

SYLLABUS
B.TECH. I-SEM
(Electronics & Telecommunication Engineering)

KDK College of Engineering, Nagpur
Faculty of Science and Technology
B. Tech. First Semester
(Electronics and Telecommunication Engineering)

Semester I	Subject Code: 1BET01T	Name of Subject: Applied Mathematics - I		
Total Hours Distribution per week				
Total Credit: 3	Lecture (L): 3 Hrs	Tutorial (T) : -	Practical (P): -	
Examination Scheme				
Mid Sem Examination	Continuous Assessment	End Sem Examination	Total Marks	Examination Duration:
30 Marks	20 Marks	50 Marks	100 Marks	3 Hours

Course Objectives	
1	To introduce advanced level mathematics and its applications in engineering subjects.

Course Outcomes	
After completion of syllabus, the student will be able to	
1	Apply the concepts of matrix operations and inversion.
2	Determine Partial derivative of various functions and apply their concepts to Engineering problems.
3	Apply the concepts of Beta and Gamma functions to solve the problems.
4	Solve ordinary differential equations using elementary techniques and apply it to formulate mathematical models.
5	Use higher order differential equations to solve the problems in engineering field.

SYLLABUS

Details of Topic	Hours	Mapped with CO
Unit 1: Matrices	6	CO1
Rank of a matrix, Consistency of system of linear non-homogeneous equations,		
Homogeneous system of Linear equations,		
Symmetric, Skew-symmetric and Orthogonal matrices		
Linear and orthogonal transformations,		
Eigen values and eigen vectors of a matrix , reduction to diagonal form ,		
Cayley- Hamilton theorem.		
Unit 2: Differential Calculus	8	CO2
Derivative of Functions of several variables, First and higher order derivatives,		
Homogeneous functions, Euler's theorem on homogeneous function,		
Chain rule and total differential coefficient of composite functions,		

Jacobians, Properties of Jacobians, Problems on Properties of Jacobians.,		
Taylor's Theorem for two variables,		
Maxima and Minima of functions of two or more variables using Lagranges method of undetermined multiplies.		
Unit 3: Integral Calculus		
Improper integrals: Gamma and Beta functions,	7	CO3
Differentiation under integral sign,		
Root mean square value,		
Tracing of curves (Cartesian only)		
Unit 4: Differential Equations I		
Reducible to linear (Bernoulli's) differential equations,	7	CO4
Exact differential equations (excluding the cases of integrating factors),		
Equations of first order and higher degree, their applications .		
Unit 5: Differential Equations II		
Higher order ordinary linear differential equations with constant coefficients,	8	CO5
Method of variation of parameters,		
Cauchy's homogeneous differential equations, Equations of the type $\frac{d^2 y}{dx^2} = f(y)$		
Applications of higher order differential equations .		

Text Books

1. Erwin Kreyzig, Advance Engineering Mathematics, 10th Edition, John Wiley and Sons, INC.
2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010
3. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.
4. H.K. Dass, Engineering Mathematics, 11th revised edition, S. Chand, Delhi.
5. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
6. Dr. B.S. Grewal, Higher Engineering Mathematics, 42th edition, Khanna Publishers.
7. P.N. Wartikar and J.N. Wartikar, Applied Mathematics, 4th Edition, Vidyarthi GrihaPrakashan.

References Books

1. Dr. P. D. Shobhane and C. N. Tembekar, Engineering Mathematics, Das Ganu Prakashan 10th Edition (2017).
2. Peter O' Neil, A Text Book of Engineering Mathematics, Thomson Asia Pvt. Ltd., Singapore.
3. G B Thomas and R L Finney, Calculus and Analytical Geometry, 9th edition, Addison-Wesley, 1999.

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Chairman, BoS	Dean (Acad.)	Principal	Date of release	Version	



KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics and Telecommunications Engineering

Semester I	Subject Code: 1BET02T	Name of Subject: Applied Physics		
Total Hours Distribution per week				
Total Credit: 2	Lecture (L): 2 Hrs		Tutorial (T) : -	Practical (P): -
Examination Scheme				
Mid Sem Examination	Continuous Assessment	End Sem Examination	Total Marks	Examination Duration:
15 Marks	10 Marks	25 Marks	50 Marks	2 Hours
Course Objectives				
1	To Provide a strong foundation in physics in preparation for technical or scientific careers.			
2	To familiarize prospective engineers with fundamental concepts of semiconductors and their applications in semiconductor technology.			
3	To make acquainted with the laser technology and the operations of laser.			
4	To provide a strong foundation in mathematical derivation and numerical problems.			
Course Outcomes				
After completion of syllabus, the student is able to				
1	Develop elementary concepts of quantum mechanics and their applications.			
2	Relate the structure of crystalline solids by applying knowledge of crystallography.			
3	Categorize solids on the basis of band theory and study of semiconductor devices along with their applications.			
4	Describe the quantum transitions and apply them to the working of lasers.			

SYLLABUS

Details of Topic	Hours	Mapped with CO
Unit 1: Quantum Mechanics	7	CO1
Planck's Hypothesis, Einstein's extension, Properties of Photons		
Concept of matter waves, Wave-particle duality, de-Broglie Hypothesis, Davission and Germer's experiment, Heisenberg's Uncertainty principle		
Schrodinger's Wave equation. Wave function Ψ , probability function, normalization condition		
Applications of Quantum Mechanics: Particle in one dimensional infinite potential well, Quantization of energy, Eigen states and Eigen values		
Unit 2: Crystal Structure:	5	CO2
Meaning of lattice and basis, unit cell: primitive and non-primitive unit cell		
cubic crystal structure: Simple Body and face centered cubic structure		
unit cell characteristics: Effective number of atoms per unit cell, atomic radius nearest neighbour distance, coordination number, atomic packing fraction, void space, density.		
Crystal planes and Miller indices, Inter-planer distance between adjacent planes		
Bragg's law of X-Ray diffraction.		

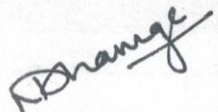
Unit 3: Semiconductor Physics and Devices :	6	CO3
Basic idea of free electron theory of metals, expression of conductivity of a metal.		
Formation of energy bands in Solids.		
Classification of solids on the basis of energy band diagram, concept of Fermi energy, Fermi level.		
Types of Semiconductors, P-N junction Diode, Formation of Potential Barrier		
V-I Characteristics of P-N junction Diode, Zener Diode, LED.		
Transistors- Types and Characteristics.	6	CO4
Unit 4: Lasers :		
Quantum Transitions: Absorption, Spontaneous emission & stimulated Emission		
Metastable states, Principle of laser, Laser characteristics, Coherence length and coherence time		
Pumping schemes: Three level and Four level.		
Optical Resonator, Construction & working of Ruby laser and He-Ne laser,		
Applications of laser.		

Text Books

1. P. M. Mathews and K. Venkatesan, A Textbook of Quantum Mechanics, Tata Mc Graw Hill (1977).
2. J. L. Powell and B. Crasemann, Quantum Mechanics, Narosa Publishing House (1993).
3. Charles Kittel, Introduction to Solid State Physics, Wiley Eastern, 5th edition, (1983).
4. A. J. Dekker, Solid State Physics, Prentice Hall of India (1971).
5. A Textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P. G. Kshirsagar, S. Chand Publication
6. A Textbook of Advanced Engineering Materials, Dr. S.P. Wankhede, Dr. D. S. Hardas, Dr. S. Shastri, Dr. D. S. Bhoomik, Dr. (Mrs.) S.U.Bhonsule, Dr. Shruti Patle, Das Ganu Publication ISBN-978-93-84336-70-7 (2021)

References Books

1. D. J. Griffiths, Quantum mechanics, Prentice Hall of India Private Limited, New Delhi
2. L. I. Schiff, Quantum Mechanics, TMH Publications
3. David Halliday, Robert Resnick, Jearl Walker, Principles of Physics, 10th Edition, John Wiley and Sons (2017).
4. Lasers and nonlinear optics, B.B. Laud, New Age International limited (1991).
5. Semiconductor devices (Physics and Technology), S.M. Sze, II Edition, Wiley India Pvt. Ltd.

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K.D.K.COLLEGE OF ENGG.
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KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics and Telecommunications Engineering

Semester I	Subject Code: 1BET02P	Name of Subject: Applied Physics Lab	
Total Hours Distribution per week			
Total Credit: 1	Lecture (L): -	Tutorial (T) : -	Practical (P): 2 Hrs
Examination Scheme			
Continuous Assessment		End Sem Examination	Total Marks
25 Marks		25 Marks	50 Marks

Practical Course Objectives	
1	To make the students gain practical knowledge to co-relate with the theoretical studies.
2	To understand the process of designing the experiments.
3	To achieve perfectness in experimental skills and the study of practical applications will bring more confidence and ability to develop and fabricate engineering and technical equipments
4	To be able to make relevant observations and to take measurements with a variety of instruments.
5	To design circuits using new technology and latest components and to develop practical applications of engineering materials and use of principle in the right way to implement the modern technology.

