PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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
CBBT-101	Remedial Mathematics-I	3	1	-	End Sem (70)	Internal (30)	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 basic mathematics such as Algebra, Trigonometry and Number system.
Course Objective	The objective of this course is to familiarize the Biotechnological engineers with techniques in trigonometry, differentiation, integrals, linear differential equations, mensuration and their applications. It aims to equip the students to deal with advanced levels of mathematics and applications that would be essential for their disciplines.
Course Outcomes	At the end of this course, the students will be able to: 1. Understand trigonometry and inverse trigonometry ratios. 2. Understand the concepts of differentiation and integration to deal with real world problems. 3. Solve the linear differential equations that are used in engineering problems. 4. Solve shape, area, volume and surface area of various geometrical figures and their analysis. 5. Application of integration and differentiation for length and area of the curve.

Unit	Contents (Theory)	Marks Weightage
I	**Trigonometry:** Trigonometry ratios: Trigonometry ratios of any angle, Relation between degree and radian, Fundamental identities, Trigonometry ratio of allied, compound, multiple and sub multiple angles. Factorization and de-factorization formulae. Inverse trigonometric ratios: Definition of inverse trigonometric, ratios, Principal values of inverse trigonometric ratios, Relation between inverse trigonometric ratios	14
II	**Derivative:** Definition of Derivatives, Notations, Derivatives of standard functions rules of differentiation (Without proof), Such as derivatives of sum or difference, Scalar multiplication, Product and quotient, Derivatives of composite function (Chain rule), Differentiation of implicit function, Logarithmic function, Parametric functions, Successive differentiation **Integration:** Definition of integration as anti-derivative, Integration of standard function, Rules of integration (Integrals of sum, difference, scalar multiplication); Methods of integration: Integration by substitution, Integration of rational functions, Integration by partial fractions, Integration by trigonometric transformation, Integration by parts.	14
III	**Differential Equation:** Formation of differential equation. Differential equation of first order and first degree. Solution of first order and first degree by Separation of variables, Homogeneous differential equation, Linear differential equation, Linear Differential equation of higher order with constant coefficients.	14
IV	**Mensuration:** Shape and area of rectangle, square, triangle, parallelogram, circle, trapezium, general/special quadrilaterals, polygon; Surface area of cube, cuboid, cone and cylinder; Volume of cube, cuboid, cone and cylinder; Volume and capacity.	14
V	**Application of calculus:** Applications of derivatives: partial derivative rate of change, maxima	14

School of Research and Technology   *Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

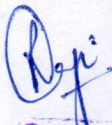Programme: **Bachelor of Technology**   Semester –I/II
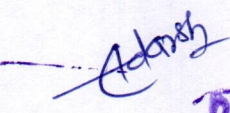
and minima; Integral calculus - length & area of circles/parabolas/ellipses (in standard form only) ; Application of differential equation in Pharmacokinetic equation.	

Text Book/References Books/ Websites:
1. D.C. Aggarwal; Engg. Mathematics – I;Shree Sai Publication.
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

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology   *Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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) 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

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

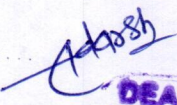|		
V	**Solid State Physics and Superconductivity**: Free electron model theory, Band theory for solids, Fermi Dirac distribution function, Fermi level of intrinsic and extrinsic semiconductor, photodiode, solar cell, Hall effect. Superconductivity: Introduction, Meissner effect, Type I and Type II superconductors,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

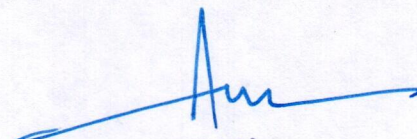### Text Book/References Books/ Websites:
1. M.N. Avadhanulu; Engineering Physics; S Chand Pub.
2. Beiser; Concepts of Modern Physics; McGraw-Hill
3. Navneet Gupta, S.K. Tiwary; Engineering Physics; Dhanpat Rai & Co.
4. Edward L. Wolf; Nanophysics and Nanotechnology; Wiley India
5. C. Kittel; Introduction 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.

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology   _Department: Biotechnology_

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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) Min: 40 (D Grade)	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)
CBBT-103	Electrical and Electronics Instrumentations	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	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. Expected to possess an in-depth understanding and Knowledge of the concepts and principles of measurement of electrical and non electrical viz. 2. About measurement of physical quantities and instruments. 3. Measure Power in single and three phase circuits. 4. Measure energy, and standardization of potentiometers. 5. Measure various electrical quantities. Ability to understand basic Parameters of Measurements.

