltage Law.
4. To determine V– I characteristics of Incandescent lamp.
5. To measure current, power, voltage and power factor of series and parallel RLC circuit.
6. To study B-H curve.
7. To study construction of transformer.
8. To study construction of D.C. machine.
9. Study of V-I characteristics of diodes.
10. Verification of truth table for Gate (AND, OR, NOT, EX-OR, NOR, NAND).

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Programme: Bachelor of Technology   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem (35)	Internal (15)	Total (50)
CBTE-104	Engineering Graphics & Design	3	1	1			Min: 40 (D Grade)			Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

Pre-Requisite	Nil
Course Objective	Develop the ability of conveying the engineering information through engineering drawings, Understand the relevance of engineering drawings to different engineering domain.
Course Outcomes	**Student will be able to learn:** 1. To understand and conveying the engineering information through drawing. 2. To understand the development of surfaces. 3. To draw the shapes, angels and lines and others. 4. Students will be able to extract information from drawings and geometric models to solve engineering problems. 5. To know about Auto CAD two dimensional drawings.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction:** Principle of Engineering Graphics & their Significance, Conventions in Drawing, Dimensioning Rules. **Scales:** Concept of Reduced, Enlarged &Full Size Scale. Classification of Scales-Plain Scales, Diagonal Scales, Scales of Chords. **Conic Sections:** Construction of Ellipse General Method, Concentric Circle Method. **Parabola:** General Method, Tangential Method, Rectangle Method. **Hyperbola:** General Method, Intersecting Arcs Method, Normal and Tangent of Conic Section, **Special Curves:** Cycloid, Epicycloids, Hypocycloid, Involutes, Archimedean spiral.	14
II	**Projection:** Types of projections, Orthographic projection, First and third angle projection, Projections of points & Straight lines, Line inclined to one plane, Inclined with both the planes, True length and true inclination and traces of straight lines.	14
III	**Projections of Planes and Solids:** Projections of planes like circle and polygons in different Positions, Projection of polyhedrons like prisms, Pyramids and solid of revolutions like Cylinder, Cone in different positions.	14
IV	**Section of Solids:** Section of Right Solid by Normal and Inclined Planes. **Development of Surfaces:** Parallel Line and Radial Line Method for Right Solid-Prisms, Pyramids and Cone. Isometric Projection: Principles of Isometric Projections-Isometric Scale, Isometric Axes, Isometric Projection from Orthographic Drawing.	14
V	**Introduction of Engineering Drawing Software's:** Introduction to Computer Aided Drafting (CAD) Software for 2D and 3D Modeling, Benefits and limitations, Software's Basic Commands of Drafting Entities like Line, Circle, Polygon, Polyhedron, Cylinders.	14

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Programme: **Bachelor of Technology**   Semester –I/II

	Transformations and Editing Commands like Move, Rotate, Mirror, Array.	

Text Book/References Books/ Websites:
1. N. D. Bhat; Engineering Drawing; Charotar Publications.
2. Basant Agarwal; Engineering Drawing; Tata McGraw Hills.
3. K. Venugopal; Engineering Drawing and Graphics; New Age International.
4. P.S.Gill; Engineering Drawing; S.K. Kataria & Sons.
5. K.C.John; Engineering Graphics for Degree; PHI.
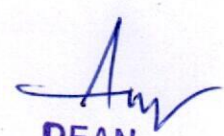6. R. K. Dhawan; A Textbook of Engineering Drawing; S. Chand.

Suggested List of Laboratory Practical (Expandable):
1. To prepare a neat sketch of a simple title block, lines, dimensioning terms & notations provided in a drawing sheet as recommended by the B.I.S.
2. To construct an ellipse using arcs of circle method.
3. To draw neatly the symbols used for indicating the method of projection in a drawing.
4. To study the projection of planes parallel to one of the reference planes.
5. To study the projection of planes inclined to one reference plane and perpendicular to the other.
6. To study the types of solids.
7. To study the projection of solid with axes inclined to both the H.P. & the V.P.
8. To construct the development of the surface of the cone.
9. To draw the isometric view of cylinder resting on its base.
10. Practice session on 2D and 3D drafting in Auto CAD.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem (35)	Internal (15)	Total (50)
CBTE-105	Programming for Problem Solving	1	-	1			Min: 20 (D Grade)			Min: 20 (D Grade)

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 15	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

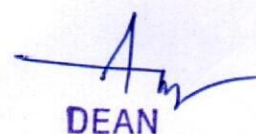| Pre-Requisite	Basic knowledge of mathematics.
Course Objective	To make the students solve problems, implement algorithms using C language and familiarize students with the Computer Programming concepts and language fundamental in a more systematic manner.
Course Outcomes	Student will be able to learn: 1. The different components of computer system and develop logic for solving different problems. 2. Prepare algorithms, programs & execution (in C language). 3. The conditional statement loops and array. 4. Track a large C program easily when it is divided into multiple functions. 5. To familiarize advantages of pointer concept.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction to Programming:** Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, Operating system, Compilers etc.), **Idea of Algorithm:** Steps to solve logical and numerical problems, Representation of Algorithm, Flowchart.	07
II	**Programming Basics:** Structure of C program, writing and executing C program, Syntax and logical error, Components of C language, Variable and memory locations, Storage classes, Data types, Standard I/O in C.	07
III	**Conditional Branching, Loops & Array:** Writing and evaluation of conditional branching, Arrays (1-D, 2-D), Iteration and loops.	07
IV	**Function & Recursion:** Functions (including using built in libraries), Parameter passing in functions, call by value, call by reference, Recursion- as a different way of solving problems, Example programs: such as Finding Factorial, Fibonacci series.	07
V	**Structure & Pointers:** Structures, Defining structures and Array of Structures, Idea of pointers, Defining pointers.	07

Text Book/References Books/ Websites:
1. R.S. Salaria; Problem Solving and Programming in C;Khanna Publishing House.
2. Yashavant Kanetkar; Let Us C; BPB Publications.
3. Brian W. Kernighan and Dennis M. Ritchie; The C Programming Language; Prentice Hall of India.
4. Byron Gottfried; Schaum's Outline of Programming with C; McGraw-Hill.
5. E. Balaguruswamy; Programming in ANSI C;Tata McGraw-Hill.

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Suggested List of Laboratory Practical (Expandable):
1. Write a Program in "C'' to find the greatest of three numbers.
2. Write a Program to find out Simple Interest in "C".
3. Write a Program in "C'' to print the Fibonacci series.
4. Write a Program to print percentage and grade of student in "C".
5. Write a Program in "C" to perform basic arithmetic operations without typecasting.
6. Write a Program in "C" to read and print elements of an array.
7. Write a Program in "C" to swap two numbers using function.
8. Write a Program in "C" to add two numbers using pointer.
9. Write a Program in "C" to print multiplication table using while loop and for loop.
10. Write a Program in "C" to find factorial of a number using recursion.

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem (Nil)	Internal (Nil)	Total
CBTE-106	Sanskrit	2	-	-			Min: 20 (D Grade)			(Nil)

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 20	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Nil
Course Objective	Sanskrit is very important part of this language to make a sentence, to know appropriate meaning of texts, oral communication and perfection. Sanskrit is the only way to know this language well.
Course Outcomes	Student will be able to learn: 1. Ancient literature and their classification as well as modern Sanskrit literature. 2. Grammar definitions and examples. 3. They will be able to know the Sanskrit poets and creations. 4. Linguistics should also help them to know the source of this language and the relation between other languages. 5. Write Sanskrit essay, vocabulary, and summary.