Practical Course Outcomes	
After completing the practical course, students will be able to	
1	Create the basic circuitries in Electronics. Demonstrate and illustrate the basic principles of operation of semiconductor diodes and transistors.
2	Differentiate between the types of semiconductors through band gap experiment. Analyze the magnetic field-based experiment to distinguish the materials.
3	Apply the concept of diffraction for the optical based devices using LASER beam. Develop the concept of fiber optic cables to determine the numerical aperture of the fiber cables and to get acquainted with its use in daily life.
4	Examine the various electrical and electronics-based parameters viz. A.C. Voltage, frequency, and phase shift and time period using CRO.
5	Practice effectively as an individual and as a member of a team.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Pr. No.	List of Practical
1	To determine Energy gap of semiconductor /thermistor.
2	Study of V-I characteristics of PN junction diode.

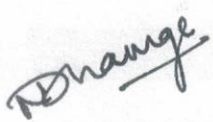
3	Study of V-I characteristics of Zener diode.
4	Study of V-I characteristics of PNP/NPN transistor in CE mode.
5	Study of V-I characteristics of PNP/NPN transistor in CB mode.
6	V-I Characteristics of Light Emitting Diodes.
7	Study of Hall Effect and determination of Hall Voltage of a given sample.
8	Variation of Hall coefficient (RH) with temperature.
9	Determination of NA for optical fiber
10	Determination of AC, DC voltage & frequency of electrical signals using CRO.
11	To determine the number of lines per cm on diffraction grating using a LASER beam.
12	Virtual Lab experiments.

Text Books

1. Avadhanulu M.N., "Experiments in Engineering Physics", S. Chand & Company LTD. Ram Nagar, New Delhi India
2. Electrical Engineering Materials, A.J Dekkar, Prentice Hall India Publication (1992)

References Books

1. Fundamentals of Physics" D.Halliday,R.Resnick and J.Walker,John Wiley and sons. New York 2001.
2. Solid State Physics, A.J. Dekker, MacMillan Students Edition (2000)

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K.D.K. COLLEGE OF ENGINEERING, NAGPUR
FACULTY OF SCIENCE & TECHNOLOGY
B.TECH. (Electronics and Telecommunication Engineering)

Semester: I	Subject Code: 1BET03T	Name of Subject: Programming for Problem Solving (Theory)		
Total Hours Distribution per week				
Total Credit: 3	Lecture (L): 3 Hrs		Tutorial (T) : -	Practical (P): -
Examination Scheme				
Mid Sem Examination	Continuous Assessment	End Sem Examination	Total Marks	Examination Duration:
30 Marks	20 Marks	50 Marks	100 Marks	3 Hours

Course Objectives	
1	To introduce the problem-solving methodologies and Python programming fundamentals.
2	To develop the ability to write, debug, and execute Python programs for engineering applications.
3	To develop and Execute the decision-making, iterative structures, functions, and modular programming.
4	To develop the Python programs using string, list, tuples, sets extra for various applications
5	To understand the concept of Exception Handling and File Handling using python.

Course Outcomes	
After completion of syllabus , students would be able to	
1	Describe the fundamentals of problem solving, algorithms, flowcharts, and Python programming environment.
2	Develop Python programs using operators, expressions, decision-making, and looping statements.
3	Develop the modular programming using Functions, modules and packages.
4	Implement modular programming using functions, strings, lists, tuples, dictionaries, and sets.
5	Apply file handling and exception handling techniques in Python programs.

Course Competencies:

1. Students will be able to apply logical thinking for computational problem solving.
2. Students will be able to develop structured Python programs for engineering applications.
3. Students will be able to use appropriate Python data structures effectively.
4. Students will be able to analyze and debug programming errors.
5. Students will be able to implement Python-based solutions for Electronics and Telecommunication problems.

CO-PO Articulating Matrix:

CO	Program Outcomes & Program Specific Outcomes												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	2	-	-	-	-	1	2	1	2
CO2	3	3	2	1	3	-	-	-	-	1	2	1	2
CO3	3	3	2	1	3	-	-	-	1	1	2	1	2
CO4	3	3	2	2	3	-	-	-	1	1	2	2	3
CO5	2	3	2	2	3	-	-	1	1	1	2	2	3

Syllabus

Unit	Contents	Hours	COs
I	Introduction to Problem Solving and Python Basics: Problem solving concepts, Algorithms and flowcharts, Characteristics of a good program, Introduction to Python, Features and applications of Python, Python installation and execution modes, Tokens, identifiers, keywords, variables, Data types and type conversion, Input and output statements, Operators and expressions, Comments and indentation	8	CO1
II	Python Data Structures: Strings, Lists, List comprehensions, Tuples, Tuple operations and applications, Dictionaries, Dictionary operations and methods, Applications of dictionaries, Sets, Set operations and methods	7	CO2
III	Functions and Modular Programming: Concept of modular programming, Classes, Objects, Built-in functions, User-defined functions, Function arguments and return values, Scope and lifetime of variables, Recursive functions, Lambda functions, Introduction to modules and packages, Importing modules.	8	CO3
IV	Decision Making and Looping: Conditional statements, Iterative statements, Loop control statements (break, continue, pass), Range function, Pattern generation programs, Problem solving using loops.	7	CO4
V	Exception Handling and File Handling: Exception Handling: Errors and exceptions, try, except, finally blocks, User-defined exceptions, File Handling: Types of files, Opening and closing files, Reading and writing text files, File modes, Working with CSV files.	8	CO5

Online Resources:

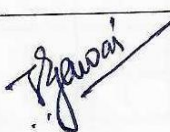
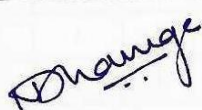
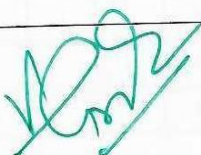
1. Python Official Documentation
2. NPTEL Python Programming Courses
3. SWAYAM MOOCs
4. Virtual Labs for Programming
5. GitHub Open Source Python Examples

Text Books:

1. Taneja, S., Kumar, N. (2018). Python Programming- A modular Approach, Pearson Education India.
2. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC, Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372.
3. Wesley J. Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education, 2016.
4. Reema Thareja, *Python Programming using Problem Solving Approach*, Oxford University Press.

Reference Books:

1. Kamthane, A. N., & Kamthane, A.A. (2017) Programming and Problem Solving with Python, McGraw Hill Education.
2. The complete reference PYTHON, Martin C Brown, McGraw Hill
3. Kenneth A. Lambert, *Fundamentals of Python*, Cengage Learning.

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K.D.K. COLLEGE OF ENGINEERING, NAGPUR
FACULTY OF SCIENCE & TECHNOLOGY
B.TECH. (Electronics and Telecommunication Engineering)

Semester: I				Subject Code: 1BET03P		Name of Subject: Programming for Problem Solving Lab	
Total Hours Distribution per week							
Total Credit: 1		Lecture (L): -		Tutorial (T) : -		Practical (P): 2 Hrs	
Examination Scheme							
Continuous Assessment				End Sem Examination		Total Marks	
25 Marks				25 Marks		50 Marks	

Course Objectives	
1	To introduce the fundamentals of problem solving and Python programming concepts for developing logical and analytical thinking.
2	To implement modular programming concepts using functions, modules, and packages in Python.
3	To apply Python data structures such as strings, lists, tuples, dictionaries, and sets for solving computational problems.