Unit	Contents (Theory)	Marks Weightage
I	**Principles of Measurement and Instrumentation:** Basic Objectives of measurements, analog versus digital measurements Parameters of Measuring devices, Accuracy, Precision, Error (Gross, Systematic & Random), Linearity, Hysteresis, Resolution, Measurement of current, voltage, Resistance and power, Introduction of Multimeter. Galvanometers – Theory & operation of ballistic galvanometer.	14
II	**Electrical Bridges :** Measurement of inductance, capacitance and resistance using Bridge Introduction about AC bridge, Maxwell's (inductance and capacitance) Bridge, Anderson's bridge, Hay's Bridge, Schering Bridge, Wheatstone Bridge, Q-meter.	14
III	**Signal Generators & Analyzer:** Introduction about generators, Sine wave generator, function generator, square and pulse wave generator, sweep frequency generator, wave analyzer, frequency selective wave analyzer & Heterodyne wave analyzer.	14
IV	**Cathode Ray Oscilloscope :** Introduction to C.R.O, Construction, Block Diagram of a general Purpose C.R.O.,Cathode Ray Tube (C.R.T.), Time Base Generator, Applications of C.R.O. to Measure: Voltage, Current, Frequency, Phase Difference, Special Purpose C.R.O.: Dual Beam Oscilloscope, Dual Trace Oscilloscope.	14
V	**Sensors and Transducers:** Sensors, solenoids, pneumatic controls with electrical actuator, mechatronics, types of valves and its applications, Introduction of Transducers, Analog and digital transducers, displacement transducer (LVDT & RVDT), Temperature Transducers: Thermocouple, Thermistors, and Optical Transducers: Photoconductive Cells, Photo Voltaic Cell.	14

School of Research and Technology   Department: Biotechnology

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

Text Book/References Books/ Websites:

1. H. S. Kalsi; Electronics Instrumentation; TMH.
2. A.K. Sawhney; Instrumentation and Measurements; Dhanpat Rai and Co.
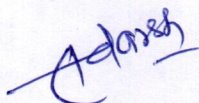3. Helfric and Cooper; Modern Electronic Instrumentation and Measurement Techniques; Pearson.

Suggested List of Laboratory Practical (Expandable):

1. To study CRO.
2. To study Voltage Measurement on CRO.
3. To study Current Measurement on CRO.
4. To study Frequency Measurement on CRO.
5. To study Phase difference Measurement on CRO.
6. To Study of AC Inductance bridges.
7. To Study of AC Capacitance bridges.
8. To Study of Signal Generator.
9. To Study of Wave Analyzer.
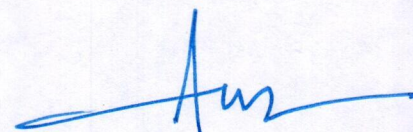10. To Study of LVDT.
11. To study of sensors.

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY

School of Research and Technology   *Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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) Min: 40 (D Grade)	End Sem (35)	Internal (15)	Total (50) Min: 20 (D Grade)
CBBT-104	**Fundamentals of Plant Science**	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	Nil
Course Objective	To educate student about the mechanism and physiology life processes in plants. To provide knowledge related to plant cells and organelles. To study structure and function of plant cells To provide knowledge about monocotyledon and dicotyledon plants. To study structure and function of plant tissues.
Course Outcomes	**Student will be able to learn:** 1. the structure and function of plant cells. 2. To understand basic structure and function of nucleus and genetic makeup of plant cell. 3. about the plant tissues. 4. To understand difference between monocotyledon and dicotyledon plants. 5. To understand role of xylem and phloem in plants.