Unit	Contents (Theory)	Marks Weightage
I	संस्कृत भाषा एक परिचय:-विश्व के प्रमुख भाषा परिवार एवं संस्कृत भाषा, संस्कृत भाषा का सामाजिक, सांस्कृतिक एवं ऐतिहासिक,आधुनिक भारतीय भाषा के रुप में संस्कृत, वैदिक साहित्य एवं लौकिक साहित्य,संस्कृत साहित्य	07
II	बोध व्याकरण :- सन्धि एवं समास परिचय व प्रकार, कारक एवं विभक्ति परिचय उदहारण सहित,संज्ञा सर्वनाम	07
III	श्लोक व बिभिन्न उक्तियाँ, संस्कृत के कवि और उनकी रचनाएं	07
IV	भाषा एवं साहित्य का सम्बन्ध संस्करित भाषा, भाषा विज्ञान – भाषा विज्ञान के रूपरेखा क्षेत्र उत्पत्ति, शिक्षण सिद्धान्त, वैदिक साहित्य व लौकिक साहित्य	07
V	संस्कृत निबंध , शब्दाबली, सारांश	07

Text Book/References Books/ Websites:

1. Dr. Ram Sakal Pandey; Sanskrit Shikshan; Shri Vinod Pustak Mandir.
2. Dr. Kadambari Sharma; Sanskrit Bhasha Aur Sidhant; JTS Publications.
3. Chandra Kant Jha; Sugam Sanskrit Vyakaran 1; Bharati Bhawan Publishers & Distributors.

Suggested List of Laboratory Practical (Expandable): Nil

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem (Nil)	Internal (Nil)	Total
CBTE-106	German	2	-	-			Min: 20 (D Grade)			(Nil)

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 20	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Nil
Course Objective	This intensive German language course for absolute beginners. It aims to impart the basics of the French language in the four skills (listening, reading, speaking and writing) in an interactive and communicative way.
Course Outcomes	Student will able to learn: 1. Ability to demonstrate basic conversational skills in day to day life situations 2. Ability to appreciate the cultural and linguistic diversity in Germany 3. Clarity of expression in writing 4. Develop writing skills 5. Improve the vocabulary and Grammar skills.

Unit	Contents (Theory)	Marks Weightage
I	Alphabets, Basic Greetings, Accents, Presentations, Numbers(0-20)	07
II	Subject Pronouns, Useful verbs – (to be, to have, to make), Sentence making	07
III	Article definite, Adjective and Adverb, Instructions and Requests, Basic Vocabulary, Numbers (21-100), Simple dialogues	07
IV	Words following the same pattern "DER, DIE, DAS" Ordinal Number	07
V	Vocabulary – (Fruits, Vegetables, Clothes, Family relations), Days, Months, Colours,	07

Text Book/References Books/ Websites:

1. Ed Swick; The Everything Learning German Book: Speak, Write and Understand Basic German in No Time.
2. Professor Martin Durrell; Hammer's German Grammar and Usage.
3. Ed Swick;Living German
4. HUGO; German beginner's language course.

Suggested List of Laboratory Practical (Expandable): Nil

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem (Nil)	Internal (Nil)	Total
CBTE-106	French	2	-	-			Min: 20 (D Grade)			(Nil)

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 15	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Nil
Course Objective	This intensive French language course for absolute beginners. It aims to impart the basics of the French language in the four skills (listening, reading, speaking and writing) in an interactive and communicative way.
Course Outcomes	Student will be able to learn: 1. Ability to demonstrate basic conversational skills in day to day life situations 2. Ability to appreciate the cultural and linguistic diversity in France 3. Clarity of expression in writing 4. Develop grammar skills 5. Improve the vocabulary and skills of tenses.

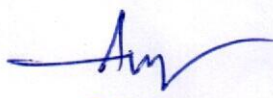| Unit	Contents (Theory)	Marks Weightage
I	Alphabets, Numbers (0-20), Accents, Salutations, Presentations.	07
II	Subject Pronouns, verb - Être, Nationalities, Professions, Adjectives, Genders, Plurals, Simple sentence making,.	07
III	Article definite, article indefinite, Qu'est-ce que c'est? Qui est-ce?, Basic Vocabulary, Numbers (21-100), Simple dialogues.	07
IV	Verb – Avoir, Verb – Aller, Negatives, Interrogatives with Est-ce que, Culture and Civilization (Introduction to France, Introduction to French Culture).	07
V	Vocabulary – (Fruits, Vegetables, Clothes, Family relations), Days, Months, Colours, Present Tense – Introduction to "er" verbs.	07

Text Book/References Books/ Websites:

1. Meenal Tiwari; Français. C'est facile! ;Langers.
2. Mahitha Ranjit & Monica Singh; Apprenons le Français1; New Saraswati House.
3. Mahitha Ranjit & Monica Singh; Apprenons le Français 2; New Saraswati House.

Suggested List of Laboratory Practical (Expandable): Nil

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem (35)	Internal (15)	Total (50)
CBTE-107	NCC-1	1	-	1			Min: 20 (D Grade)			Min: 20 (D Grade)

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks:15	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

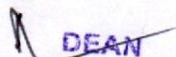| Pre-Requisite	Nil
Course Objective	**Cadets will be able to: -** 1. Know about the history of NCC, its organization, and incentives of NCC for their career prospects. 2. Acquire knowledge of duties and conduct of NCC cadets. 3. Understand about different NCC camps and their conducts. 4. Understand the concept of national integration and its importance. 5. Understand the concept of self-awareness and emotional intelligence. 6. Understand the concept of critical & creative thinking. 7. Understand the process of decision making & problem solving. 8. Understand the concept of team and its functioning. 9. Understand the concept and importance of Social service.
Course Outcomes	**Student will be able to learn:** 1. Imbibe the conduct of NCC cadets. 2. Respect the diversity of different Indian culture. 3. Practice togetherness and empathy in all walks of their life. 4. Do their own self analysis and will work out to overcome their weakness for better performance in all aspects of life. 5. Understand creative thinking & its components. 6. Think divergently and will try to break functional fixedness. 7. Make a team and will work together for achieving the common goals. 8. Do the social services on different occasions.

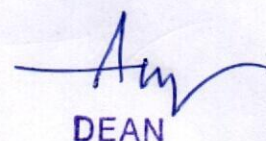| Unit	Contents (Theory)	Marks Weightage
I	**NCC General (N):** Introduction of NCC, History, Aims, Objective of NCC & NCC as Organization, Incentives of NCC, Duties of NCC Cadet. NCC Camps: Types & Conduct.	35
II	**National Integration & Awareness (NI):** National Integration: Importance & Necessity, Factors Affecting National Integration, Unity in Diversity & Role of NCC in Nation Building, Threats to National Security.	
III	**Personality Development:** Intra & Interpersonal skills - Self-Awareness- &Analysis, Empathy, Critical & creative thinking, decision making and problem solving.	
IV	**Social Service and Community Development:** Basics of social service and its need, Types of social service activities, Objectives of rural development programs and its importance, NGO's and their contribution in social welfare, contribution of youth and NCC in Social welfare.	

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Text Book/References Books/ Websites:

1. Cadet's handbook, NCC Directorate, MP, CG.
2. Supplementary cadet's handbook, NCC Directorate, MP, CG.

Suggested List of Laboratory Practical (Expandable):

1. **Drill:** Foot Drill-Drill ki Aam Hidayaten, Word ki Command, Savdhan, Vishram, Aram Se, Murdha, Kadvar Sizing. Teen Line Banana, Khuli Line, Nikat Line, Khade Khade Salute Karna Parade Par, Visarjan, Line Tod, Tej Chal, Tham aur Dhire Chal, Tham.
2. **Weapon Training (WT):** Introduction & Characteristicsof.22 rifle, Handlingof .22 rifle.
3. **Map Reading (MR):** Definition of Map, Conventional signs, Scale and Grid System, Topographical forms and technical terms, Relief, Contours andgradients,Cardinal points and types of North, Magnetic Variation and Grid Convergence.
4. **Field Craft & Battle Craft (FC & BC) :** Introduction of Field Craft & Battle craft, Judging Distance, Method of Judging Distance.
5. **Social Service and Community Development (SSCD) :** Cadets will participate in various activities throughout the semester e.g., Blood donation Camp, Swachhata Abhiyan, Constitution Day, Jan Jeevan Hariyali Abhiyan,Beti Bachao Beti Padhao etc.