Course Outcomes	
After completion of syllabus, students would be able to	
1	To develop the Python programs using its basic concept like variables, datatypes, operators, etc.
2	Apply decision-making and looping concepts of python programming and implement modular programming using functions and modules.
3	Apply file handling and exception handling techniques using Python Programming

CO-PO Articulating Matrix:

CO	Program Outcomes & Program Specific Outcomes												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1	1	3	-	-	-	-	-	1	1	1
CO2	3	3	2	1	3	-	-	-	1	-	1	2	2
CO3	2	3	2	2	3	-	-	-	1	-	1	2	2

List of Experiments:

Any EIGHT practicals to be performed. (All COs needs to be addressed)

Exp. No.	List of Experiments	COs
1	Study of Python programming environment and execution of simple programs.	CO1
2	Implementation of programs using variables, data types, and operators.	CO1
3	Development of programs using input/output statements and type conversion.	CO1
4	Implement python script to create a tuple with different data types.	CO2
5	Development of programs using Tuples, Sets, and Dictionaries.	CO2
6	Implement the python script to check whether every element in S is in T and every element in T is in S	CO2
7	Implementation of programs using user-defined functions and recursion.	CO3

Exp. No.	List of Experiments	COs
8	Implement python script to find minimum and maximum elements without using built-in operations in the lists.	CO3
9	Development of modular programs using modules and packages.	CO3
10	Implementation of decision-making statements for problem solving.	CO4
11	Implement python script to perform union, Intersection, Difference of given two sets	CO4
12	Implementation of object-oriented programming concepts using classes and objects.	CO4
13	Implementation of programs using file handling operations.	CO5
14	Development of programs using exception handling mechanisms.	CO5
15	Mini-project implementation based on real-world problem solving applications.	CO5

Simulators & IDEs:

1. IDLE (Integrated Development and Learning Environment): Default Python IDE
2. Google Colab: Cloud-based Python programming platform
3. Visual Studio Code (VS Code): Lightweight and widely used code editor
4. NumPy: Numerical and matrix computations.
5. Matplotlib: Plotting graphs and signal visualization

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KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code:	Name of Subject:		
	1BET04T	Basics of Electrical & Electronics Engineering		
Total Hours Distribution per week				
Total Credit: 3	Lecture (L): 3 Hrs		Tutorial (T) : --	Practical (P): --
Examination Scheme				
Mid Sem Examination	Continual Assessment	End Sem Examination	Total Marks	Examination Duration:
30 Marks	20 Marks	50 Marks	100 Marks	3 Hours

Course Objectives	
The objective of the course is	
1	To introduce basic ideas and principles of Electrical Engineering
2	To study construction and operation of electrical devices- transformers, generators and motors.
3	To acquire knowledge on fundamentals of semiconductor devices

Course Outcomes	
After the completion of this course, the students shall be able to	
1	Acquire basic concepts of electric and magnetic circuit.
2	Analyze ac series circuits
3	Explain construction, working and applications of single-phase transformers and electric machines.
4	Discuss 3-phase power generation and basic power system.
5	Explain operation and applications of semiconductor devices like diode and BJT.

SYLLABUS

Details of Topic	Hours	Mapped with CO
Unit 1: Basics of electrical circuits	8	CO1
Equivalent resistance. Kirchhoff's Laws. Current and Voltage division rule.		

Electrical Sources, Source Transformation.		
Basics of Magnetic circuits and parameters, Right hand grip rule. Magneto motive Force.		
Fleming's Left-hand Rule. Reluctance. Magnetic hysteresis and hysteresis loss.		
Faraday's laws of electromagnetic induction, Lenz's Law., Fleming's Right-hand rule.		
Comparison of Electric and Magnetic Circuits.		
Unit 2: Generation of alternating voltage	8	CO2
Values of alternating quantity, Form factor and peak factor,		
Concept of phasor and its mathematical representation. Concept of phasor diagram.		
Power in a.c. circuit, concept of power factor, reactive power and apparent power with power triangle		
Analysis of purely resistive (R), inductive (L), and capacitive (C) circuits.		
Concept of inductive and capacitive reactance.		
Analysis of series R – L, R – C, and R – L – C circuits for voltages and current, their waveforms, phasor diagram, impedance triangle, power factor, series resonance		
Unit 3: Transformer	7	CO3
Introduction, Basic Principles, Construction, Phasor Diagram for Transformer under No Load Condition, Transformer on Load		
Basic idea of Losses in transformer, Voltage Regulation and Efficiency.		
Introduction to Generator and Motors, Introduction, Working, Construction and applications of - 1) DC Motors 2) Induction Motors (3-phase)		
Unit 4: Three phase AC generation	7	CO4
Voltage and current relations in star and delta connections.		
Introduction to Power system- Introduction to Power Generation (Thermal, Hydro, Nuclear and Solar) with block schematic presentation only.		
Single line diagram for Generation, Transmission & Distribution through different voltage levels.		
Unit 5: Application of semiconductor diodes	6	CO5
Rectifier		
Clipping and clamping circuits.		
Introduction to BJT- NPN and PNP, Modes of operation,		
Configuration and its Characteristics, BJT as switch and amplifier.		

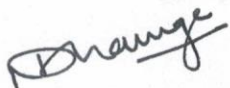
Text Books

1. D. C. Kulshretha, "Basic Electrical Engineering", Tata McGraw Hill, 2012.
2. S.K. Bhattacharya, "Basic Electrical and Electronics Engineering", Pearson Education, 2012.

3. Millman, Halkias , “Electronic Devices and Circuits”, Tata McGraw Hill, 2000

References Books

1. Kothari D.P. and Nagrath I.J., “Theory And Problems of Basic Electrical Engineering, ” Prentice Hall
2. Edward Hughes, “Electrical Technology”, Pearson Education , 2008
3. Basic Electrical Engineering A Web course of NPTEL by Day, Bhattacharya & Roy, Available at [www. nptel.ac.in](http://www.nptel.ac.in)

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KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code: 1BET04P	Name of Subject: Basics of Electrical & Electronics Engineering lab	
		Total Hours Distribution per week	
Total Credit: 1	Lecture (L): -	Tutorial (T): -	Practical (P): 2 Hrs
Examination Scheme			
Continual Assessment	End Sem Examination		Total Marks
25 Marks	25 Marks		50 Marks

Practical Course Objectives	
The objective of the course is	
1	To introduce basic ideas and principles of Electrical Engineering
2	To study construction and operation of electrical devices- transformers, generators and motors.
3	To acquire knowledge on fundamentals of semiconducting devices.

Practical Course Outcomes	
After completing the practical course, students shall be able to	
1	Acquire basic concepts of electric and magnetic circuit.
2	Analyze ac series circuits
3	Explain construction, working and applications of single-phase transformers and electric machines.
4	Discuss 3-phase power generation and basic power system.
5	Explain operation and applications of semiconducting devices like diode and BJT.

SAMPLE LIST OF PRACTICALS:
(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Pr. No.	List of Practicals
1	Measure voltage current and power in 1 phase circuit with resistive load.
2	Measure voltage current and power in R L series circuit.
3	Determine transformation ratio (K) of 1 phase transformer
4	Connect single phase transformer and measure input output quantities.
5	Identify various passive electronic components in the given circuit.

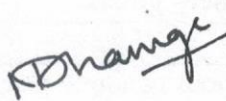
6	Connect resistors, capacitors in series and parallel combination on bread board and measure its value using multimeter.
7	Identify various active electronic component in the given circuit.
8	Test the performance of PN junction diode.
9	Test the performance of Zener diode.
10	Test the performance of NPN transistor

Text Books

1. D. C. Kulshrehtha, "Basic Electrical Engineering", Tata McGraw Hill, 2012.
2. S.K. Bhattacharya, "Basic Electrical and Electronics Engineering", Pearson Education, 2012.
3. Millman, Halkias , "Electronic Devices and Circuits", Tata McGraw Hill, 2000

References Books

1. Kothari D.P. and Nagrath I.J., "Theory And Problems of Basic Electrical Engineering, " Prentice Hall
2. Edward Hughes, "Electrical Technology", Pearson Education , 2008
3. Basic Electrical Engineering A Web course of NPTEL by Day, Bhattacharya & Roy, Available at [www. nptel.ac.in](http://www.nptel.ac.in)

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KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code: 1BAE01T-A / 2BAE01T-A	Name of Subject: Professional communication		
Total Hours Distribution per week				
Total Credit: 2	Lecture (L): 2Hrs		Tutorial (T) : --	Practical (P): --
Examination Scheme				
Mid Sem Examination	Continuous Assessment	End Sem Examination	Total Marks	Examination Duration:
15 Marks	10 Marks	25 Marks	50 Marks	2Hrs

Course Objectives	
1	To develop basic communication and grammar usage
2	To orient students in formal written communication.
3	To develop effective Listening Skill.
4	To provide practice and improve students' oral communication skills.