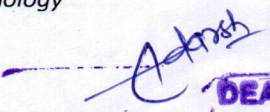| Unit	Contents (Theory)	Marks Weightage
I	**Prokaryotic and Eukaryotic cell:** Ultra structure of plant cell, Cell wall with structure and function. Structure and function of Cytoplasm and plasma membrane. Cell Organelles: Structure and origin of the following: Endoplasmic Reticulum, Golgi complex, Lysosomes, Mitochandria, Plastids and Ribosomes. Classification of plant kingdom.	14
II	**Genetics of plant cells:** Nucleus, Nucleoplasm, Chromosome, special types of chromosomes - Polytene and Lambrush chromosomes, Nucleic acids - DNA and RNA molecular structure and functions. Replication of DNA. Cell divisions - Mitosis and Meiosis and their significances	14
III	**Plant Tissues:** Classification - structural characteristics and functions of the following tissues. Meristamatic, simple and complex and permanent. Tissue system - Epidermal and vascular, stomatal types, apical meristem - Theories.	14
IV	**Monocotyledons and dicotyledons plants:** Primary structure of stem and root of monocotyledons and dicotyledons plants. Internal structure of leaves of monocot and dicot. Structure of stem and root of Dicotyledons. Anamalous secondary growth of Dicotyledons stem of Boerhaavia, Nyctanthus.	14
V	**Xylem and phloem:** Origin and structure of secondary xylem and secondary phloem. Annual rings, heart wood and sapwood, periderm, wound healing, leaf Abscission, Vascular cambium, laticifers, nodal anatomy.	14

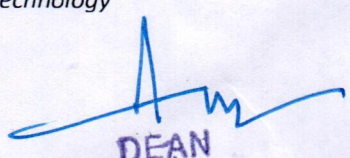**Text Book/References Books/ Websites:**

1. Verma.P.S and Agarwal, V.K. 2007. Cytology. S. Chand & Co. Chennai.

School of Research and Technology   Department: Biotechnology

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

2. Eams A.J. and Mac Daniel. An Introduction to Plant Anatomy. TMH Edition. Tata MC. Graw Hill Publishing Co.ltd. Bombay - New Delhi.
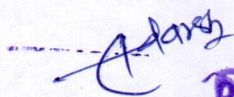
Suggested List of Laboratory Practical (Expandable):

1. Study of structure of plant cell using Permanent slides
2. Study structure of plant cell organelles by electron microscopy pictures from standard books.
3. Study of stages of Mitosis by Squash technique (onion root tip) using permanent slides.
4. Study of simple & Complex tissues (primary and secondary) using permanent slides.
5. Study of internal structure of stem of dicotyledons using permanent slides.
6. Study of root of dicotyledons using permanent slides.
7. Study of normal stem and root of Monocotyledons using permanent slides
8. Study of internal structure of leaves using permanent slides
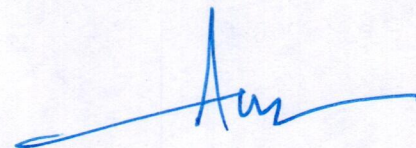9. Study of Nodal Anatomy using permanent slides

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (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	

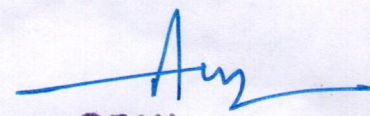| Pre-Requisite	Basic knowledge of mathematics.
Course Objective	To make the students solve problems, implement algorithms using C language and familiarize students with the Computer Programming concepts and language fundamental in a more systematic manner.
Course Outcomes	**Student will be able to learn:** 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.

School of Research and Technology   Department: Biotechnology

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

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.
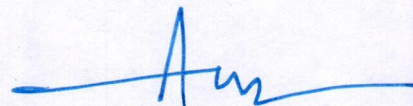
CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (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.

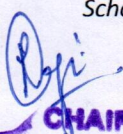| Unit	Contents (Theory)	Marks Weightage
I	संस्कृत भाषा एक परिचय:-विश्व के प्रमुख भाषा परिवार एवं संस्कृत भाषा, संस्कृत भाषा का सामाजिक, सांस्कृतिक एवं ऐतिहासिक,आधुनिक भारतीय भाषा के रुप में संस्कृत, वैदिक साहित्य एवं लौकिक साहित्य,संस्कृत साहित्य	07
II	बोध व्याकरण :- सन्धि एवं समास परिचय व प्रकार, कारक 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
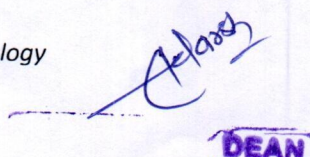
School of Research and Technology   *Department: Biotechnology*
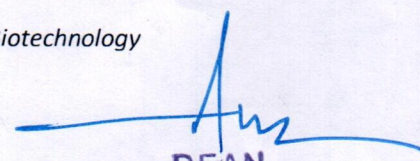
CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (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
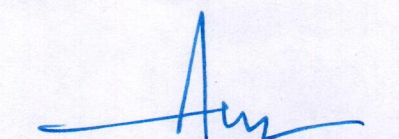
Suggested List of Laboratory Practical (Expandable): Nil

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL
School of Research and Technology

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL
Department: Biotechnology

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (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.