Note: Examination of this NCC course will be conduct as per NCC head quarter norms in consultation with office of COE, PU.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (Nil)	Internal (Nil)	Total (Nil)	End Sem (Nil)	Internal (50)	Total (50)
CBTE-108	Soft Skills	-	-	1						Min: 20 (D Grade)

Duration of Theory (Externals): -Nil

Theory Internal- Max Marks: -Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 50	Lab Performance/Assignment / Quiz/Attendance - Max. Marks: 50	

Pre-Requisite	Intermediate level English proficiency.
Course Objective	To inculcate good manners and etiquettes to make students more flexible and capable to change before entering the professional work environment
Course Outcome	**Student will be able to learn:** 1. To effectively communicate through verbal/non verbal communication and improve the speaking skills. 2. A structured methodology to prepare and deliver an effective, high impact presentation that meets the objectives and brings results.

Unit	Contents (Theory)	Marks Weightage
I	Introduction to soft skills, its importance in today's world; art of introduction, perception and personality (with examples of national and world leaders in politics and business) grooming, personal appearance, diversity, inclusiveness, gender sensitivity, taking initiatives. Importance of communication and non-verbal communication, courtesy, flexibility, Public speaking, handling criticism, professionalism, work ethics, punctuality, willingness to learn. Oral presentation: planning and preparation, job interview: preparing questions, group discussion, debate, extempore.	50

Text Book/References Books/ Websites:
1. Butterfield, Jeff; Soft Skills for Everyone; Cengage Learning New Delhi.
2. Chauhan, G.S. and Sangeeta Sharma; Soft Skills; Wiley New Delhi.
3. Holtz, Shel; Corporate Conversations; PHI.
4. Turk, Christopher; Effective Speaking. South Asia Division; Taylor & Francis.
5. Lucas, Stephen E; The Art of Public Speaking; McGraw-Hill Book Co. International edition.

Suggested List of Laboratory Experiments: - Nil

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (Nil)	Internal (Nil)	Total (Nil)	End Sem (70)	Internal (30)	Total (100) Min: 40 (D Grade)
CBTE-109	Workshop Practice	-	-	1	End Sem (Nil)	Internal (Nil)	(Nil)	End Sem (70)	Internal (30)	Min: 40 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil
Practical Internal Max Marks: 30	Lab Performance / Quiz/Attendance - Max. Marks: 30	

Pre-Requisite	Nil
Course Objective	To get knowledge of basis of measurements and measuring tools, study the engineering aspect of working of machine tools, ability to understand construction, function, use and application of different working tools, equipment and machines.
Course Outcomes	**Student will be able to learn:** 1. To get the knowledge of materials used for making jobs across various shops. 2. To acquire basic measurement skills. 3. To acquire practical skills across various trades. 4. To understand various deadlines during production cycle. 5. To ensure safety during various production processes.

Unit	Contents (Theory)	Marks Weightage
I	**Study of Mechanical Tools and Components and their Application:** Measurement, Vernier Caliper, Micrometer, Dial Gauge, Slip Gauge, Sine-Bar, Combination set.	14
II	**Carpentry Shop:** Name and use of raw materials used in Carpentry Shop: Wood & Alternative Materials, Names, Uses, Care and Maintenance of Hand Tools such as different types of Saws, 'G'- Clamp Chisels, Mallets, Carpenter's Vices, Marking Gauges, Try-Squares, Rulers and other commonly used Tools and Materials used in Carpentry Shop.	14
III	**Smithy/ Forging shop:** Purpose of Smithy / Forging Shop, different types of Hearth's used in Smithy / Forging Shop. Purpose, Specifications, Uses, Care and Maintenance of various tools and equipments used in Hand Forging. Types of raw materials used in Smithy / Forging Shop.	14
IV	**Welding Shop:** Purpose of Welding, Brazing and Soldering. Purpose, Specifications, Uses, Care and maintenance of various Welding Machines, Cables, Tools and equipments used for Welding, Brazing and Soldering. Purpose of Fluxes, Electrodes, Filler Rods, Safety Equipments used in Welding Shop. **Bench Work & Fitting Shop:** Purpose of Bench Work and Fitting Shop, Study of different types of Hand Tools & their Uses, Care and maintenance of Tools e.g. Files, Chisels, Hammers, Hack-saw with Frames, Fitting Bench Vice, Different other Vices, Divider, Tri-Square, Drill-taps, Dies, V-blocks, Bevel Protector, Scribers, Surface plates, Types of Calipers, Types of Drill Bits etc.	14
V	**Machine:** Demonstrations and application of Drilling Machine, Grinding Machine, Shaping Machine, Milling Machine, and Lathe Machine etc.	14

Text Book/References Books/ Websites:

1. Hazara Choudhury; Workshop Practices -, Vol. I & II; Media Promoters and Publishers Pvt. Ltd.
2. H.S. Bawa; Workshop Practice, TMH

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3. P.N. Rao; Manufacturing Technology- Vol.1& 2; TMH
4. K.C. John; Mechanical workshop practice; PHI
5. Priti Agrawal; Electrician Practical; NK
6. GK Mittal; Electrical Engineering material; Khanna Publication

Suggested List of Laboratory Practical (Expandable):

1. To make different joints by using carpentry shop.
2. To make a male and female V- shape joint by using fitting shop.
3. To prepare the pipeline connections with various fitting joints.
4. To make the T-fillet joint on given metal pieces using arc welding.
5. To prepare a Lap joint using AC Arc welding.
6. To prepare a Chisel edge by forging from a given cylindrical rod.
7. To prepare a multi-operation job as per sketch using Lathe Machine.
8. To make a funnel from the given sheet metal piece.
9. To prepare the mould using different patterns by using green sand.
10. To study various machines viz lathe machine, Drill machine.

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Programme: **Bachelor of Technology**　　　　　　　　　　Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (Nil)	Internal (Nil)	Total (Nil)	End Sem (Nil)	Internal (50)	Total (50) Min:20 (D Grade)
CBTE-110	Physical Education & Yoga	-	-	-						

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil
Practical Internal Max Marks: 50	Lab Performance/ Quiz/Attendance – Max. Marks: 50	

Pre-Requisite	Nil
Course Objective	To enhance wholesome development of personality of an individual which means making and individual physical fit, mentally, alert, emotionally, balanced, socially well adjusted, morally true and spiritually uplifted.
Course Outcomes	**Student will be able to learn:** 1. Improving concentration and stress bust 2. Students will acquire a comprehensive knowledge and sound understanding of fundamentals of physical education and yoga.

Unit	Contents (Theory)	Marks Weightage
I	**Yoga:** Meaning & Importance of Yoga, Elements of Yoga. Introduction – Asanas & Meditation. Yoga for concentration & related Asanas (Sukhasana, Tadasana, &Padmasana), Relaxation Techniques for improving concentration – Yog-nidra. Asanas as preventive measures: 1. Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh-Matsyendrasana., Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana, Pavanmuktasana, Ardh-Matsyendrasana, Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana, Back Pain: Tadasana, Ardh-Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana. **Sports:** Any two games: Students are required to play two games out of the listed sports:Badminton,Table Tennis, Volleyball, Football, Basketball, Kabaddi,Kho-Kho	50

Text Book/References Books/ Websites:
1. Physical Education; Ravindra Chaudhry and Zamirullah Khan;
2. The Language of Yoga; Nicolai Bachman;
3. Yoga Therapy: Foundations, Methods, and Practices for Common Ailments; Mark Stephens
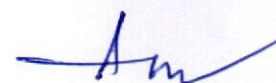4. Mudras Healing and Transformation; Joseph.