Course Outcomes	
After completion of syllabus, the students will be able to	
1	Apply basic communication skill and correct grammar usage.
2	Design formal written communication
3	Prepare and illustrate their thoughts effectively through improving listening & speaking skills
4	Use of oral communication skills in order to handle themselves effectively in interview and group discussion

SYLLABUS

Details of Topic	Hours	Mapped with CO
Unit 1: Basic Communication & Grammar	6	CO1
Introduction of Communication, types & barriers of communication		
Overcoming barriers of communication.		
Basic grammar: types of sentences, tense, voice, narration		

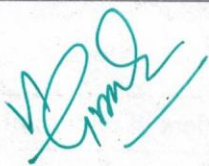
Concept of word formation, prefixes, suffixes, synonyms, antonyms , Abbreviation, acronyms		
Unit 2: Mechanics of Written Communication		
Professional Drafting: Notice , memo & e-mail	6	CO2
Job application & resume		
Business correspondence: Enquiry letter, order letter, complaint letter.		
Report writing: Accident report, fall in production Report, investigation Report, Feasibility Report& Brochure designing		
Unit 3: Listening& Speaking skills		
Introduction to phonetics, speech organs	6	CO3
Articulation of different sound in English		
Introduction to Listening ,Listening versus hearing, Merits of good listening		
Types of listening & Techniques of effective listening.		
Unit 4: Honing oral Communication & Presentation		
Techniques of Group Discussion.	6	CO4
Types& Techniques of Interviews.		
Ppt Making.		
Creating Podcast		

Text Books

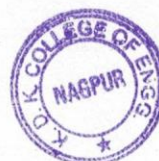
1. Communication Book for Budding Professionals by Sindhu Panikar and Priyanka Sharma (Edition 2)
2. Communication Book – Global Education Ltd .
3. Bridging the Soft Skills Gap- Bruce Tulgan.
4. R. C. Sharma & Krishna Mohan, "Business Correspondence and Report Writing", Tata McGraw Hill
5. High School English Grammar and Composition by Wren and Martin.

References Books

1. S. Mishra & C. Muralikrishna, "Communication Skills for Engineers", Pearson Education
2. T.M. Farhathullah , "Communication Skills for Technical Students", Orient Longman
3. Saran Freeman, "Written Communication in English", Orient Longman
4. Raymond Murphy, "Essential English Grammar (Elementary & Intermediate)", CUP
5. Shirley Tailor, "Communication for Business: A Practical Approach", Longman Developing
6. Krishna Mohan & Meera Banerji, " Communication Skills", Macmillan

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KDK College of Engineering, Nagpur
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Semester I	Subject Code: 1BAE01T-B / 2BAE01T-B	Name of Subject: Business communication skills		
Total Hours Distribution per week				
Total Credit: 2	Lecture (L): 2Hrs		Tutorial (T) : --	Practical (P): --
Examination Scheme				
Mid Sem Examination	Continual Assessment	End Sem Examination	Total Marks	Examination Duration:
15 Marks	10 Marks	25 Marks	50 Marks	2 Hrs

Course Objectives	
1	To develop basic communication and grammar usage
2	To orient students in formal written communication.
3	To develop effective Listening Skill.
4	To provide practice and improve students' oral communication skills.

Course Outcomes	
After completion of syllabus, the student will be able to	
1	Demonstrate effective verbal and non-verbal communication skills in a business context.
2	Explain professional written communication.
3	Describe and demonstrate their thoughts effectively through improving listening & speaking skills.
4	Develop and evaluate efficiently in team-based communication projects.

SYLLABUS

Details of Topic	Hours	Mapped with CO
Unit 1 : Foundations of Business communication	6	CO1
Introduction to Business Communication, Process and Models		
Verbal and Non-Verbal Communication		
Basic grammar: types of sentences, tense, voice, narration.		
concept of word formation, prefixes, suffixes, synonyms, antonyms ,		

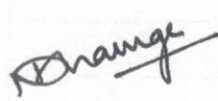
Unit 2:Written Communication in Business		
Professional Drafting: Notice , memo & e-mail	6	CO2
Job application & resume.		
Business correspondence: Enquiry letter, order letter, complaint letter.		
Report writing: Accident report, fall in production Report, investigation Report		
Unit 3:Listening& Speaking skills		
Principles of Effective Oral Communication	6	CO3
Public Speaking Techniques		
Listening Skills and Techniques		
Overcoming Stage Fright and Nervousness		
Unit4 :Oral Communication & Presentation		
Techniques of Group Discussion.	6	CO4
Types& Techniques of Interviews.		
Visual aids and presentation tools		
Handling communication challenges in multicultural environments		

Text Books

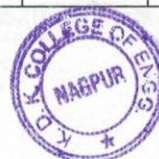
- 1.Communication Book for Budding Professionals by Sindhu Panikar and Priyanka Sharma (Edition 2)
2. Communication Book – Global Education Ltd .
3. Bridging the Soft Skills Gap- Bruce Tulgan.
4. R. C. Sharma & Krishna Mohan, "Business Correspondence and Report Writing", Tata McGraw Hill
5. High School English Grammar and Composition by Wren and Martin.

References Books

1. ,"Business Communication: Process and Product" by Mary Ellen Guffey and Dana Loewy
2. "Effective Business Communication" by Herta A. Murphy, Herbert W. Hildebrandt, and Jane P. Thomas
3. "The Essentials of Technical Communication" by Elizabeth Tebeaux and Sam Dragga
4. "The Art of Public Speaking" by Stephen Lucas
5. "Crucial Conversations: Tools for Talking When Stakes Are High" by Kerry Patterson, Joseph Grenny, Ron McMillan, and Al Switzler

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Semester I	Subject Code: 1BAE01T-C/ 2BAE01T-C	Name of Subject: English for Professional Aptitude		
Total Hours Distribution per week				
Total Credit: 2	Lecture (L): 2Hrs		Tutorial (T) : --	Practical (P): --
Examination Scheme				
Mid Sem Examination	Continual Assessment	End Sem Examination	Total Marks	Examination Duration:
15 Marks	10 Marks	25 Marks	50 Marks	2 Hrs

Course Objectives	
1	To introduce the students the importance of communication in English
2	To enhance formal written communication.
3	To build up listening and speaking Skill.
4	To provide practice and improve students' oral communication skills.

Course Outcomes	
After completion of syllabus, the students will be able to	
1	Use communication skills in English, particularly in professional settings
2	Write the importance of effective communication in the professional world
3	Explain listening skills and their significance in professional settings
4	Prepare oral communication skills in order to handle themselves effectively in interview and group discussion

SYLLABUS

Details of Topic	Hours	Mapped with CO
Unit 1 : Effective Communication skills	6	CO1
Introduction of Communication. ,verbal & non- verbal & barriers of communication		
Barriers of communication, Overcoming barriers of communication.		
Types of sentences, Transformation of sentences; Tenses, Active passive sentences, reported speech, Degree		

Concept of word Building , prefixes, suffixes, Vocabulary enhancement ,synonyms, antonyms ,Abbreviation, acronyms, lexicals		
Unit 2: Formal Written Communication		
Professional Drafting: Notice , memo & e-mail	6	CO2
Job application & resume		
Business correspondence: Enquiry letter, order letter, complaint letter		
Technical Report writing:, Brochure designing, Proposal writing		
Unit 3: Listening & Speaking skills		
Strategies for effective public speaking	6	CO3
Business etiquette and professional conduct		
Introduction to Listening ,Listening versus hearing, Merits of good listening		
Types of listening & Techniques of effective listening		
Unit 4 Interpersonal Communication & Teamwork		
Understanding cultural differences in communication.	6	CO4
Types & Techniques of Interviews, GD.		
Effective teamwork and collaboration strategies.		
Conflict resolution and negotiation techniques		

Text Books

1. Communication Book for Budding Professionals by Sindhu Panikar and Priyanka Sharma (Edition 2)
2. Communication Book – Global Education Ltd .
3. Bridging the Soft Skills Gap- Bruce Tulgan.
4. R. C. Sharma & Krishna Mohan, "Business Correspondence and Report Writing", Tata McGraw Hill
5. High School English Grammar and Composition by Wren and Martin.

Reference Books:

1. "Business Communication: Process and Product" by Mary Ellen Guffey and Dana Loewy
2. "Effective Business Communication" by Herta A. Murphy, Herbert W. Hildebrandt, and Jane P. Thomas
3. "The Essentials of Technical Communication" by Elizabeth Tebeaux and Sam Dragga
4. "The Art of Public Speaking" by Stephen Lucas
5. "Crucial Conversations: Tools for Talking When Stakes Are High" by Kerry Patterson, Joseph Grenny, Ron McMillan, and Al Switzler

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Semester I	Subject Code: 1BET05P	Name of Subject: Skill Enhancement Course (Electronics workshop I)	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T): -	Practical (P): 4 Hrs
Examination Scheme			
Continual Assessment	End Sem Examination		Total Marks
50 Marks	50 Marks		100 Marks

Practical Course Objectives	
The objective of the course is	
1	To study basic concepts, of all active, passive components, sensors, actuators, and different types of Electronic components.
2	To study the use of above components in DC circuits, AC circuits, semiconductors, Semiconductor devices, Power supply, Bipolar and Field effect transistor amplifiers, Frequency response of amplifier.