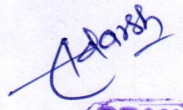| Unit	Contents (Theory)	Marks Weightage
I	Alphabets, Basic Greetings, Accents, Presentations, Numbers(0-20)	07
II	Subject Pronouns, Useful verbs – (to be, to have, to make), Sentence making	07
III	Article definite, Adjective and Adverb, Instructions and Requests, Basic Vocabulary, Numbers (21-100), 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
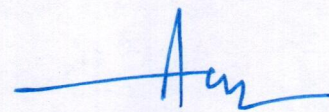
CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY BHOPAL
School of Research and Technology

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL
Department: Biotechnology

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (35)	Internal (15)	Total (50)
CBTE-107	NCC-I	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.	
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.	35
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.	

School of Research and Technology   Department: Biotechnology

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

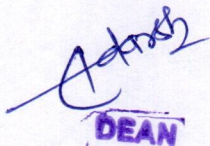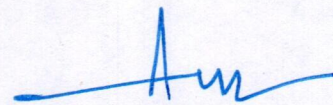**Text Book/References Books/ Websites:**
1. Cadet's handbook, NCC Directorate, MP, CG.
2. Supplementary cadet's handbook, NCC Directorate, MP, CG.

Suggested List of Laboratory Practical (Expandable):

1. **Drill:** Foot Drill-Drill ki Aam Hidayaten, Word ki Command, Savdhan, Vishram, Aram Se, Murdna, 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.

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology   *Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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-108	Soft Skills	-	-	1			(Nil)			Min: 20 (D Grade)

Duration of Theory (Externals): -Nil

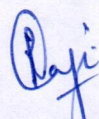| Theory Internal- Max Marks: -Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 50	Lab Performance/Assignment / Quiz/Attendance - Max. Marks: 50	

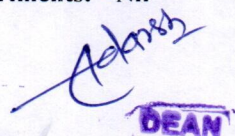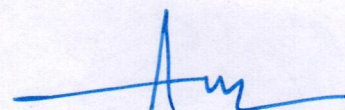| Pre-Requisite	Intermediate level English proficiency.
Course Objective	To inculcate good manners and etiquettes to make students more flexible and capable to change before entering the professional work environment
Course Outcome	Student will be able to learn: 1. To effectively communicate through 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

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL
School of Research and Technology

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL
Department: Biotechnology

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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 (70)**	**Internal (30)**	**Total (100)**
CBTE-109	Workshop Practice	-	-	1			(Nil)			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	

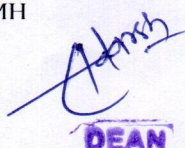| Pre-Requisite	Nil
Course Objective	To get knowledge of basis of measurements and measuring tools, study the engineering aspect of working of machine tools, ability to understand construction, function, use and application of different working tools, equipment and machines.
Course Outcomes	Student will 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

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)
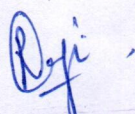
Programme: **Bachelor of Technology**   Semester –I/II

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

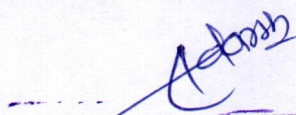## Suggested List of Laboratory Practical (Expandable):

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.
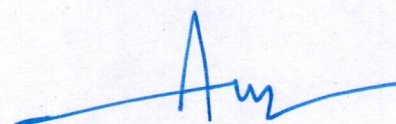10. To study various machines viz lathe machine, Drill machine.

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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-110	Physical Education & Yoga	-	-	-			(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	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

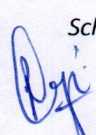**Text Book/References Books/ Websites:**
1. Physical Education; Ravindra Chaudhry and Zamirullah Khan;
2. The Language of Yoga; Nicolai Bachman;
3. Yoga Therapy: Foundations, Methods, and Practices for Common Ailments; Mark Stephens
4. Mudras Healing and Transformation; Joseph.
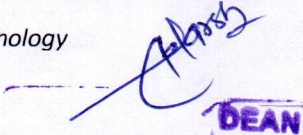
Suggested List of Laboratory Experiments: (Expandable):
1. Fitness tests for all items.
2. Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
3. Take any game of your choice from the list above. Then, make a labelled diagram of field & equipment (Rules, Terminologies & Skills).