Suggested List of Laboratory Experiments: (Expandable):
1. Fitness tests for all items.
2. Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
3. Take any game of your choice from the list above. Then, make a labelled diagram of field & equipment (Rules, Terminologies & Skills).

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory				Practical		
		L	T	P	End Sem (Nil)	Internal (Nil)	Total		End Sem (Nil)	Internal (50)	Total (50)
CBTE-111	NSS-I/NSO-I	-	-	1			Nil				Min: 20 (D Grade)

Duration of Theory (Externals): -Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil
Practical Internal Max Marks: 50	Lab Performance/ Quiz/Attendance – Max. Marks: 50	

Pre-Requisite	Nil
Course Objective	The objective of the National Service Scheme is development of the personality of students through community service.
Course Outcomes	**Student will be able to learn:** Team work and social responsibility.

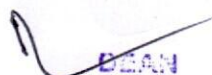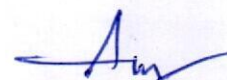|	Contents (Theory)	Marks Weightage
I	Activity under NSS : Celebration of a. World No Tobacco day b. International yoga day c. World Environment Day d. Swachh Bharat summer internship Programme (SBSI) e. Awareness Campain of Jal Shakthi Abhiyan f. One student one tree campaign g. Swachh Pakhwada Campaign h. Free Health check up camp i. Celebration of Indian Constitution Day j. Aids day Awareness etc. NSO-Students are required to play any games out of the listed sports:Badminton, cricket Table Tennis, Volleyball, Football, Basketball, Kabaddi,Kho-Kho	50

Text Book/References Books/ Websites:Nil

Suggested List of Laboratory Experiments :- (Expandable):
Students should actively participate in the mention activities and submit assignment given by their faculty.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (Nil)	Internal (Nil)	Total	End Sem (Nil)	Internal (50)	Total (50)
CBTE-112	Music Vocal- I/ Music Instruments-I	-	-	1			Nil			Min: 20 (D Grade)

Duration of Theory (Externals): -Nil

Theory Internal- Max Marks: -Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 50	Lab Performance/ Quiz/Attendance - Max. Marks: **50**	

Pre-Requisite	Basic knowledge of Swaras.
Course Objective	Impart a basic knowledge of music (Vocal and Instruments)
Course Outcome	**Student will be able to learn:** 1. Basics of Raag and Taal. 2. Composition of Alaps and Taals. 3. Elementary knowledge of instruments.

	Contents (Theory)	Marks Weightage
I	Applied and General Study of Music Comparative study of the following ragas and taalas **Raga:** Yaman, Bihag, Bhairav, Vrindavani- Sarang, Durga, Alhaiya-Bilawal, Bhupali, Bhimpalasi, Khamaj, Bhairavi & Des **Taal:** Teental, Ektal, Chautal, Kaharwa, Dadra Notation Writing of Composition with Alap & Taan Writing Laykaris of prescribed Talas (Dugun, Tigun, and Chaugun) Definitions: Sangeet, Naad, Swara, Shruti, Varna, Alankar, Taan, Saptak, Purvanga, Uttaranga, Laya-Vilambit, Madhya and Drut, Matra, Sum, Tali, Khali, Bhari, Avartan. Brief study of Raga, Thaat, Raga-jati, Vadi, Samvadi, Anuvadi, Vivadi Elementary knowledge of instruments	50

Text Book/References Books/ Websites:

1. Late Pandit Omkarnath Thakur; Sangeetanjali Vol-I; Pilgrims Publishing.
2. Poonam Dutta; Bhartiya Sangeet: Shiksha Evam Uddeshya; Raj Publications

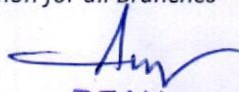**Suggested List of Laboratory Experiments :- (Expandable):**

1. Practices on Raag and Taal (Vocal and Instrumental)

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem	Internal	Total
CBTE-201	Engineering Mathematics-II	3	1	-			Min: 40 (D Grade)	(Nil)	(Nil)	(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: Nil	Lab Performance/Quiz/Attendance -Max. Marks: Nil	

Pre-Requisite	Fundamental knowledge of Differentiation and Integration, Probability.
Course Objective	To comprehend various computational techniques to find approximate value for possible root(s) of non-algebraic equations, to find the approximate solutions of system of linear equations and ordinary differential equations.
Course Outcomes	**Student will be able to learn:** 1. Solve the problem of Complex Analysis. 2. Elaborate the concepts of Vector Space. 3. Solve Linear & Non Linear Partial Differential Equations of First Order. 4. Discuss the Line Integral, Surface Integral and Volume Integral. 5. Elaborate the concepts of Probability.

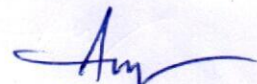| Unit	Contents (Theory)	Marks Weightage
I	**Functions of Complex Variables:** Analytic functions, Harmonic Conjugate, Cauchy – Riemann Equations, Line integral, Cauchy's theorem, Cauchy's Integral formula, Singular points, Poles and Residues, Residue theorem and Evaluation of Real Integral.	14
II	**Vector Spaces:** Vector Space, Vector Sub Space, Linear Combination of Vectors, Linearly Dependent, Linearly Independent, Basis of a Vector Space, Linear Transformations.	14
III	**Linear & Non Linear Partial Differential Equations of First Order :** Formulation of partial differential equations, Solution of equation by direct integration, Lagrange's linear equation, Non linear partial differential equation by Charpit's method, Linear homogeneous and non-homogeneous partial differential equation of second and higher order with constant coefficient.	14
IV	**Vector Calculus :** Differentiation of Vectors, Scalar and vector point function, Gradient, Geometrical meaning of gradient, Directional Derivative, Divergence and Curl, Line Integral, Surface Integral and Volume Integral, Gauss Divergence, Stokes and Green theorems.	14
V	**Concept of Probability:** Probability Mass function, Probability Density Function, Discrete Distribution: Binomial, Poisson's, Continuous Distribution: Normal Distribution, Exponential Distribution.	14

Text Book/References Books/ Websites:
1. D.C. Aggarwal; Engg. Mathematics – II; Shree Sai Publication.
2. D.K Jain;Engg. Mathematics – I and II;Shri RAM publication.
3. B.S. Grewal; Higher Engineering Mathematics; Hanna Publication.
4. S. Arumungam; Mathematics for Engineers; SCITECH Publication.
5. P. G. Hoel, S. C. Port and C. J. Stone; Introduction to Probability Theory;Universal Book Stall.
6. Erwin kreyszig;Advanced Engineering Mathematics;9th Edition, John Wiley & Sons.

Suggested List of Laboratory Practical (Expandable): Nil

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PEOPLE'S UNIVERSITY, BHOPAL
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Programme: Bachelor of Technology   **Semester –I/II**

Subject Code	Subject Title	Credit			Theory				Practical		
		L	T	P	End Sem (70)	Internal (30)	**Total (100)**		End Sem (35)	Internal (15)	**Total (50)**
CBTE-202	Engineering Chemistry	3	-	1			Min: 40 (D Grade)				Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance / Quiz/Attendance - Max. Marks: 15	

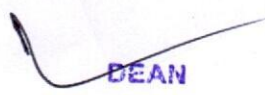| Pre-Requisite	Basic knowledge of Chemistry.
Course Objective	The objective of the Engineering Chemistry is to acquaint the students with the basic phenomenon/concepts of chemistry, the student faces during course of their study in the industry and Engineering field.
Course Outcomes	**Student will be able to learn:** 1. The theoretical principles of water testing and its properties. 2. Firm foundations in the fundamentals and application of lubricants. 3. To design, carry out, record and analyze the results of chemical experiments. 4. Are able to use modern instrumentation and classical techniques, to design experiments, and to properly record the results of their experiment each. 5. Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.