Practical Course Outcomes	
After completing the practical course, students shall be able to	
1	Explain the Basic Concepts of Different Semiconductor Components with Their types & Usage Physically.
2	Use Semiconductor Devices in Different Electronic Circuits and Projects.
3	Calculate Different Performance Parameters of Active and Passive Devices and their Datasheets.
4	Plot and Study the Characteristics of Semiconductor Devices.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Pr. No.	List of Practicals
1	To demonstrate and understand the relationship between voltage, current, and resistance in an electrical circuit using resistors. (All types and their applications)
2	To investigate the behavior of capacitors in DC circuits and understand the concepts of charging and discharging. (All types and their applications)
3	To understand the working principle of Inductors and analyze the voltage waveform to determine the amplitude and phase shift compared to the input voltage. (All types and their applications)
4	To investigate the behavior of diodes in electronic circuits and understand their characteristics (All types and their applications)

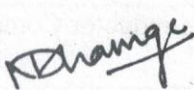
5	To investigate the behavior of transistors, including MOSFETs and IGBTs, in electronic circuits and understand their characteristics
6	To explore the Light Sensing Devices: Practical Applications of Photodiodes and Phototransistors
7	To understand the working of Optocoupler.
8	Identify the key components and materials used in solar cell fabrication.
9	Describe the principles of operation for different types of sensors and their specific applications.
10	Design simple circuits incorporating sensors, encoders, or accelerometers for specific measurement or control tasks.

Text Books

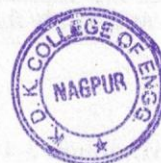
1. Michael Tooley ,“Electronics Circuits: Fundamentals and applications”, Second Edition, Generic publisher
2. S.K. Bhattacharya, “Basic Electrical and Electronics Engineering”, Pearson Education, 2012

References Books

1. Kothari D.P. and Nagrath I.J., “Theory And Problems of Basic Electrical Engineering,” Prentice Hall
2. Jacob Fraden ,”Handbook of Modern Sensors-Physics, Designs, and Applications” fourth edition, Springer publications
3. “Basic Electrical Engineering” A Web course of NPTEL by Day, Bhattacharya & Roy, available at [www. nptel.ac.in](http://www.nptel.ac.in)

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Semester I	Subject Code: 1BCC01P-A / 2BCC01P-A	Name of Subject: Yoga/ Sports Recreation	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Course Objectives	
1	To provide students with foundational knowledge of sports, yoga, and recreational activities for their health and well-being.
2	To introduce students to health-related exercises and assess their fitness levels.
3	To foster holistic development, teamwork, social skills, and leadership qualities among students through participation in a variety of sports, games, and yoga activities.
4	To establish an atmosphere conducive to student interaction and relaxation, serving as a stress reliever, through the introduction of a range of minor and recreational games.

Course Outcomes	
After completion of syllabus, the student is able to	
1	Illustrate the fundamental techniques, underlying principles, and standard practices of both sports and yoga.
2	Collect practical experience in applying the principles of general and targeted physical conditioning exercises and yoga.
3	Enhance health-related fitness levels and achieve harmony between body and mind through participation in a variety of fitness activities, sports, recreational games, and yoga.
4	Practice Healthy & active living with reducing Sedentary Life style.

SYLLABUS

Details of Topic
Unit 1: Introduction Meaning, Definition and Importance of Sports and Yoga, History of Sports and Yoga, Modern trends of Sports and Yoga, Dimensions of Health and Wellness, Factors influencing Health and Wellness, Physical Fitness, Nutrition, Habits, Age, Gender, Lifestyle, Body Types, Health & Wellness through Physical Activities, Sports, Games, Yoga and Recreation activities, Causes of Stress & Stress relief through Exercise and Yoga, Safety in Sports
Unit 2: Practical- Basic Fitness

Warm-Up and Cool Down - General & Specific Exercises, Physical Fitness Activities, Stretching Exercises, General & Specific Exercises for Strength, Speed, Agility, Flexibility, coordinative abilities

Unit 3: Practical- Exercises for Wellness

Cardiovascular Exercises, Assessment of BMI, Relaxation techniques, Physical Efficiency Tests

Unit 4: Yoga- Basic Asanas, Pranayama & Surya Namaskara

Shukshma Vyayam, Suryanamaskar, Basic Set of Yogasanas – Sitting, standing, supine and prone position, Basic Set of Pranayama & Meditation, Vibhagiya Pranayama (Sectional breathing), Sukha Pranayama (Breath awareness), Kapalabhathi/Basthrika & Anuloma Viloma/Nadi Shuddhi, Bhramari & Cooling Pranayamas (Sithali/Sithkari/Sadhantha)

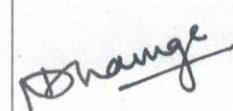
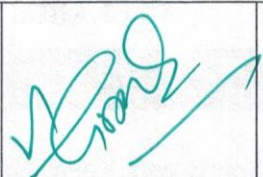
SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

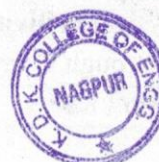
Pr. No.	List of Practical
1	Study and performance of Warm-Up and Cool Down Exercises
2	Study and performance of Stretching Exercises
3	Study and performance of Cardiovascular Exercises
4	Study and performance of Shukshma Vyayam , Suryanamaskar
5	Study and performance of Yogasanas – Sitting, standing, supine and prone position
6	Study and performance of Pranayama & Meditation
7	Study and performance of Kapalabhathi/Basthrika & Anuloma Viloma/Nadi Shuddhi
8	Study and performance of Bhramari & Cooling Pranayamas (Sithali/Sithkari/Sadhantha)

References Books

1. Russell, R.P. (1994). Health and Fitness Through Physical Education. USA: Human Kinetics.
2. Uppal, A.K. (1992). Physical Fitness. New Delhi: Friends Publication.
3. AAPHERD "Health related Physical Fitness Test Manual."1980 Published by Association drive Reston Virginia
4. Kumar, Ajith. (1984) Yoga Pravesha. Bengaluru: Rashtrothanna Prakashana.
5. Dr. Devinder K. Kansal, A Textbook of Test Evaluation, Accreditation, Measurements and Standards (TEAMS 'Science)

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KDK College of Engineering, Nagpur
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B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code: 1BCC01P-B / 2BCC01P-B	Name of Subject: Fundamentals of Indian Classical Dance: Kathak	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Practical Course Objectives	
1	Introduce students to Kathak, an integral component of Indian traditional knowledge, fostering an appreciation for its cultural significance and historical heritage.
2	Provide comprehensive training in Kathak, equipping students with the necessary skills and techniques to proficiently perform this art form.
3	Enhance students' mental and physical well-being through Kathak, promoting attributes such as strength, flexibility, discipline, self-confidence, creativity, focus, and coordination.
4	Cultivate a holistic learning environment where students can develop both artistic prowess and personal growth through the practice and study of Kathak.

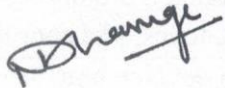
Practical Course Outcomes	
After completing the practical course, students will be able to	
1	Illustrate the historical and cultural context of Kathak, including its origins, development, and significance within the Indian classical dance tradition.
2	Illustrate the fundamental techniques and movements of Kathak, including footwork (tatkar), hand gestures (mudras), body postures (bhangas), and facial expressions (abhinaya).
3	Apply theoretical knowledge to practical performance, effectively interpreting Kathak compositions and expressing emotions through rhythmic sequences and storytelling elements.
4	Develop physical fitness, coordination, and gracefulness through regular practice and refinement of Kathak repertoire, fostering a deeper connection with the art form and its artistic expression.

SAMPLE LIST OF PRACTICALS:
(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Pr. No.	List of Practical
1	Study of various footwork patterns (tatkar) such as basic, tihai, and chakkars, ensuring clarity, speed, and precision in execution.
2	Study of different hand gestures (mudras) used in Kathak, emphasizing proper form and expression to convey emotions and narratives effectively.
3	Study of control and balance while executing chakkars (spins), starting with slow rotations and gradually increasing speed and duration.
4	Study of rhythmic patterns (taals) commonly used in Kathak, focusing on maintaining alignment with the accompanying music and enhancing rhythmic accuracy.
5	Study of expressive facial expressions (abhinaya), conveying various emotions and sentiments through subtle movements and gestures.
6	Study of body movements (angika abhinaya), including graceful poses, turns, and extensions, to enhance overall expressiveness and stage presence.
7	Practice duet or group choreographies, emphasizing coordination, synchronization, and ensemble dynamics.