School of Research and Technology   *Department: Biotechnology*

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

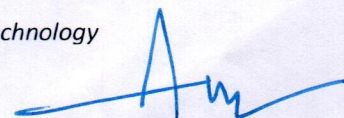Programme: **Bachelor of Technology**   Semester –I/II

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
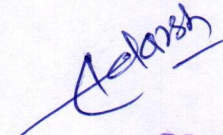
Text Book/References Books/ Websites:Nil

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

CHAIRMAN
BOARD OF STUDIES (ENGINEERIN)
PEOPLE'S UNIVERSITY, BHOPAL
School of Research and Technology

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL
Department: Biotechnology

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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.

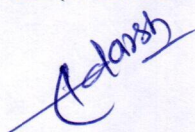|	Contents (Theory)	Marks Weightage
I	**Applied and General Study of Music** Comparative study of the following ragas and taalas **Raga**: Yaman, Bihag, Bhairav, Vrindavani- Sarang, Durga, Alhaiya-Bilawal, Bhupali, Bhimpalasi, Khamaj, Bhairavi & Des **Taal**: Teental, Ektal, Chautal, Kaharwa, Dadra Notation 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
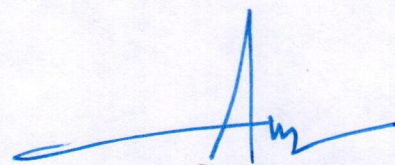
Text Book/References Books/ Websites:
1. Late Pandit Omkarnath Thakur; Sangeetanjali Vol-I; Pilgrims Publishing.
2. Poonam Dutta;Bhartiya Sangeet: Shiksha Evam Uddeshya; Raj Publications

Suggested List of Laboratory Experiments :- (Expandable):
1. Practices on Raag and Taal (Vocal and Instrumental)

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL
School of Research and Technology

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL
Department: Biotechnology

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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
CBBT-201	Remedial Mathematics-II	3	1	-	End Sem (70)	Internal (30)	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 basic mathematics such as function, Geometry, Determinant and Number system.
Course Objective	This course aims to familiarize biotechnological engineers with techniques in graph, statistics, probability, coordinate geometry and linear algebra. It seeks to prepare the students to handle complex mathematical concepts and applications that are crucial to their subjects.
Course Outcomes	Student will be able to learn: 1. Apply the concept of two dimensional geometry to find the shortest distance between two lines. Also apply for finding angle between two straight lines condition of parallel and perpendicular lines. 2. The inverse matrix, eigen values , eigen vectors and linear equations by Cramer's rule. 3. The measures of central tendency, standard deviation, variance and coefficient of variation. 4. Discuss the different type of graph and chart. 5. Elaborate the concepts of Probability.

Unit	Contents (Theory)	Marks Weightage
I	**Coordinate Geometry:** Point and distances: Distance formula, Section formula, midpoint, centriod of Triangle. Area of triangle and condition of co linearity. Straight line: Slope and intercept of straight line, Equation of straight line in slope point form, slope-intercept form, two-point form, two-intercept form, normal form. General equation of line, Angle between two straight lines condition of parallel and perpendicular lines. Intersection of two lines. Length of perpendicular from a point on the line and perpendicular distance between parallel lines.	14
II	**Linear Algebra:** Matrices and determinants, Solution of system of linear equations by Cramer's rule, Inverse matrix, Eigen values and eigen vectors,	14
III	**Statistics:** Measures of Central tendency (mean, mode and median) for ungrouped and grouped frequency distribution, Measures of dispersion such as range, Mean deviation, Standard deviation, Variance and coefficient of variation.	14
IV	**Graph and Chart:** Graphical representation of Histogram, Ogive Curve and pie diagram, bar chart, box plot.	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 – I & III, Shree Sai Publication.
2. S.P. Deshpande; Basic Mathematics, Pune Vidyarthi Garh.

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

3. Dilip Tulshiramji Gaikwad, Dr. Suresh Pathak, Ashojk C Patil; Basic Mathematics , S. Chand Publication.
4. B.S. Grewal, Higher Engineering Mathematics, Hanna Publication.
5. S.C.Gupta, V.K. Kapoor; Fundamentals of Mathematical Statistics, Sultan Chand & Sons Publication.
6. S.L.Loney; Coordinate Geometry; S. Chand & Co. PHI.