Unit	Contents (Theory)	Marks Weightage
I	**Water – Analysis, Treatments and Industrial Applications** Sources, Impurities, Hardness & its units, Determination of hardness by EDTA method, Alkalinity & It's determination and related numerical problems. Boiler troubles (Sludge &Scale, Priming & Foaming, Boiler Corrosion, Caustic Embrittlement),Softening methods (Lime-Soda, Zeolite and Ion Exchange Methods)	14
II	**Lubricants and Lubrication** Introduction, Mechanism of lubrication, Classification of lubricants, significance & determination of Viscosity and Viscosity Index, Flash & Fire Points, Cloud & Pour Points, Aniline Point, Saponification Number, Steam Emulsification Number and related numerical problems.	14
III	**Fuels & Combustion:** Fossil fuels & classification, Calorific value, Determination of calorific value by Bomb calorimeter Proximate and Ultimate analysis of coal, calorific value Computation based on ultimate analysis data, Carbonization. Cracking of higher Hydrocarbons & mechanism of cracking, Knocking, relationship between' knocking & structure of hydrocarbon, improvement of anti-knocking characteristics of IC engine fuels, Diesel engine fuels, Cetane number	14
IV	**Polymer & polymerization:** Introduction, types of polymerization, Classification, mechanism of polymerization (Free radical & Ionic polymerization). Thermoplastic & Thermosetting polymers Elementary idea of Biodegradable polymers, preparation, properties & uses of the following polymers- PVC,PMMA, Teflon, Nylon 6, Nylon 6:6, Polyester phenol formaldehyde,	14

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Programme: **Bachelor of Technology**   Semester –I/II

		Urea- Formaldehyde, Buna N, Buna S, Vulcanization of Rubber.	
	V	**Spectroscopic Techniques and Applications:** Principle, Instrumentation & Applications, electronics spectroscopy, Vibrational & Rotational Spectroscopy of diatomic molecules. Chromatography, Lambert's and Beer's Law.	14

Text Book/References Books/ Websites:
1. Jain and Jain; Engineering Chemistry; Dhanpat Rai Publications.
2. S S Dara; Environmental Chemistry & Pollution Control; S.Chand Publication.
3. Shashi Chawla; Engineering chemistry; Dhanpat Rai Publications.
4. B.K. Sharma; Engineering Chemistry; Krishna Prakashan Media (P) Ltd.Meerut.

Suggested List of Laboratory Practical (Expandable):
1. To determine the total hardness of given water sample by EDTA method.
2. Determine the type and extent of alkalinity of given water sample by N/50 sulphuric acid [P>1/2].
3. Determine the type and extent of alkalinity of given water sample by N/50 sulphuric acid [P<1/2].
4. Determine the flash point and fire point of the given lubricating oil by Pensky marten apparatus.
5. Determine the flash point and fire point of the given lubricating oil by Cleaveland apparatus.
6. Determine the flash point and fire point of the given lubricating oil by Abel's apparatus.
7. Determine the effect of temperature on the viscosity of given lubricating oil using by Red wood viscometer no.1.
8. Determine the effect of temperature on the viscosity of given lubricating oil using by Red wood viscometer no.2.
9. Determine the percentage of moisture content, volatile matter, and Ash content in the given sample of coal.
10. Determine the LCV and HCV by given sample of coal by using Bomb calorie meter.

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PEOPLE'S UNIVERSITY, BHOPAL
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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100) Min: 40 (D Grade)	End Sem (35)	Internal (15)	Total (50) Min: 40 (D Grade)
CBTE-203	Communication Skills	3	1	1						

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance /Quiz/Attendance -Max. Marks: 15	

Pre-Requisite	Intermediate level English proficiency.
Course Objective	This course is designed to hone the communication skills of the budding engineers and empower them to carry out day to day communication at the workplace by adequate understanding of various types of communication to facilitate efficient interpersonal communication.
Course Outcomes	**Student will be able to learn:** 1. The process, nature and channels of communication and understand the barriers to effective communication, and to apply Verbal and Non-verbal Communication Techniques in the Professional Environment. 2. To use the LSRW skills to communicate effectively in a professional environment. 3. To write effective and impressive official correspondence. 4. To plan and organize a report or proposal by clearly stating the purpose and apply key elements of structure and style in drafting longer documents. 5. To strengthen their creative learning process through individual expression and collaborative peer activities.

Unit	Contents (Theory)	Marks Weightage
I	**Communication:** Nature, Process and Importance of Communication, Channels of Communication Network, Media of Communication, Verbal and Non-Verbal Communication, Barriers to Communication.	14
II	**Listening:** Process of Listening, Barriers to Listening, Types of Listening, Benefits and techniques of effective Listening, Phonetics and phonetics transcription.	14
III	**Business letter:** Enquiry, Quotation, Order, Complaint and Adjustment Letters, Tender, Noting and Drafting, Comment, Speech, Job Application, Resume Writing.	14
IV	**Report Writing:** Techniques of report writing and Types of reports—Project report, Observation report, Survey report, Laboratory report, Event and Incident report.	14
V	**Advertisement:** Advertisement, Slogan Writing, Paragraph Writing Precise Writing, Role Play, Telephonic Conversation, Definitions of Common Technical and Scientific Terms.	14

Text Book/References Books/ Websites:

1. Dr. Gajanan Malviya & Prof R. N.Shukla; Communication Skills; S. Chand & Company Delhi.
2. R Rizvi; Professional Communication; TMH.
3. Sharma; Business Correspondence and Report Writing; TMH.
4. W.S. Allen; Living English Structure; Longmans.
5. R.K. Bansal and IB Harrison; Orient Longman; Spoken English for India.

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Programme: **Bachelor of Technology**   **Semester –I/II**

6. Joans and Alexander;New International Business English;OUP.

Suggested List of Laboratory Practical (Expandable):
1. Practice of Basic Grammar (identifying parts of speech and use of articles)
2. Practice of Basic Grammar (identifying structure and forms of Verb and Tenses)
3. Learning Basic and Technical Vocabulary.
4. Practice translation from Hindi to English language.
5. Learning the basic skills of a language- Listening, Speaking, Reading and Writing skills.
6. Learning the basics of Body language.
7. Learn the skills of Oral Presentation (4 Ps).
8. Learning and practicing Interview skills.
9. Learning and practicing Public speaking skills.
10. Taking on roles and engage in conversation in Role play activities.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem (Nil)	Internal (Nil)	Total
CBTE-204	Engineering Mechanics	3	1	-	End Sem (70)	Internal (30)	Min: 40 (D Grade)	End Sem (Nil)	Internal (Nil)	(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Basic knowledge of mathematics and applied physics.
Course Objective	To develop the capacity to predict the effects of force and motion while carrying out the creative design function of engineering.
Course Outcomes	**Student will be able to learn:** 1. Analyze and develop free-body diagrams for any system of forces in two and three dimensions 2. Understand and use the general ideas of friction and forces. 3. Calculate center of gravity, centroids, and moments of inertia. 4. Define basic kinematic quantities of linear and angular motion of particle. 5. Analyze trusses, beams, frames, and machines.