References Books

1. Kathak Volume1 A "Theoretical & Practical Guide" (Kathak Dance Book), Marami Medhi & Debasish Talukdar, 2022, Anshika Publication (13 September 2022)

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Semester I	Subject Code: 1BCC01P-C / 2BCC01P-C	Name of Subject: Music	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Practical Course Objectives	
1	To enhance the music skills of the students.
2	To enhance the musical instruments' skills of the students.
3	To prepare students to overcome the futuristic challenges in the field of Music.

Course Outcomes	
After completion of syllabus, the student is able to	
1	Identify various Raags of music and differentiate between the classical music and the light music.
2	Operate various instruments of music.
3	Differentiate between the various musical instruments
4	Use music in therapy.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic with List of Practicals
Unit 1: Basic Knowledge of Music: Fundamentals of music, a system to interpret musical compositions, basic music theory containing the elements that form harmony, melody, and rhythm.
Practicals: 1. Study of Sam Veda. 2. Study difference between Classical Music and Light Music. 3. Study of various Technical – Terminology: Raga, Tala, Gamak, Gandharva – Gaan, Giti, Gaan, Varna, Alankar, Melody, Harmony, Musical Scales 4. Vocal recital of various ragas like Yaman, Bhupali.

Unit 2: Importance of Tabla and Pakhawaj : Origin, History, Development of Tabla and Pakhawaj, Importance of Tabla in Films, Advertisises etc Importance of Pakhawaj in Film, Music etc
Practicals: 1. Study of Taal–Teen Taal. 2. Study of Tabla and Pakhawaj Artists 3. Performance of tabla and Pakhawaj
Unit 3: Importance of Guitar: <u>Guitar; History, Types; classical and acoustic or electric guitars, Facts and its benefits</u>
Practicals: 1. Study of different types of Guitar. 2. Playing of Ragas using Guitar
Unit 4: Music Therapy: Musical study with specialized training in the areas of behavioral sciences, psychology, anatomy, biology, and physiology.
Practical: 1. Study of Music for Meditation

Text Books

1. Fundamentals of Music Theory, Nikki Moran, Reid School of Music, Michael Edwards, Folkwang University of the Arts, Richard Worth, University of Liverpool, Zack Moir, Edinburgh Napier University, John Kitchen, The University of Edinburgh, Publisher: University of Edinburgh
2. The Basic Elements of Music By Catherine Schmidt-Jones Published by Textbook Equity. ISBN: 978-1-312-48694-2. <http://textbookequity.org/category/music/>
3. Music Notation and Theory for Intelligent Beginners by Jono Kornfeld Cover art by Jason Dullack © 2001, revised 2005 Jono Kornfeld

References Books

1. This Is Your Brain on Music: The Science of a Human Obsession, by Daniel Levitin
2. Music, Language, and the Brain by Aniruddh Patel
3. Listen To This by Alex Ross .
4. Music, The Brain, And Ecstasy: How Music Captures Our Imagination, by Robert Jourdain
5. The Tao of Music: Sound Psychology by John Ortiz

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Semester I	Subject Code: 1BCC01P-D / 2BCC01P-D	Name of Subject: Chess	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Course Objectives	
1	To grow dendrites which conduct brain signals and the prefrontal cortex, which coordinates planning, judgement and self-control
2	To develop creativity by activating the right side of the brain.

Course Outcomes	
Upon successful completion of the course the students will be able to	
1	Develop problem solving skills and memory Improvement.
2	Work under tense situations and pressure.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic with List of Practicals
Unit 1: Basic Knowledge
Overview, Chess Board and piece, Movement of pieces and their values, attack, capture, check, notations.
Practicals: 1. Study of Chess Board and no. of pieces. 2. Study of movement of pieces and their values. 3. Study of their attack, capture, check, and notations of pieces. 4. Practice session of playing Chess.
Unit:2 Special Move
Castling, En Passent, Pawn Promotion, Stalemate, One Move Mate, Two Move Mate

Practicals: 1. Study of different techniques, like in Chess Castling, En Passent, Pawn Promotion, Stalemate, One Move Mate, Two Move Mate 2. Practice session of playing Chess using different techniques, like in Chess Castling, En Passent, Pawn Promotion, Stalemate, One Move Mate, Two Move Mate
Unit:3 Mates
Check Mate without king, Check Mate with King Double rook mate, Single Queen Mate, Single Rook Mate, Double Bishop Mate
Practicals: 1. Study of Check Mate without king, Check Mate with king, Double rook mate and practice Chess using them. 2. Study of Single Queen Mate, Single Rook Mate, Double Bishop Mate and practice Chess using them.
Unit:4 Opening
Opening Commandment/ Principles , Short Games, Traps/ Tricks
Practicals: 1. Study of Opening Commandment/ Principles and play Chess using it. 2. Study of Short Games, Traps/ Tricks and play Chess using them.

Text Books

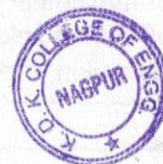
1. **Official Rules of Chess, By Eric Schiller • 2003**
2. Pawn Power in Chess, By Hans Kmoch • 2013
3. Checkmate!- My First Chess Book, By Garry Kasparov • 2004
4. The Game of Chess, By Nicolae Sfetcu, 2014
5. Fundamental Checkmates, By Antonio Guide, 2016

References Books

1. Encyclopedia of Chess Wisdom, 2nd Edition, By Eric Schiller, 2003
2. Art of Attack in Chess, By Vladimir Vuković, 1998
3. A Course in Chess Tactics, By Dejan Bojkov, Vladimir Georgiev, 2010
4. Chess Thinking, The Visual Dictionary of Chess Moves, Rules, Strategies and Concepts, By Bruce Pandolfini, 1995
5. Official Rules of Chess, By Eric Schiller, 2003

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Faculty of Science and Technology
B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code: 1BCC01P-E / 2BCC01P-E	Name of Subject: Introduction to Language and Culture – Japanese/Spanish/German	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Practical Course Objectives	
1	To develop basic communication skills in Japanese Language and help develop a basic understanding of Japanese culture in cross-cultural communication.
2	To help build a foundation and interest in Spanish language so that the students can pursue the proficiency levels of the language in higher semesters
3	To prepare students for elementary communication skills, based on oral and written comprehension of common words and simple sentences in German.
4	Meet the needs of growing industry with respect to language support.
Course Outcomes	
After completion of syllabus, the student is able to	
1	Develop ability to use vocabulary required for everyday conversations of basic level communication in Japanese language.
2	Demonstrate basic knowledge about Spain language and develop ability to use simple language structures in everyday communication, write in basic Spanish about themselves and others.
3	Use basic knowledge about German language to develop ability of reading and writing German conversations related to simple day-to-day situations.
4	Identify Japanese culture, Spanish culture and German culture to meet the needs of growing industry.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic with List of Practicals
Unit 1: Communication skills in Japanese language: Introduction to the structure of Japanese language, Basic vocabulary for daily use, Introduction to Hiragana script, Words based on Hiragana
Practicals: 1. Self-introduction in Japanese language 2. Reading and writing of Hiragana characters. 3. Study of Numbers (1-10000), Days of the week, dates, months, year, and Clock time. 4. Practice of Daily Greetings in Japanese language

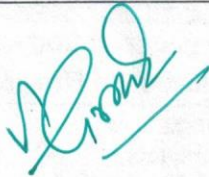
Unit 2: Vocabulary building in Spanish language: Orientation about Spain, Basic Introduction of Spanish language, Communication Skills and Writing Skills in Spanish language.
Practicals: 1. Practice sessions of Vocabulary building for every day conversations. 2. Reading and writing simple text in Spanish language. 3. Listening comprehension and summarize it in Spanish language.
Unit 3: Introduction, Vocabulary and Grammar of German language: German alphabets and Character set, Introduction to Germany, Grammar- Nouns- genders, article, Plural; Vocabulary- Months, weekdays and daytimes and Seasons; Vocabulary- The number system.
Practicals: 1. Study Grammar and practice of Vocabulary building for every day conversations. 2. Reading and writing simple text in German language. 3. Practice sessions of basic greetings, Self-Introduction in German language.
Unit 4: Civilization in Japan, Spain and Germany: Basic introduction about Japan, Spain and Germany; and their history, geography, culture and traditions; their relations with India and co-operation in various fields. Elementary familiarity with cultural information such as important events and days, monuments, festivals.
Practicals: 1. Study of Vocabulary - House and Furniture and Draperies in Japanese, Spanish and German language. Practice sessions. 2. Study Vocabulary for -Family, profession, food, Drink and Cutlery in Japanese, Spanish and German language. Practice sessions.