Suggested List of Laboratory Practical (Expandable): Nil

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)
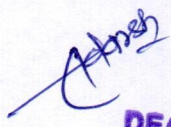
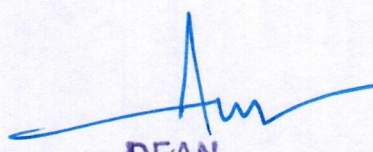Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (70)	Internal (30)	Total (100)	End Sem (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

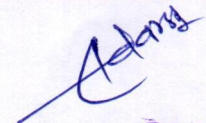| Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance - Max. Marks: 10
Practical Internal Max Marks: 15	Lab Performance / Quiz/Attendance - Max. Marks: 15	

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

School of Research and Technology   Department: Biotechnology

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

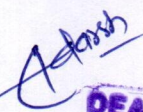|		
	Urea- Formaldehyde, Buna N, Buna S, Vulcanization of Rubber.	
V	**Spectroscopic Techniques and Applications:** Principle, Instrumentation & Applications, electronics spectroscopy, Vibrational & Rotational Spectroscopy of diatomic molecules. Chromatography, Lambert's and Beer's Law.	**14**

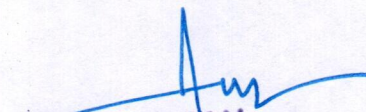**Text Book/References Books/ Websites:**

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.

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology   *Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

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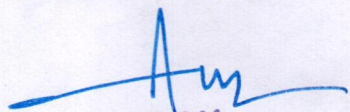
Text Book/References Books/ Websites:

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.

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

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.
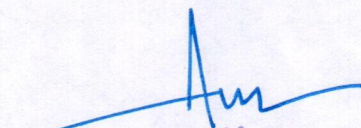
CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (Nil)	Internal (Nil)	Total
CBBT-204	Fundamentals of Animal Science	3	1	-			Min: 40 (D Grade)			(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	
Course Objective	To study the principles of animal cell biology, and genetic makeup of animal cells, knowledge about organization and functioning of different organs. To acquire knowledge about ecology, environment and pollution and basic evolutionary theories.
Course Outcomes	**Student will be able to learn:** 1. Students gain knowledge and skill in the fundamentals of animal science. 2. Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms. 3. Understands the complex evolutionary processes of animals. 4. Correlates the physiological processes of animals and relationship of organ systems. 5. Understanding of environmental conservation processes and its importance, pollution control.

Unit	Contents (Theory)	Marks Weightage
I	Cell Biology - structure of animal cell, Genetics: molecular structure of gene – gene function, sex linked inheritance. Genetic Engineering and its application.	14
II	Embryology - cleavage and gastrulation of Amphioxus. Human Physiology: Digestion, Circulation - blood components, structure of heart, heart function.	14
III	Diseases of Circulatory system - blood pressure, heart disease - Ischemia, Myocardial Infarction, Rheumatic heart disease, stroke. Excretion - structure of kidney and mechanism of urine formation.	14
IV	Environmental Biology - Biotic factors and Abiotic factors, food chain and food web. Pollution - Environmental degradation, (Air, Water and Land) - Green house effect - Bioremediation, Biodegradation - Global warming - acid rain.	14
V	Evolution: Theories of Lamarkism & Darwinism.	14

Text Book/References Books/ Websites:

1. Ekambaranatha Ayyar, and Ananthakrishnan, T.N. 1993. Outlines of Zoology, Vol I & II, Viswanathan and Co, Madras.
2. Sambasiviah, I, Kamalakara Rao, A.P., Augustine Chellappa, S. 1983. Text book of Animal Physiology, S. Chand & Co., New Delhi.
3. Verma and Agarwal. 1983. Text book of animal Ecology, S. Chand & Co., New Delhi.
4. Verma and Agarwal and Tyagi. 1991. Chordate Embryology, S. Chand & Co., New Delhi.
5. Rastogi and Jayaraj. 2000. Text book of Genetics. Rastogi publications, Meerut.
6. Verma and Agarwal. 2000. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology, S. Chand & Co., New Delhi.
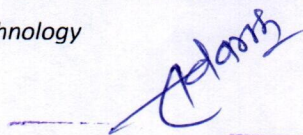
Suggested List of Laboratory Practical (Expandable): Nil