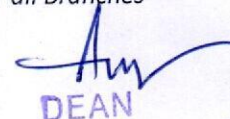| Unit	Contents (Theory)	Marks Weightage
I	**Introduction:** Introduction to Engineering Mechanics Covering, Basic Concepts, Rigid Body, Equilibrium; System of Forces, Components of Force –Moment of Forces and its Application; Couples and Resultant of Force System, Equilibrium of System of Forces, Free Body Diagrams, Equations of Equilibrium of Coplanar Systems and Lami's theorem.	14
II	**Friction:** Friction Covering, Types of Friction, Limiting friction, Laws of Friction, Static and Dynamic Friction; Motion of Bodies, Wedge Friction, Screw Jack & Differential Screw Jack.	14
III	**Centroid & Centre of Gravity:** Centroid, Centre of Gravity and Moment of Inertia, Moment of Inertia of Area and Mass, Radius of Gyration, Perpendicular and Parallel Axis Theorem, Introduction to Product of Inertia and Principal Axes.	14
IV	**Motion of Particle:** Definition of Speed, Velocity, Acceleration, Uniform Velocity, Uniform Acceleration and Variable Acceleration, Motion under Constant Acceleration/ Retardation (Equations of Motion). **Definition of Projectile,** Velocity of Projection, Angle of Projection, Time of Flight, Maximum Height, Horizontal Range and their determination, Definition of Angular Velocity, Angular Acceleration and Angular Displacement.	14
V	**Frame;** Beam and its Types, Types of loading and Supports; Support Reactions, Shear force and Bending Moment Diagram for Cantilever & Simply Supported Beam with Concentrated, Distributed Load. **Structures:** Trusses and its Types, Assumptions followed in the analysis of Structures, Method of Joints and Method of Section.	14

Text Book/References Books/ Websites:
1. H. Shames; Engineering Mechanics; Statics and dynamics; PHI.
2. P. Beer and E. R. Johnston; Vector Mechanics for Engineers, Vol I - Statics, Vol II –TMH.
3. Prasad I.B; Applied Mechanics; Khanna Publication.
4. N.H. Dubey; Engineering Mechanics Statics and Dynamics; TMH.

Suggested List of Laboratory Practical (Expandable): Nil

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Programme: Bachelor of Technology   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100) Min: 40 (D Grade)	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)
CBTE-205	Computer Fundamentals	3	-	1						

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

Pre-Requisite	Nil
Course Objective	To provide fundamental concepts of information and communication technology.
Course Outcomes	Students will be able to learn: 1. Basics of computer systems and their operations. 2. Basics of operating systems, their functions and types. 3. Categories of programming languages and structure of C++. 4. Basics of communication modes and networking. 5. Fundamentals of Database.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction to Computers**: Basics of computer, Characteristics of computers, Application of Computer, Limitations of computers, Evolution of computers, Classification of Computers, Types of Computers, Input devices, Output devices, Computer Memory, Central Processing Unit, and Mother Board. **Storage Fundamentals**: Primary Vs Secondary Storage, Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks, hard disks, Floppy disks Optical Disks, Compact Disks	14
II	**Computer Software& Operating System**: Introduction to Software, Types of Software. Operating System Concepts, Functions of Operating System, Types of Operating System, Operating System Components, Operating System Services, Operating System Security.	14
III	**Introduction of Programming Language**: Categories of Programming Language, Features of C++,Character Set, Identifiers, Literals, Precedence & Associativity, Variables and Data types, Operators, Expression, Program Structure, Control Flow Statements, Working with Functions, Basics of Array.	14
IV	**Data Communication & Networking**: Communication Process, Component of Data Communication, Communication modes, Data Transmission Medias, Modem and its working, Types of Networks, Network Topology, History of Internet, Web browsers, Web servers, How Internet Works, Internet Security, Uses of Internet, Virus, Antivirus.	14
V	**Database Management System**: Introduction to DBMS, File oriented and database approach Database Models, Architecture of DBMS, Database Language, Function of Database Administrator, Database keys and its types	14

Text Book/References Books/ Websites:

1. P.K Sinha; Computer Fundamental; BPB publication 4th Edition
2. Rajaraman; Fundamentals of Computers; Prentice Hall India Pvt. Limited.

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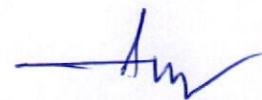Programme: **Bachelor of Technology**   Semester –I/II

3. E Balagurusamy; Fundamentals of Computers; Tata McGraw-Hill Education PVT. Ltd.,
4. Peter Norton's, Introduction to Computers, Tata McGraw-Hill, 2010, ISBN: 9780070671201.
5. https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html.
6. https://www.academia.edu/33601473/computer_fundamentals_by_sinha_and_sinha_pdf.

Suggested List of Laboratory Practical (Expandable):
1. To study about Computer hardware.
2. Practice on Microsoft word.
3. Practice on Microsoft Excel
4. Practice on Microsoft PowerPoint.
5. Write a Program using Variables in "C++".
6. Write a Program to print percentage and grade of student in "C".
7. Write a Program to find out Simple Interest in "C++".
8. To study about Windows DOS Commands.
9. Write a Program to display whether the given number is odd or even.
10. Installation of any one of the operating system.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem	Internal	Total
CBTE-206	Basic Civil & Mechanical Engineering	3	-	1			Min: 40 (D Grade)	Nil (35)	Nil (15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

Pre-Requisite	Basic knowledge of Science and Mathematics.
Course Objective	To understand the introduction of Civil and mechanical engineering through the concept of engineering material and their properties, fluid, combustion of fuels in SI and CI engine and modern surveying techniques.
Course Outcomes	**Students will be able to learn:** 1. The knowledge of Engineering materials and their properties. 2. The concept of fluid properties. 3. The concept of petrol and diesel engine. 4. The concept of different building materials used in building construction and their properties. 5. Basic concept of surveying and remote sensing.

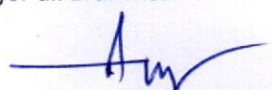| Unit	Contents (Theory)	Marks Weightage
I	**Engineering Material:** Introduction, Classification, and Application of Engineering materials, Mechanical Properties- Strength, Elasticity, Ductility, Malleability, Plasticity, Toughness, Hardness, Brittleness, Fatigue, Characteristics and Applications of Ferrous and Non-Ferrous Metals, Hook's Law, Stress-Stain diagram for Ductile and Brittle Materials.	14
II	**Fluids:** Fluid Properties- Pressure, Density, Viscosity, Bernoulli's Equation. Types of Fluid Flow, Basic introduction of Turbines, Classifications and their Working, Pumps-Types and their uses, Compressors-Types and its uses.	14
III	**I.C. Engines:** Working of Two Stroke Petrol Engine, Working of Two Stroke Diesel Engine. Working of Four Stroke Diesel Engine, Working of Four Stroke Petrol Engine.	14
IV	**Building Materials:** Stones, Bricks, Cement, Timber, Mortar and Concrete- types, Basic Properties, Tests & Uses. **Building Construction:** Sub and Super Structure of a Building, Types of Foundations, Types of Brick and Stone Masonry, Plastering and Pointing.	14
V	**Surveying & Positioning:** Introduction to Surveying- Classification, Fundamental Principles, & Instrument Used, Angular measurement by Compass Survey, Measurement of elevation by leveling. **Remote Sensing & GIS:** Introduction of Remote Sensing & its applications in Civil Engineering, GIS, GPS, its application in Civil Engineering.	14

Text Book/References Books/ Websites:
1. S Ramamrutham; Basic Civil Engg; Dhanpat Rai Publishing.
2. B C Punamia& Ashok Jain; Basic Civil Engg.;Laxmi Publications.
3. S.S. Bhavikatti; Basic Civil Engineering; New Age Publications.
4. GK Narula; Material Science; TMH.

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5. R.K Rajput; Basic Mechanical Engg; Laxmi Publications.
6. P.K. Nag; Engineering Thermodynamics; TMH.

Suggested List of Laboratory Experiments (Expandable) :

1. To study the tensile testing of standard mild steel specimen.
2. To derive an experiment of Bernoulli's Theorem and its applications.
3. To study four stroke Petrol (S.I.) engine.
4. To study four stroke Diesel (C.I) engine.
5. To study two stroke Petrol (S.I.) engine.
6. To study two stroke Diesel (C.I) engine.
7. To determine the Water absorption of given brick.
8. To determine the Compressive strength of bricks.
9. To find the Standard consistency of cement.
10. To perform leveling exercise by height of instrument method.
11. To study the ranging and reciprocal ranging.