Text Books

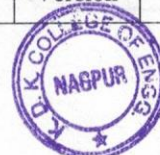
1. Marugoto Starter (A1) Rikai-Course Book for Communicative Language Competences, by The Japan Foundation, Goyal Publishers & Distributors Pvt. Ltd (ISBN:9788183078047)
2. Japanese Kana Script Practice Book– Vol.1 Hiragana, by Ameya Patki, Daiichi Japanese Language Solutions (ISBN:9788194562900)
3. Patki A. (2020) Japanese Kana Script Practice Book Volume 1: Hiragana. Daiichi Japanese Language Solutions. ISBN: 9788194562900
4. 15-Minute Spanish by Ana Bremon.
5. Towards Germany by Sampada Apte.

References Books

1. The Japan Foundation (2014). Marugoto Starter (A1) Rikai - Course book for communicative Language Competences. Goyal Publishers. ISBN: 9788183078047.
2. Corporation, 3A. (2018). Minna No Nihongo 1-1 Main Textbook Elementary with CD (New 2nd Edition). Goyal Publishers. ISBN: 9789388141147.
3. Aula International 1 by Jaime Corpas, Eva Garcia, Agustin Garmendia.
4. Chicos Chicas Libro del Alumno by María Ángeles Palomino.
5. Studio D / Netzwerk A1 - Goyal Pub.
6. Complete Training Manual for German A

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NAGPUR-24.



KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code: 1BCC01P-F / 2BCC01P-F	Name of Subject: Basics of Vedic Maths	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Practical Course Objectives	
1	To empower learners to discover the efficacy and potential of Vedic Mathematics.
2	To strengthen learners proficiency in numerical mathematics.
3	To enable learners to recognize and understand simple techniques of Arithmetical calculations.
4	To train learners to use the ideas of Vedic math in daily calculations and make those calculations with accuracy and speed.

Practical Course Outcomes	
After completing the practical course, students will be able to	
1	Compute simple arithmetic calculations with speed and accuracy.
2	Generate tables of any number
3	Solve products of large numbers quickly
4	Solve difficult calculations like square roots and cube roots of integers speedily.

SYLLABUS

Details of Topic and List of Practicals
Unit 1: Vedic math - High Speed Addition and Subtraction- Vedic Math: History of Vedic math and its Features, Vedic Math formulae: Sutras and Upsutras, Addition in Vedic Math: Without carrying, Dot Method, Subtraction in Vedic Math: Nikhilam Navatashcaramam Dashatah (All from 9 last from 10), Fraction -Addition and Subtraction
Unit 2: Vedic Math - Miracle Multiplication and Excellent Division- Multiplication in Vedic Math: Base Method (any two numbers upto three digits), Multiplication by Urdhva Tiryak Sutra, Miracle multiplication: Any three-digit number by series of 1's and 9's, Division by Urdhva Tiryak Sutra (Vinculum method)
Unit 3: Vedic Math - Squares and Rapid Cubes-

Squares of any two-digit numbers: Base method, Square of numbers ending in 5: Ekadhikena Purvena Sutra, Easy square roots: Dwandwa Yoga (duplex) Sutra, Square root of 2: Baudhayana Shulbasutra, Cubing: Yavadunam Sutra

Unit 4: Algebra and Geometry-

Factoring Quadratic equation: Anurupyena, Adyamadyenantyamanty Sutra, Concept of Baudhayana (Pythagoras) Theorem, Circling a square: Baudhayana Shulbasutra, Concept of pi: Baudhayana Shulbasutra

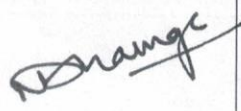
SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

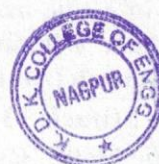
Prac. No.	List of Practical
1	Numerical of Addition using Vedic Math (At least 6 numerical)
2	Numerical of Subtraction using Vedic Math (At least 6 numerical)
3	Numerical of Multiplication using Vedic Math (At least 6 numerical)
4	Numerical of Division using Vedic Math (At least 6 numerical)
5	To find Square roots using Vedic Math (At least 6 numerical)
6	To find Cubes, Cube roots using Vedic Math (At least 6 numerical)
7	To Solve Quadratic Equations using Vedic Math (At least 6 numerical)
8	To study the Concept of Baudhayana (Pythagoras) Theorem, Circling a square: Baudhayana Shulbasutra, Concept of pi: Baudhayana Shulbasutra
9	Activities/ Pictorial display based on above syllabus

References Books

1. Bhatiya Dhaval, Vedic Mathematics Made Easy, Jaico Publishing House
2. Thakur Rajesh Kumar, Vedic Mathematics for students taking Competitive Examinations. Unicorn Books 2015 or Later Edition
3. Gupta Atul, Power of Vedic Mathematics with Trigonometry, Jaico Books
4. V. G. Unkalkar, Magical World of Mathematics (Vedic Mathematics), Vandana Publishers, Bangalore

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KDK College of Engineering, Nagpur
Faculty of Science and Technology
B.Tech. Electronics & Telecommunication Engineering

Semester I	Subject Code: 1BCC01P-G / 2BCC01P-G	Name of Subject: Self-defense Essentials and Basics	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Course Objectives	
1	To enhance the Physical fitness and skills.
2	To enhance the Mental Health.
3	To enhance the ability to defend and protect
4	To enhance the value of self discipline

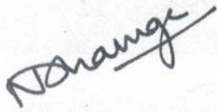
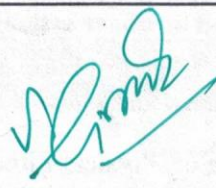
Course Outcomes	
Upon successful completion of the course the students will be able to	
1	Develop strength, coordination, and balance.
2	Develop advance student's growth and conditioning toward lifelong fitness. assaults in everyday situations
3	Use protection skills against threat,
4	Prepare to work in civil defence, security services in public and private/corporate sectors and government establishment etc.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic & List of Practicals
Unit 1: Importance of Physical Fitness: Importance of Physical Fitness in self-defense and personal security. Concepts involved in personal security and self-defense – economic security, food security, health security, personal security, community security

Practicals: 1. Study of Physical Fitness in self defence and practice it in personal security 2. Study of Physical Fitness in self defence and practice it for economic security, food security, health security, personal security, community security
Unit:2: Basics of Human Anatomy Respiratory system, Cardiovascular system, Nervous system, Reproductive system, Stomach, Bones, Joints and Muscles.
Practicals: 1. Study of Respiratory system, Cardiovascular system, Nervous system. 2. Study of Reproductive system, Stomach, Bones, Joints and Muscles
Unit:3 Psychological Aspects in Self Defense Projection, Displacement, Sublimation, Repression, Denial, Identification, Introjection, Undoing Benefits of Self Defense, Builds Confidence, Develop discipline, Goal setting, Boost health, Physical improvement, Mental improvement, Self-esteem, Reduce stress and Depression, Cognitive Benefits
Practicals: 1. Study of Psychological aspects in Self Defence 2. Study of Builds Confidence, Develop discipline, Goal setting, Boost health, Physical improvement, Mental improvement, Self-esteem, Reduce stress and Depression, Cognitive Benefits
Unit-4 Principals and Benefits of Self Defense: Innocence, Imminence, Proportionality, Avoidance, Reasonableness.
Practicals: 1. Study of Principals and Benefits of Self Defense 2. Study of Innocence, Imminence, Proportionality, Avoidance, Reasonableness

Text Books 1, Exercise Physiology Fitness and : B. Srilakshmi, V. Suganthi, C. Kalaivani Ash Sports Nutrition 2. Fitness Habits : Amaresh Ojha and Sibhra Moitra 3. Right of Private and Self Defence : Ramachandra 4. Tricks of Self Defense: W.H. Collingridge 5 Psychology of Self Defence : Christopher Sutton 6. Self Defence for Individual : Billy C. Sandow					
References Books 1. Self Defence Make Simple : Phil Pierce 2. Self Defense : Janathan Kellerman 3. Scientific Self Defence : William E. Faribairn 4. Book of Self Defense : Brouce Tegner 5. Physical Fitness and Wellness : Dr. Shyam Sundar Rath					
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Semester I	Subject Code: 1BCC01P-F / 2BCC01P-F	Name of Subject: Basket Ball	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Course Objectives	
1	To support for growing dendrites which conduct brain signals cortex, which coordinates planning, judgment and self-control.
2	To develop creativity by activating the right side of your brain.
3	To develop effective Listening Skill.
4	To arrange practice and improve students' oral communication skills.
Course Outcomes	
After completion of syllabus, the students will be able to	
1	Demonstrate basic basketball rules, terminology, and safety concerns
2	Demonstrate the ability to perform individual offensive and defensive skills and strategies.
3	Demonstrate the ability to perform team offensive and defensive skills and strategies.
4	Demonstrate an understanding of health-related fitness components: muscular strength, muscular endurance, and stress management