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.,

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (35)	Internal (15)	Total (50)
CBTE-205	Computer Fundamentals	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	

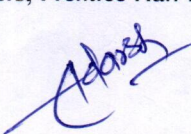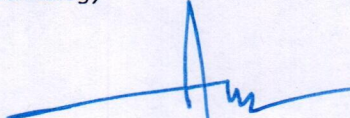| Pre-Requisite	Nil
Course Objective	To provide fundamental concepts of information and communication technology.
Course Outcomes	**Students will be able to learn:** 1. Basics of computer systems and their operations. 2. Basics of operating systems, their functions and types. 3. Categories of programming 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.

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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.
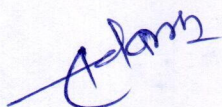
Suggested List of Laboratory Practical (Expandable):
1. To study about Computer hardware.
2. Practice on Microsoft word.
3. Practice on Microsoft Excel
4. Practice on Microsoft PowerPoint.
5. Write a Program using Variables in "C++".
6. Write a Program to print percentage and grade of student in "C".
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.
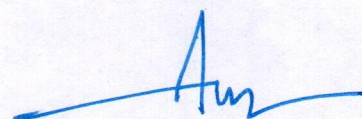
CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology   *Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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-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.

School of Research and Technology   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

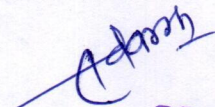Programme: **Bachelor of Technology**　　　　　　　　　　　Semester –I/II

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.

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology　　　　　　　*Department: Biotechnology*

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

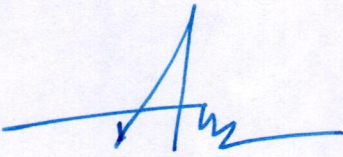Programme: **Bachelor of Technology**   Semester –I/II

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	End Sem (35)	Internal (15)	Total (50)	End Sem (35)	Internal (15)	Total (50)
CBTE-207	NCC-II	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	

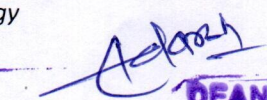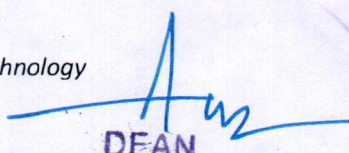| Pre-Requisite	---
Course Objective	**Cadets will be able to: -** 1. Understand the thinking & reasoning process. 2. Understand the process to cope with Stress & emotions. 3. Understand the importance of improving communication skills. 4. Identify the leadership traits. 5. Admire the qualities of great 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.

School of Research and Technology   Department: Biotechnology

DEAN

CHAIRMAN   **FACULTY OF ENGINEERING**   DEAN
 ACADEMIC AFFAIRS

BOARD OF STUDIES (ENGINEERING)   **PEOPLE'S UNIVERSITY, BHOPAL**   PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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.

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
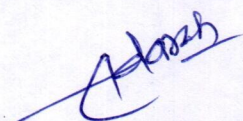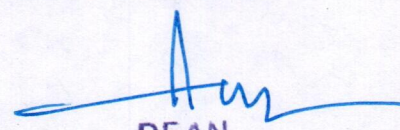PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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: Biotechnology*

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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 (Nil)	Internal (Nil)	Total
CBTE-209	Biology for Engineers	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	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: Biotechnology*

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 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.
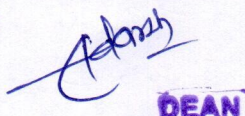4. National Disaster Management Policy; 2009; GoI

Suggested List of Laboratory Experiments (Expandable): Nil

School of Research and Technology   *Department: Biotechnology*

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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

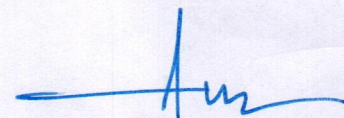*School of Research and Technology*   *Department: Biotechnology*

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

PEOPLE'S UNIVERSITY, BHOPAL
(Applicable for Admitted from Academic Session 2023-24 onwards)

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-I	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

CHAIRMAN
BOARD OF STUDIES (ENGINEERING)
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
FACULTY OF ENGINEERING
PEOPLE'S UNIVERSITY, BHOPAL

DEAN
ACADEMIC AFFAIRS
PEOPLE'S UNIVERSITY, BHOPAL (M.P.)

School of Research and Technology   *Department: Biotechnology*