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)
CBTE-207	NCC-II	1	-	1						

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 15	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: 15	Lab Performance/ Quiz/Attendance - Max. Marks: 15	

Pre-Requisite	---
Course Objective	**Cadets will be able to: -** 1. Understand the thinking & reasoning process. 2. Understand the process to cope with Stress & emotions. 3. Understand the importance of improving communication skills. 4. Identify the leadership traits. 5. Admire the qualities of great leaders. 6. Know about different legal provisions for children & women safety and protection. 7. Understand the various rules & measures to be taken to ensure Road/Rail safety. 8. Understand & spread awareness about latest Government initiatives for welfare of citizens and contribute towards Nation building. 9. Understand concepts of cyber and mobile security.
Course Outcomes	**Student will be able to:** 1. Define thinking, reasoning, critical thinking and creative thinking. 2. To think critically about different life related issues. 3. Think divergently and will try to break functional fixedness. 4. Creatively in their real-life problems. 5. Understand the organizations related to disaster management and their functioning. 6. Appreciate the role of NCC cadets in disaster management.

Unit	Contents (Theory)	Marks Weightage
I	**Personality Development:** Thinking- Meaning and Concept of thinking, Reasoning, Process of thinking. **Critical Thinking-** Meaning & concept of critical thinking, Features of critical thinking, Process of critical thinking; Creative thinking- Meaning & concept of creative thinking, Features of creative thinking, Process of creative thinking, levels of Creativity, Characteristics of creative person.	35
II	**Leadership Development:** Leadership capsule; Important Leadership traits, Indicators of leadership and evaluation. Motivation- Meaning & concept, Types of motivation. Factors affecting motivation. Ethics and Honor codes.	
III	**Social Service and Community Development:** Protection of Children & Women Safety. Road/Rail Safety; New Government Initiatives; Cyber and mobile Security Awareness.	

Text Book/References Books/ Websites:
1. Cadet's handbook, NCC Directorate, MP, CG.
2. Supplementary cadet's handbook, NCC Directorate, MP, CG.

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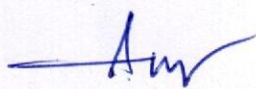
Programme: **Bachelor of Technology**

Semester –I/II

Suggested List of Laboratory Practical (Expandable):

(a) **Unit 1. Drill**
- (i) Foot Drill Dahine, Baen, Aageaur Piche Kadam Lena.
- (ii) Tej Chal se Murdna, Tej Chal se Salute Karna, Tej Kadam Taal aur Tham, Tej Kadam Taal se Kadam Badalna.
- (iii) Teeno Teen se Ek File aur ek file se Teeno Teen Banana

(b) **Unit 2. Weapon Training**
- (i) Range procedure & Theory of group.
- (ii) Short Range firing.

(c) **Unit 3. Map Reading**
- (i) Protractor Bearing and its conversion methods.
- (ii) Service protractor and its uses.
- (iii) Prismatic compass and its uses and GPS.
- (iv) Navigation by compass and GPS.

(d) **Unit 4. Field Craft & Battle Craft**
- (i) Indications of landmarks and Targets.
- (ii) Intro, Definitions, Types of Ground, Indication of Landmarks, Methods of iden of targets, difficult targets.

(e) **Unit 5. Social Service and Community Development:** Cadets will participate in various activities throughout the semester e.g., Blood donation Camp, Swachhata Abhiyan, Constitution Day, Jan Jeevan Hariyali Abhiyan, Beti Bachao Beti Padhao etc. as per the requirement and similar announced days- National and state level.

Note: Examination of this NCC course will be conduct as per NCC head quarter norms in consultation with office of COE, PU.

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PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2021-22 onwards)

Programme: Bachelor of Technology   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem	Internal	Total
CBTE-208	Introduction to Artificial Intelligence	2	-	-			Min: 20 (D Grade)	Nil	Nil	Nil

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 15	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Fundamental knowledge of Linear Algebra, Probability and Statistics.
Course Objective	To provide a strong foundation of fundamental concepts in Artificial Intelligence.
Course Outcomes	Students will be able to learn: 1. Fundamentals of artificial intelligence (AI) and its applications. 2. Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. 3. To understand principle of fuzzy logic fundamentals. 4. To explain the basic Knowledge representation, problem solving and learning methods of Artificial Intelligence. 5. To run models against manually labeled datasets to ensure that the results are as expected.

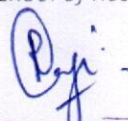| Unit	Contents (Theory)	Marks Weightage
I	**Introduction to AI:** Definition, Characteristics of AI problems, Scope and Future Expectation of AI, Applications of AI.	07
II	**Learning and Natural Language Processing:** Learning in Neural Network, Learning Processes:-Error Correction Learning, Memory Based Learning, Competitive Learning, Hebbian Learning.	07
III	**Overview of AI Technologies:** Study of Neural Networks, Reinforcement Learning, Transfer Learning, Natural Language Processing (NLP) and Chatbots , Heuristic Searches, Logic and Automated Reasoning Systems, Planning, and Robotics.	07
IV	**Overview of some of popular AI platforms:** AWS, Google Cloud AI, Microsoft Azure Learning Studio, and IBM Watson.	07
V	**Overview of the AI infrastructure:** Examination of what it takes to create a working AI technology stack in modern business settings to provide effective AI solutions.	07

Text Book/References Books/ Websites:
1. Elaine Rich and Kerin Knight; Artificial Intelligence; TMH.
2. Anderson J. A; An Introduction to neural networks; Prentice Hall.
3. Saroj Kaushik; Artificial Intelligence; Cengage Learning India, 2011.
4. Stuart Russell and Peter Norvig; Artificial Intelligence: A Modern Approach; Prentice Hall.
5. Trivedi, M.C; A Classical Approach to Artificial Intelligence; Khanna Publishing House, Delhi.
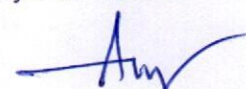
Suggested List of Laboratory Practical (Expandable): Nil

School of Research and Technology   Department: Common for all Branches

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PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2021-22 onwards)

Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)	End Sem (Nil)	Internal (Nil)	Total (Nil)
CBTE-209	Biology for Engineers	2	-	-						

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 15	Best of Two Mid Semester Test – Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Basic knowledge of Science.
Course Objective	The purpose of this course is to provide a basic understanding of biological mechanisms of living organisms from the perspective of engineers. In addition, the course is expected to encourage engineering students to think about solving biological problems with engineering tools.
Course Outcomes	Student will be able to learn: 1. The Morphology and chemical composition of the cell and function of each organelle present in the cell with the help of microscope. 2. The process of human physiological system and its cell functioning. 3. The importance of microbiology and immunological science to know the reactions of our body. 4. The biological science related to the different disciplinary areas. 5. The importance of genetics and how bioscience is related to other technical areas.