SAMPLE LIST OF PRACTICALS:-

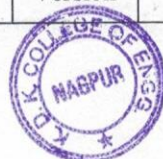
(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic & list of Practicals
Unit 1: Basic Knowledge
Dimension and Measurement of basketball court, Circumference and sizes of ball, Duration and time outs quarter wise .Fouls:- Personal, Technical, Intentional and Disqualification, Discussion about the various age groups .Rules of Under 13 age group, Various signs of referees, Knowledge of score sheet. Time Keeper, Short Clock operator, Knowledge of team fouls and personal foul plates.
Practicals: 1. Study of Dimension and Measurement of basketball court, Circumference and sizes

of ball, Duration and time outs quarter and practice it. 2. Study of various types of foul.					
Unit 2: Level 1					
Stance (Dribble, Pass, Receive and Shooting), How to hold a ball, Dribbling (Low,Medium,High), Pass and Receive (Chest, Bounce, Overhead and Side), Running Dribble, One step and pass, Zig Zag running dribble with cone, Dribble out fun game to improve dribble, Look up and dribble, Tap the Cone and dribble, Shadow drill					
Practicals: 1. Study of Stance and Dribbling (Low, Medium, High). 2. Study of Dribble out fun game and Shadow drill.					
Unit 3: Level 2					
Cross Dribble (Full court), Two man pass, Three man pass without cutting and Running step for Layup with cone, Zig Zag running dribble both hands, Lay up from 45 positions, Shooting with one hand, Stance (Shooting, Defence), Toss the cone while dribbling, Three man pass with Cutting.					
Practicals: 1. Study of Cross Dribble (Full court) and Zig Zag running dribble both hands. 2 Study of Shooting with one hand, Toss the cone while dribbling and practice it.					
Unit 4: Level 3					
Man-to-man Defence offence, 1 on 1, 2 on 2, 3on 3. Screen and roll One dribble and Layup. Introduction of Zone defence (3-2, 2-1-2), Zone Shifting, Rotation, lay up from both side both hand					
Practicals: 1. Study of Man to man Defence offence and practice it. 2. Study of Zone Shifting, Rotation, lay up from both side both hand & practice it.					
Text Books					
1. Full Steam Basketball: Science, Technology, Engineering, Arts, and Mathematics of the Game-N-Helget Capstone 2018. 2. Basketball Essentials, By Ryan Goodson, 2016 3. Long Shot, By Mike Lupica, 2008 4. Basketball Coaching, Putting Theory Into Practice, By AlexandruRadu, 2015 5. Basketball, Steps to Success, By Hal Wissel, 2008					
References Books					
1. Developing Youth Football Players, By Horst Wein, 2007 2. Basketball Fundamentals, By Jon A. Oliver, 2004 3. Basketball Skills & Drills, By Jerry Krause, Don Meyer, Jerry Meyer, 2008 4. The Young Basketball Player, By Chris Mullin, Brian Coleman, 1995 5. Basketball, By Forrest C. Allen, 1975					

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Semester I	Subject Code: 1BCC01P-I / 2BCC01P-I	Name of Subject: Athletics	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Course Objectives	
1	To enhance the Physical fitness and skills.
2	To integrate aspects of physical and mental health.
3	To develop the concept of "team" and healthy interaction with teammates.

Course Outcomes	
After completion of syllabus, the student is able to	
1	Demonstrate attitudes, behaviors, and practices that support personal well-being and life-long learning.
2	Apply discipline and commitment developed in practice and competition to academic achievement.
3	Demonstrate traits of good sportsmanship and teamwork in both competition and practice.
4	Demonstrate an expert knowledge of the strategies and skills of the athletics and use critical thinking skills to apply this knowledge in competitive situations.

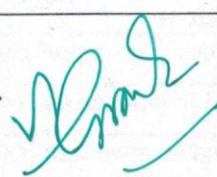
SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic with List of Practicals
Unit 1: Historical survey of athletics- History of Athletics in India & Olympics, Training and Coaching of Athletes Selection of an Athlete, Organization and Administration of Athletic Meet. Track and Field Marking with Layout of Field Events
Practical: 1. Relay Race, Stretching 2. Technique of Long Jump & High Jump
Unit 2: Rules and hygiene of athletics- Rules and Regulations of Track and Field Events, Duties and Powers

of Officials.
Practical: 1. Fartleck Training, ExelARATION Running, Throwing, Jumping, Stretching 2. Technique of Discus throw Grip, stance, swing, Release and Reverse.
Unit 3: Conditioning and warming up exercises- Warming Up, Cool Down & its Significance, Definition of following Athletic Terminology (i) Jogging (i) Striding (iii) Second Wind (iv) Soreness of Muscles (v) speed Play or Fartlek (vi) Stitch in the Side (vii) Sprinting,
Practical: 1. Core Exercises (Standing/On Mat), Body position, Conditioning, Stretching, 2. Medium & distance running (800 M. to 10,000 M.)
Unit 4: Equipment and Surfaces- Training Methods -Components and Significance: (i) Interval training (ii)Acceleration Sprints (iii) Continuous Running (iv) Hollow Sprints (v) Repetition, Running (vi) Sprints (vii) Fartlek or Speed Play (viii) Circuit Training.
Practical: 1. Road Running, Lead Up Run, Free Play Games, Intramural Competition (In House) 2. Hurdles races (100 M., 110 M. and 400 M.)

Text Books 1. The Book of Athletics, Out-Of-Door Sports, by Norman W Bingham 2. Practical Book of athletics for young people by Juan Alfonso Garcia Roca and Antonio Sánchez-Pato
References Books 1. Peak Performance: Elevate Your Game, Avoid Burnout, and Thrive with the New Science of Success – Brad Stulberg and Steve Magness 2. Endurance Performance in Sport: Psychological Theory and Interventions – Carla Meijen 3. Mental Toughness: The Mindset Behind Sporting Achievement – Michael Sheard 4. The Champion's Mind: How Great Athletes Think, Train, and Thrive – Jim Afremow

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Semester I	Subject Code: 1BCC01P-J / 2BCC01P-J	Name of Subject: Painting	
Total Hours Distribution per week			
Total Credit: 2	Lecture (L): -	Tutorial (T) : -	Practical (P): 4Hrs
Examination Scheme			

Continuous Assessment	Total Marks
100 Marks	100 Marks

Course Objectives	
1	To enhance the creativity of the students by inculcating painting skills.
2	To nurture creativity and imagination in students.
3	To prepare students to overcome the futuristic challenges in the field of painting.
Course Outcomes	
After completion of syllabus, the student is able to	
1	Recognize the symbolic and narrative possibilities inherent in painting and drawing
2	Identify a variety of historical and contemporary approaches to representational drawing.
3	Apply variety of techniques and different methods of painting.
4	Demonstrate basic concept of Art, its meaning, definitions, and basic elements of visual Art.

SAMPLE LIST OF PRACTICALS:

(Minimum 8-10 practical based on above syllabus covering all topics are expected.)

Details of Topic with List of Practicals
Unit 1: Introduction and handling of water color and acrylic color- Introduction, Difference between water color and acrylic color, use of acrylic paint with water.
Practical: 1. Draw geometrical shapes and construct for design 2. Marking & Cutting different Drawing Paper as per given size.
Unit 2: Create landscape and abstract Painting- Introduction, painting demonstration, create an abstract image, techniques used in landscape painting.
Practical: 1. Draw free hands sketching practice of human figures 2. Make practice match the color from nature & coloring Landscape in water/ poster color.
Unit 3: Study of Traditional Painting and its technique- Traditional Indian painting styles, intricate details, and depiction of cultural and spiritual themes, unique materials and techniques such as natural dyes and pigments, gold leaf, and hand-painting.

Practical: 1. Tool handling in Corel draw familiarize with all hand tools Apply select / move / copy / objects, rotate skew, size Objects.

2. Operate paint software and draw freehand sketch and practice on color bucket, eraser, pencil & all tools.

Unit 4: Creative Designs using Inkscape- Introduction of different designs using inkscape, creative logo designing with inkscape, use of inkscape in graphics and web work.

Practical: 1. Observe different nature spots make a good composition on paper and draw Land Scape.

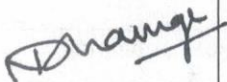
2. Draw scenery like realistic in paint software.

Text Books

1. Alla Prima II by Richard Schmid, Expanded edition.
2. Landscape Painting by Michal Albala
3. Color and Light: A Guide For The Realist Painter by James Gurney

References Books

1. Classical Painting Atelier by Juliette Aristides
2. Color and Light in Oils by Nicholas Verrall
3. Painting Self Portraits by Andrew James

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