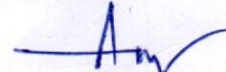| Unit	Contents (Theory)	Marks Weightage
I	**Cell Biology:** Introduction to the cell biology – The cell: the basic unit of life –Cell size and shape-Chemical composition-Classification of cell and its properties; Cytoskeleton–Cell membrane-Nucleus–Mitochondria-Endoplasmic Reticulum – Lysosome and Peroxisome; Microscopy and its types.	07
II	**Cell Physiology:** Cell cycle; Cell signaling, Transport across cell membrane; Metabolism-anabolism and catabolism; Expression of genetic information - protein structure and functiom; Introduction to Human physiology – Circulatory system - Respiratory system - Excretory system – Nervous system.	07
III	**Immunological Science:** Immune system and its types; Functional properties of antibodies; Helper T cells and T cell activation; Importance of Microbiology.	07
IV	**Implementation of Bio-Nano Science:** Nano Bimolecular and its various types; Principles and Application of Biosensor; Basics of Biochips – Bio fertilizer – Bioinformatics – Bio fuel – ioremediation.	07
V	**Advances IN Biological Sciences:** Fundamentals of Bio mechanics - Neural Network - Stem Cell; Introduction to Genetics; Genetic Engineering and its Application, Safety Hazardous Effect.	07

Text Book/References Books/ Websites:
1. Dr. Sohini Singh and Dr. Tanu Allen;Biology for Engineers;Vayu Educationof India, New Delhi.
2. Thyaga Rajan.S., Selvamurugan. N., Rajesh.M.P., Nazeer.R.A., Richard W. Thilagaraj, Barathi.S., and Jaganthan.M.K.; Biology for Engineers;Tata McGraw-Hill, New Delhi.
3. Arthur T. Johnson; Biology for Engineers; CRC Press.

Suggested List of Laboratory Practical (Expandable): Nil

School of Research and Technology   *Department: Common for all Branches*

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(Applicable for Admitted from Academic Session 2021-22 onwards)

Programme: **Bachelor of Technology**　　　　　　　　　　Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem Nil	Internal Exam (25)	Total (25)	End Sem	Internal	Total
CBTE-210	Disaster Management and Safety	-	-	-			Min: 10 (D Grade)	Nil	Nil	Nil

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: 25	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: 25
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Nil
Course Objective	1. To provide basic conceptual understanding of disasters. 2. To understand approaches of Disaster Management. 3. To build skills to respond to disaster.
Course Outcomes	Students will be able to learn:- 1. Foundations of hazards, disasters and associated natural/social phenomena. 2. Familiarity with disaster management theory 3. Technological innovations in Disaster Risk Reduction: Advantages and problems 4. Employs emergency planning to mitigate against, cope with and recover from a disaster 5. Builds and implements a community hazard mitigation plan.

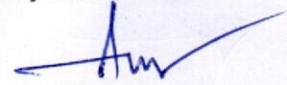| Unit	Contents (Theory)	Marks Weightage
I	**Introduction, Definition and Types of Disaster:** Hazards and Disasters, Risk and Vulnerability in Disasters, Natural and Man-made disasters, earthquakes, floods drought, landslide, cyclones, volcanoes, tsunami, global climate extremes.	05
II	**Study of Important Disasters:** Earthquakes and its types, magnitude and intensity, seismic zones of India, major geological areas of India, flood types and its management, drought types and its management, landside and its managements.	05
III	**Disaster Management Policies:** Basic principles of disasters management, Disaster Management cycle, Disaster management policy, National and State Bodies for Disaster Management.	05
IV	**Applications of Science and Technology for Disaster Management:** Geo-informatics in Disaster Management (RS; GIS; GPS and RS) Disaster Communication System (Early Warning and Its Dissemination).	05
V	**Disaster Management in India:** Disaster Profile of India – Mega Disasters of India and Lessons Learnt Disaster Management Act 2005 – Institutional and Financial Mechanism National Policy on Disaster Management, National Guidelines and Plans on Disaster Management.	05

Text Book/References Books/ Websites:

1. M C Gupta; Manual on natural disaster management in India; NIDM; New Delhi.
2. R K Bhandani; An overview on natural & man-made disasters and their reduction; CSIR New Delhi.
3. Disaster Management Act 2005; Publisher by Govt. of India.
4. National Disaster Management Policy; 2009; GoI

Suggested List of Laboratory Experiments (Expandable): Nil

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Programme: **Bachelor of Technology** Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (Nil)	Internal (25)	Total (25)	End Sem	Internal	Total
CBTE-211	Life Skills	-	-	-			Min: 10 (D Grade)	Nil	Nil	Nil

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: 25	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: 25
Practical Internal Max Marks: Nil	Lab Performance/ Quiz/Attendance - Max. Marks: Nil	

Pre-Requisite	Nil
Course Objective	To enhance the employability and maximize the potential of the students by introducing them to the principles that underly personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.
Course Outcomes	**Students will be able to learn:** 1. Define and identify different life skills required in personal and professional life. 2. Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress. 3. The basic mechanics of effective communication and demonstrate these through presentation. 4. Take part in group activities. 5. Use appropriate thinking and problem solving techniques to solve new problems.

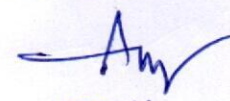| Unit	Contents (Theory)	Marks Weightage
I	**Overview of Life Skills**: Meaning and significance of life skills, Life skills identified by WHO:Self awareness, Empathy, Critical thinking, Creative thinking, Decision making, problem solving, Effective communication, interpersonal relationship, coping with stress, coping with emotion.	05
II	**Stress Management**: Stress, reasons and effects, identifying stress, stress diaries, the four A's of Stress management, techniques, Approaches: action-oriented, emotion-oriented, acceptance oriented, resilience, Gratitude Training.	05
III	**21st Century skills**: Creativity, Critical Thinking, Collaboration, Problem Solving, Need for Creativity in the 21st century, Imagination, Intuition, Experience, Sources of Creativity, Lateral Thinking, Myths of creativity, Critical thinking Vs Creative thinking, Functions of Left Brain &Right brain, Convergent & Divergent Thinking, Critical reading & Multiple Intelligence.	05
IV	**Group and Team Dynamics**: Introduction to Groups: Composition, formation, Cycle, thinking, Clarifying expectations, Dynamics techniques, Group vs Team, Team Dynamics, Virtual Teams. Managing team performance and managing conflicts	05
V	**Leadership**: Leadership framework, entrepreneurial and moral leadership, vision, cultural dimensions. Growing as a leader, turnaround leadership, managing diverse stakeholders, crisis Management. Types of Leadership.	05

Text Book/References Books/ Websites:
1. Barun K. Mitra; Personality Development & Soft Skills; Oxford Publishers Third impression.
2. Larry James; The First Book of Life Skills; Embassy Books, First Edition.
3. Shalini Verma; Development of Life Skills and Professional Practice; Sultan Chand (G/L) & Company.
4. Remesh S., Vishnu R.G.; Life Skills for Engineers; Ridhima Publications, First Edition.

Suggested List of Laboratory Experiments (Expandable): Nil

School of Research and Technology Department: Common for all Branches

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Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (Nil)	Internal (Nil)	Total	End Sem (Nil)	Internal (50)	Total (50)
CBTE-212	Fine Arts-1	0	0	1			Nil			Min: 20 (D Grade)

Duration of Theory (Externals): -Nil

Theory Internal- Max Marks: -Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 50	Lab Performance/ Quiz/Attendance - Max. Marks: **50**	

Pre-Requisite	Nil
Course Objective	Understand that the meaning of a work of art is conditioned by the manner in which it is exhibited or otherwise presented and distributed. They will have the ability to consider methods of presentation and distribution in innovative ways that respond to, and potentially influence, existing conditions in the field.
Course Outcome	**Students will be able to learn:** 1. Increase ability to communicate with people. 2. Learn to sketch and take field dimensions. 3. Learn to take data and transform it into graphic drawings.

Unit	Contents (Theory)	Marks Weightage
I	**History of Indian Painting-I:** Six Limbs of Indian Art Pre Historic Painting- Mirzapur, Bhimbetka, Hoshangabad, Pachmarhi Cave Painting – Jogimara, Sigria, Sittannvasal	50

Text Book/References Books/ Websites:

1. Lokesh Chandra Sharma;A Brief History of Indian Painting .
2. R.A. Agrawal; Rup Prad Kala Kemool Adhar

Suggested List of Laboratory Experiments :- (Expandable):

1. Drawing :- Objects, human Figure, Nature
2. Still Life :- Objects, Nature

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